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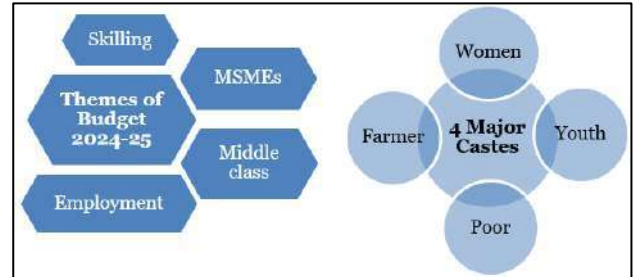
AUGUST 2024

1. IMPORTANT TOPICS OF THE MONTH

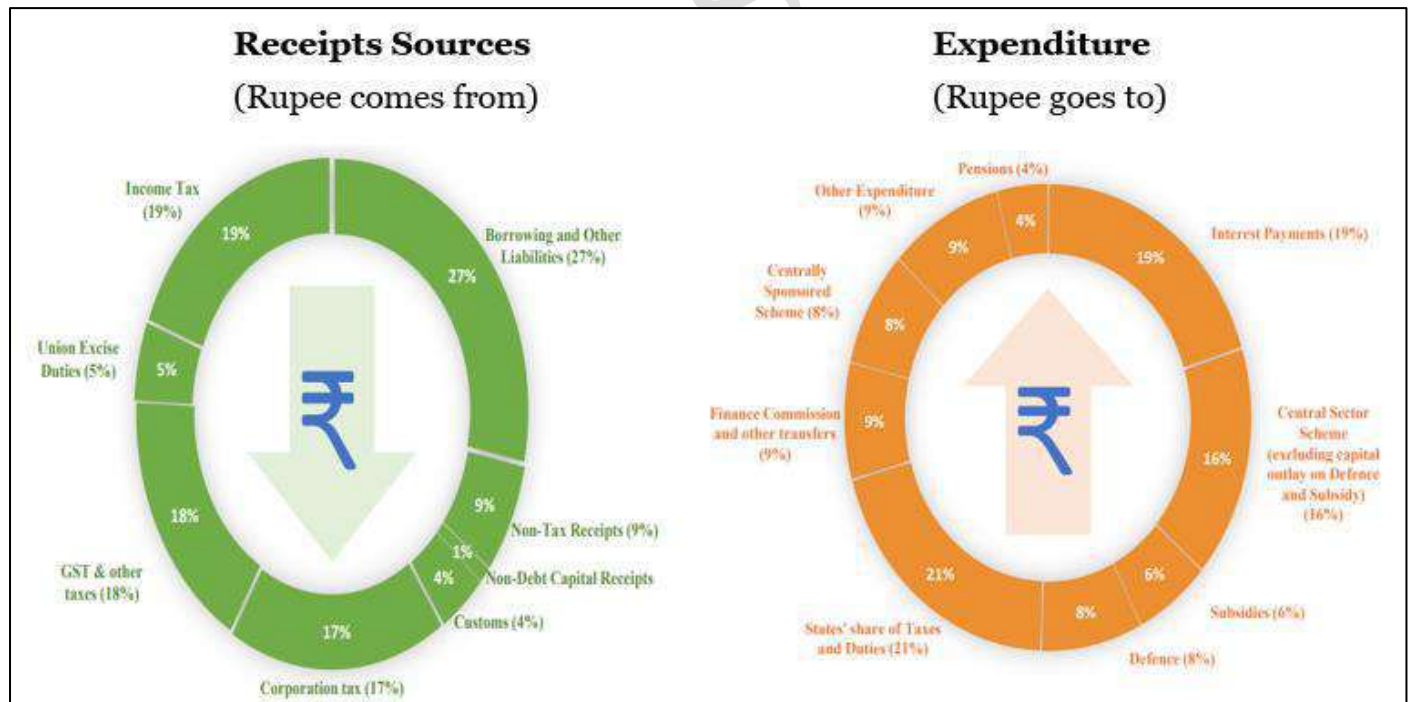
1.1 Budget 2024-25 Series – I

Key Highlights

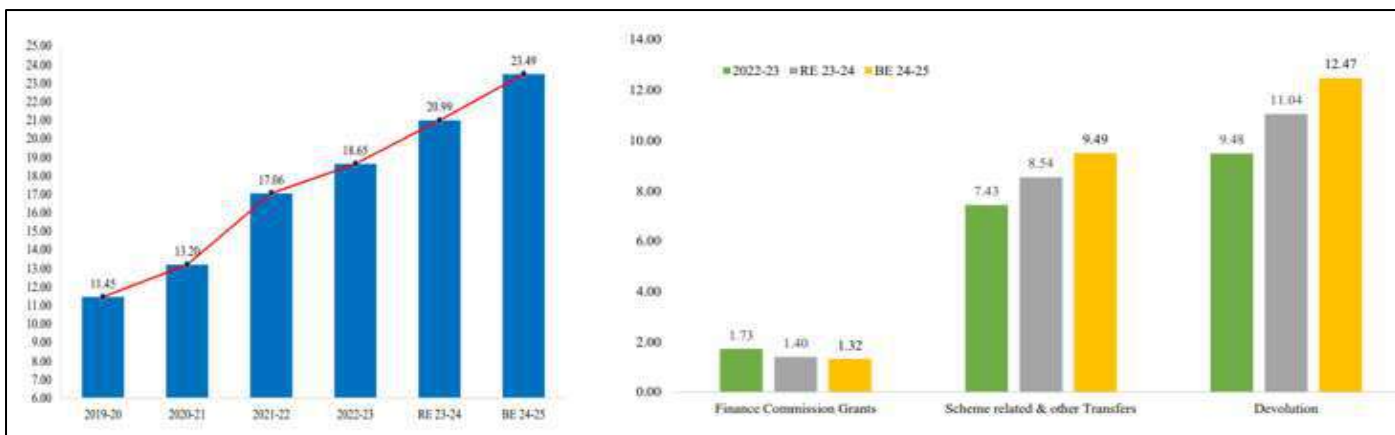
- **Themes** – Skilling, employment, MSME and middle class.
- **Four major castes** – Women, farmer, youth and the poor.
- **Budget Estimates** – It encompasses details about receipts, expenditure, deficits and central government debts.
- **Receipts** – Barring borrowings & other liabilities, **Income Tax tops** in revenue sources.
- It is followed by GST & other taxes, Corporation taxes, non-tax receipts, union excise duties, customs and non-debt capital receipts respectively.
- **Expenditure** – States share of taxes and duties gets the highest amount of expenditure from the budget.
- It is followed by interest payments and central sector schemes (excluding capital outlay on defence and subsidies).



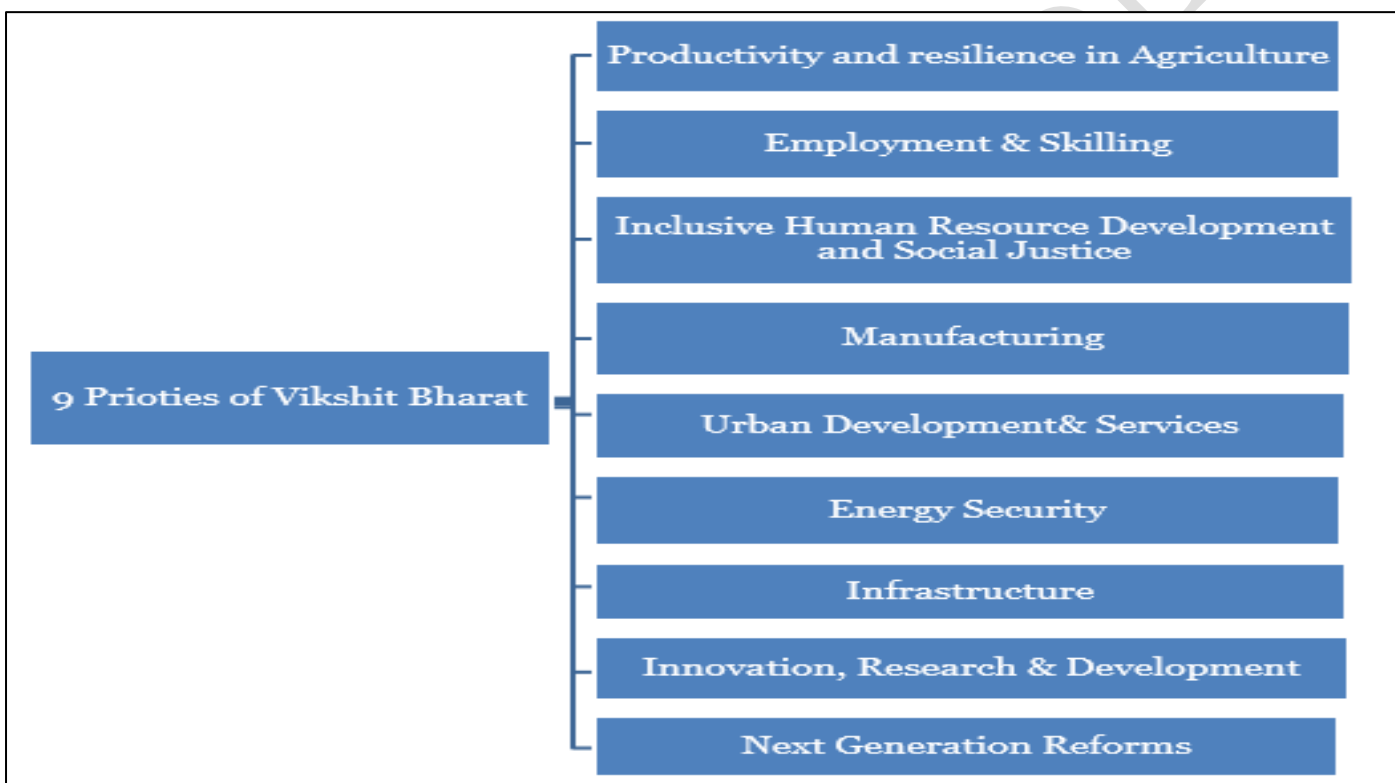
Budget Estimates 2024-25	
Receipts	<ul style="list-style-type: none"> • Total receipts other than borrowings: Rs.32.07 lakh crore • Net tax receipt: Rs.25.83 lakh crore • Tax Revenue(Gross): 11.8% of GDP • Non-tax Revenue: 1.7% of GDP
Expenditure	<ul style="list-style-type: none"> • Total expenditure: Rs.48.21 lakh crore • Capital expenditure: ₹11,11,111 crore (3.4% of GDP)
Deficits	<ul style="list-style-type: none"> • Fiscal deficit :4.9 % of GDP • Revenue Deficit: 1.8 % of GDP • Primary Deficit: 1.4 % of GDP
Central Government Debt	<ul style="list-style-type: none"> • 56.8% of GDP



- **Department wise Expenditure** – **Defence sector tops** the list of receiving higher expenditure amount from the budget.
- **Total transfers to States and UTs** (Rs. in lakh crore) – There is consistent increase year on year.
- Among them, devolution forms a larger share followed by Schemes related transfers and then Finance Commission grants.



Nine Budget Priorities – It in line of attaining the target of Viksit Bharat.



Priority 1: Productivity and resilience in Agriculture

- **Allocation** – Rs.1,52 lakh crore allocated for agriculture and allied sectors.
- **Targets** – To *achieve self-sufficiency in oil seeds* such as mustard, groundnut, sesame, soybean, and sunflower.
- **Initiatives** – *Agricultural research setup* will be reviewed comprehensively to raise productivity.
- New *109 high-yielding and climate-resilient* varieties of 32 field and horticulture crops to be released for cultivation by farmers.
- 1 crore farmers across the country to be initiated into *natural farming*, with certification and branding in next 2 years.
- 10,000 need-based *bio-input resource centres* to be established for natural farming.
- Digital Public Infrastructure (*DPI for Agriculture*) to be implemented for coverage of farmers and their lands in 3 years.
- *Digital crop survey* in 400 districts and issuance of *Jan Samarth* based Kisan Credit Cards.
- Production, storage and marketing of pulses and oilseeds will be strengthened.

- It proposes National Cooperation Policy for systematic, orderly and all-round development of the cooperative sector.

Priority 2: Employment & Skilling

- **PM's 5 schemes for employment and skilling** – It is aimed to cover 4.1 crore youth over a 5-year period
 - First timers
 - Job creation in manufacturing
 - Support to employers
 - New Centrally Sponsored Scheme for skilling
 - New scheme for internship
- **Employment Linked Incentive** – Scheme A,B,Cs are aimed at creating new employment opportunities by providing incentives to employers.
- **Model Skill Loan Scheme** – The Skill Loan Scheme, launched in July 2015 will be revised to facilitate loans up to Rs.7.5 lakh.
- **Women** – Working women hostels and crèches to be established with industrial collaboration.
- Women-specific skilling programmes to be organized.
- Market access for women SHG enterprises to be promoted.

Scheme A - First Timers

- **One-month salary of up to Rs.15,000** to be provided in **3 installments to first-time employees**, as registered in the EPFO

Scheme B - Job Creation in manufacturing

- Incentive to be provided directly, to **both new employee and employer**, with respect to their **EPFO contribution** in the **first 4 years** of employment.

Scheme C - Support to employers

- Government to reimburse up to **Rs.3,000** per month for **2 years** towards EPFO contribution of employers, for **each additional employee**

New centrally sponsored scheme for Skilling

- **20 lakh youth** to be skilled over a **5-year period**.
- **1,000 Industrial Training Institutes** to be upgraded in **hub and spoke** arrangements.

New Scheme for Internship

- Internship to **1 crore youth in 5 years** in 500 Top Companies

Priority 3: Inclusive Human Resource Development and Social Justice

- Saturation Approach will be adopted for inclusive human resource development and social justice.
- **Saturation approach** – It aims to cover all eligible people through various programmes including those for education and health for achieving social justice.
- **Pradhan Mantri Janjatiya Unnat Gram Abhiyan** – To improve the socio-economic condition of tribal communities by adopting saturation coverage for tribal families in tribal-majority villages and aspirational districts.
- It envisages to cover 63,000 villages and aims to benefit 5 crore tribal people across the country.
- **Purvodaya Plan (Vikas bhi Virasat bhi)** – For the all-round development of the eastern region of the country covering Bihar, Jharkhand, West Bengal, Odisha and Andhra Pradesh.
- **Industrial nodes** – Development of Industrial nodes at Gaya in Bihar along the Amritsar-Kolkata Industrial Corridor.
- Koppurthy in Andhra Pradesh along Vishakhapatnam-Chennai Industrial Corridor.
- Orvakal in Andhra Pradesh along Hyderabad-Bengaluru Industrial Corridor.
- 2400 MW power plant will be setup at Pirpainti, in Bihar.
- Rs.15,000 Crore to Andhra Pradesh for the developing capital at Amaravati.
- **Banks** – Opening bank branches in North-Eastern Region
- 100 branches of India Post Payment Bank to be set up in the North East region
- **Women** – More than ₹3 lakh crore is allocated for schemes benefitting women and girls.
- **Education Loan e Voucher Scheme** – Loans upto Rs.10 lakh for higher education in domestic institutions for helping youth who have not been eligible for any benefit under existing schemes and policies.
- E-vouchers will be given directly to 1 lakh students every year for annual interest subvention of 3 per cent of the loan amount.

Priority 4: Manufacturing & Services

- **Finances** – Credit guarantee scheme upto Rs.100 Crore without collateral or third-party guarantee to MSMEs in manufacturing sector for purchase of machinery and equipment.
- New mechanism to facilitate continuation of bank credit to MSMEs during their stress period.

- The limit of Mudra loans under ‘Tarun’ category to be enhanced to Rs.20 lakh from `10 lakh for those who have successfully repaid previous loans.
- Turnover threshold of buyers for mandatory onboarding on the TReDS platform to be reduced from `500 crore to `250 crore.
- Financial support to set up 50 multi-product food irradiation units in the MSME sector.
- **Quality assurance** – 100 food quality and safety testing labs with NABL accreditation will be established.
- **E-Commerce Export Hubs** – It is to be set up under public-private-partnership (PPP mode for MSMEs) and traditional artisans to sell their products in international markets.
- **Critical Mineral Mission** – It is for domestic production, recycling of critical minerals, and overseas acquisition of critical mineral assets.
- **Offshore mining of minerals** – Auction of the 1st tranche of offshore blocks for mining, building on the exploration already carried out.
- **Digital Public Infrastructure (DPI) Applications** – It will be developed in areas of credit, e-commerce, education, health, law and justice, logistics, MSME, services delivery, and urban governance.
- **Industrial parks** – 12 industrial parks under the National Industrial Corridor Development Programme be created.

Priority 5: Urban Development - Cities as Growth Hubs

- Development of peri-urban areas using town planning schemes.
- Creative brownfield redevelopment of existing cities through enabling policies, market-based mechanisms, and regulations.
- Transit Oriented Development plans for 14 large cities above 30 lakh population.
- **PM Awas Yojana Urban 2.0** – For the housing needs of 1 crore urban poor & middle-class families with investment of Rs. 10 lakh crore, including the central assistance of Rs.2.2 lakh crore in next 5 years.
- Dormitory type rental housing accommodation for industrial workers will be developed in PPP mode.
- New scheme for developing 100 weekly ‘haats’ or street food hubs every year for the next 5 years in select cities.
- Promote water supply, sewage treatment and solid waste management projects and services for 100 large cities through bankable projects in partnership with the State Governments & Multilateral Development Banks.

Brownfield is the previously-developed land that has been abandoned or underutilized.

Priority 6: Energy Security

- Energy Transition Pathways Policy will be created.
- Pumped Storage Policy for electricity storage and integration of renewable energy in the overall energy mix.
- Research and development of **Bharat Small Modular Reactor** and newer technologies for nuclear energy.
- Advanced Ultra Super Critical Thermal Power Plants (**AUSC Technology**) of 800 MW will be established by NTPC and BHEL.
- Regulations will be created for transition of ‘hard to abate’ industries from the current ‘Perform, Achieve and Trade’ mode to ‘Indian Carbon Market’ mode to be put in place.
- **Hard to Abate Industries** – Industries such as steel, cement, and petrochemicals that are difficult to lower their greenhouse gas emissions.
- **Indian Carbon Market (ICM)** – A new scheme to decarbonise the Indian economy by pricing the Green House Gas (GHG) emission through trading of the Carbon Credit Certificates.
- **Auditing** – Investment-grade energy audit of traditional micro and small industries in 60 clusters, including brass and ceramic.

Perform, Achieve and Trade (PAT) is a regulatory instrument to reduce Specific Energy Consumption in energy intensive industries, to enhance the cost effectiveness through certification of excess energy saving which can be traded.

Priority 7: Infrastructure

- Rs.11, 11,111 crore (3.4 % of GDP) to be provided for capital expenditure.
- Rs. 1.5 lakh crore for long-term interest free loans to states for infrastructure investment.

- **Pradhan Mantri Gram Sadak Yojana (PMGSY)** – Phase IV to provide all-weather connectivity to 25,000 rural habitations.
- **Flood Management and Irrigation** – Building infrastructures like Kosi-Mechi intra-state link in Bihar.
- Assistance to Bihar, Assam, Himachal Pradesh, Uttarakhand and Sikkim for floods, landslides and other related projects.
- **Tourism Infrastructure** – Development of
 - Vishnupad Temple Corridor at Gaya
 - Mahabodhi Temple Corridor at Bodhgaya
 - Rajgir
 - 20th Tirthankara Munisuvrata Jain temple Complex and Brahmakund- Saptharishi or the 7 hotsprings.
- Development of Nalanda as a tourist centre and reviving Nalanda University to its glorious stature.
- Assistance to make Odisha an ultimate tourism destination.

Vishwa Shanti Stupa is a large white Peace Pagoda in Rajgir, Nalanda District, Bihar. Rajgir is significant for being the holy place for Hinduism, Buddhism and Jainism.

Priority 8: Innovation, Research & Development

- **Anusandhan National Research Fund** – It is for basic research and prototype development to be operationalized.
- **Financing** – Finance of Rs. 1 lakh crore for spurring private sector-driven research and innovation at commercial scale.
- Venture capital fund of Rs.1, 000 crore to for expanding the space economy by 5 times in the next 10 years.

Priority 9: Next Generation Reforms

- **ULPIN** – Unique Land Parcel Identification Number or Bhu-Aadhaar for all lands.
- It is a 14-digit identification number accorded to a land parcel based on the longitude and latitude coordinates.
- **Mapping** – Digitization of cadastral maps and survey of map sub-divisions as per current ownership.
- Establishment of land registry and linking it to the farmer's registry.
- Digitization of urban land records with GIS Mapping.
- **Jan Vishwas Bill 2.0** – It is next in series of [Jan Vishwas 1.0](#), to improve ease of doing business.
- It amended certain enactments for decriminalising and rationalising offences to further enhance trust-based governance for ease of living and doing business.
- Incentivizing states to implement their Business Reforms Action Plans and digitalization.
- **Others** – Integrated Technology Platform will be set up for improving the outcomes under the Insolvency and Bankruptcy Code (IBC).
- Establishment of additional National Company Law tribunals and additional Debt Recovery Tribunals to speed up debt recovery.
- Voluntary closure of Limited Liability Partnerships (LLPs) will be brought under Centre for Processing Accelerated Corporate Exit (C-PACE).
- Shram Suvidha and Samadhan portals will be revamped to enhance ease of compliance for industry and trade.
 - **Shram Suvidha** – It was launched in 2014, a platform for sharing of information among the labour enforcement agencies.
 - **SAMADHAN** – It is a Software Application for Monitoring, Disposal and Handling of Industrial Disputes.
- Integration of e-shram portal (Database of Unorganized workers) with other portals will facilitate such one-stop labour services solution.
- **NPS Vatsalya** – National Pension Scheme (NPS) for minors

National Pension Scheme (NPS) is a voluntary pension system for all citizens, including both residents and NRIs between the ages of 18 and 70 years.

- A regular contribution is made by parents or guardians till the age of 18 and will be converted to regular NPS once the child attains the age of 18.
- **Variable Capital Company (VCC) structure** – It will be implemented to provide flexible financing for leasing aircraft and ships and supporting private equity pooled funds.

Variable Capital Company was introduced in 2020 to meet corporate financial needs.

1.2 Challenges with Great Nicobar Island (GNI) Infrastructure Project

Why in news?

Recently, the reports of the high-powered committee (HPC) formed by National Green Tribunal in 2023 to revisit the green clearance of Great Nicobar Island (GNI) infrastructure project were submitted before the bench.

What is GNI?

- **GNI** – It refers to Great Nicobar Island (GNI) infrastructure project.
- The Great Nicobar ‘Holistic Development’ Project was conceived by the NITI Aayog.
- **Budget** – Central Government has granted Rs. 72,000 Crore for this project.
- **Components**
 - Airport, for civilian and defense use
 - International container transshipment terminal (ICIT)
 - Township
- **Area coverage** – In total, the project will be spread over 166 sq km along the island’s Southeastern and southern coasts along with a coastal strip of width between 2 km and 4 km.
- **Implementation** - Andaman and Nicobar Islands Integrated Development Corporation Limited (ANIIDCO) is the project’s implementing agency.
- The project is to be implemented in 3 phases over the next 30 years.
- **Significance** – It ensures *development* in the Islands.
- More than 1 lakh new direct jobs and 1.5 lakh indirect jobs are likely to be created on the island over the period of development.
- It is important for national security and for consolidation of the Indian Ocean Region as a strategic location.
 - Increasing Chinese assertion in the Bay of Bengal and the Indo-Pacific has added great urgency to this imperative in recent years.

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

What are the challenges associated with this project?

- **Lack of impact assessment** – There is inadequate environmental impact studies and assessment of the impact on Shompen and Nicobarese tribal communities.
 - The coastline where the port and the project is proposed to come up is an earthquake prone zone, and saw a permanent subsidence of about 15 feet during the tsunami of December 2004.
- **Threat to tribals** – The Tribal Council of the Islands was not adequately consulted, as is legally required.
 - Consultations with the Scheduled Tribes Commission, legally mandated by **Article 338(9)** of the Indian Constitution.
- It violates the letter and spirit of the Forest Rights Act (2006), which holds the Shompen as the sole legally



AND THE PERILS

- **Over 8.5 lakh trees to be felled** over an area of **130 sq kms**
- Destruction of tropical rainforests in Galathea National Park, home to **648 species of flora** and **330 species of fauna**, including Nicobar’s **wild pig, treeshrew**, the Great Nicobar crested serpent eagle, Nicobar paradise flycatcher and the Nicobar **megapode**.
- **Threat to the Shompen tribe:** Proposed project areas have been important foraging grounds for the hunter-gatherer nomadic community.
- Threat to nesting sites of iconic species like **Giant leatherback turtle** and the **Nicobar megapode**.
- **Threat to coral and marine ecosystem:** ZSI reported presence of 117 species of scleractinian corals in Galathea. But the Environment Impact Assessment of the project states that there is no coral located in the Galathea Bay region.
- Threat to **Dugongs** due to loss of seagrass meadows, rising anthropogenic activities.

empowered authority to protect, preserve, regulate and manage the tribal reserve.

- It can potentially result in the genocide of the Shompen.
- **Clearance issues** – There is an *opacity* in the clearance process and non-compliance with due process in granting statutory clearance.
- **Conflict of interest** – The Secretary, Environment and Forests, of the UT of Andaman and Nicobar Islands, was also the Managing Director of the ANIIDCO.
- **Deforestation** – It involves felling of 130.75 sq km of forests that is 15% of island's area, and a nationally and globally unique rainforest ecosystem.
- **Impact on biodiversity** – Irreversible damage that the project would cause to biodiversity.
- **Violates CRZ** – The parts of the project site reportedly come under CRZ 1A (areas with turtle nesting sites, mangroves, coral reefs) that restricts the construction of Ports.

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

Island Coastal Regulation Zones (ICRZ)

- **Declaration** - Island Protection Zone Notification, 2011 declared certain coastal stretches of Andaman and Nicobar and Lakshadweep as the *Island Protection Zone* under Environment (Protection) Act, 1986.
- **Coverage** – 8 *Oceanic Islands* in Andaman and Nicobar.
- **Group-I islands** - Islands with geographical areas >1000 sq.km such as South Andaman, Middle Andaman, North Andaman and Great Nicobar.
- The land area from High Tide (HTL) to 200 meters on the landward side along the sea front for Group-I Islands.
- **Group-II islands** - Islands with geographical areas >100 sq.km but < 1000 sq.km such as Baratang, Little Andaman, Havelock and Car Nicobar.
- The land area from High Tide Line (HTL) 100 meters on the landward side along the sea front for Group-II Islands.
- **Classification of ICRZ** - ICRZ-I areas are environmentally most critical.
- **ICRZ-IA areas** – Areas of Mangroves, Corals and coral reefs, Sand Dunes, Biologically active Mudflats, National parks, marine parks, sanctuaries, reserve forests, wildlife habitats and other protected areas under the provisions of Wild Life (Protection) Act, Biosphere Reserves, Salt Marshes, Turtle nesting grounds, Horse shoe crab's habitat, Sea grass beds, Seaweeds, Nesting grounds of birds, Areas or structures of archaeological importance and heritage sites.
- **ICRZ-I B** - Intertidal zone area between Low Tide Line and High.
- **ICRZ-II** - Developed land areas up to or close to the shoreline.
- **ICRZ-III** - Land areas that are relatively undisturbed (viz. rural areas etc.) and those do not fall under ICRZ-II.

What is the current issue?

- **Legal challenge** – In 2022, Mumbai-based non-profit Conservation Action Trust (CAT) challenged the environmental clearance, forest clearance and CRZ clearances granted to the GNI project.
- **Formation of the HPC** - A special bench of the NGT, Kolkata had constituted the High Powered Committee, headed by Secretary, Union Environment Ministry, in April 2023.
- It was tasked to enquire
 - Protection of 4,518 coral colonies.
 - Limited one-season baseline data collection for assessing the project's environmental impact.
 - Issue of project components falling in the ecologically sensitive ICRZ-IA area.
- **Committee report** – The proposed transshipment port *does not fall in the ICRZ-IA (ICRZ-IA)*, where ports are prohibited.
- It is in ICRZ-IB where these are permitted.
- **Issues** – The HPC's conclusions of port location at ICRZ-IB are at *variance with the information* submitted by the Andaman and Nicobar Coastal Management Authority.

Shompen is an indigenous community classified as a Particularly Vulnerable Tribal Group (PVTG).

- The HPC's *operations have been opaque* and the report of HPC has *not been made public*.
- The new information that would have justified the recategorisation of the land has *not been provided to stakeholders*.
- *MoEFCC had not passed any order* after revisiting the clearance.

What lies ahead?

- Conduct comprehensive environmental impact assessment.
- Evaluate the socio economic and health impacts of the project on the islands and tribal groups.
- Ensure that Tribal Council of the Islands are integrated in all decision making processes.
- Make the environment clearances more legal compliant.

Quick Facts

- **Ecological significance of Andaman & Nicobar Islands** - The present forest coverage is 86.2% of the total land area.
- *Great Nicobar Biosphere Reserve* is one of the 18 Biosphere Reserves in India.
- **National Parks** – 9
 - Campbell Bay National Park
 - Galathea National Park
 - Mahatma Gandhi Marine National Park
 - Middle Button Island National Park
 - Mount Harriet National Park
 - North Button Island National Park
 - Rani Jhansi Marine National Park
 - Saddle Peak National Park
 - South Button Island National Park
- **Flora** – 2200 varieties of plants, out of which 200 are endemic.
- **Forests** - Deciduous forests are common in the Andaman, and they are almost absent in the Nicobars.
- Grasslands occur only in the Nicobars.
 - South Andaman Forests – Epiphytic vegetation, mostly ferns and orchids.
 - Middle Andaman - Moist deciduous forests
 - North Andaman - Wet evergreen type.
 - Central and South Nicobar Islands – Mostly evergreen forests.
- **Faunas** – There are about 50 varieties of mammals.
- Rat is the largest group having 26 species followed by 14 species of bat.
- Leatherback turtles and Nicobar megapode bird nest here during breeding season.
- It house some of the larger & most spectacular butterflies of the world.
- Mount Harriet National Park richest area of butterfly.
- The Island is also enriched with *corals, shells, fishes*.

1.3 India- Poland Bilateral Relationship

Why in News?

Poland and India upgrade relations during first visit by Indian PM in 45 years since previous visit of Indian PM in 1979.

What are the pillars of the India-Poland Relationship?

- **Historical connections** – Between 1942 and 1948 during World War II, over 6,000 Polish women and children found refuge in India, particularly in the princely states of Jamnagar and Kolhapur.
- The then-Maharaja of Nawanagar, Jam Saheb Digvijaysinhji Ranjitsinhji, played a key role in offering sanctuary to these refugees which is remembered fondly in Poland to this day.
- The monument for the Battle of Monte Cassino, pays homage to Indian and Polish soldiers who fought one of the defining moments of World War-II in Italy in 1944.

Nawanagar was an Indian princely state on the southern shores of the Gulf of Kutch, was ruled by the Jadeja dynasty. It became a part of newly formed India. Its capital city was Nawanagar city, now known as Jamnagar.

Recognition of Jam Saheb Digvijaysinhji Ranjitsinhji in Poland

- A square in Warsaw was named in his honour called as 'Good Maharaja Square.'
- A monument was dedicated to him in the square.
- He was also posthumously awarded the Commander's Cross of the Order of Merit of the Republic of Poland.
- Eight schools in Poland have also been named after him.

- **Political relations** – The diplomatic relations was formally established in 1954 and 2024 marks the 70th anniversary of the diplomatic relations.
- The year 1957 saw the opening of embassies in respective countries
 - The Indian Embassy in Warsaw
 - The Polish Embassy in New Delhi
- **Economic ties-** Poland joined the EU in 2004, becoming a key economic partner for India in Central Europe.
- Poland is India's largest trading & investment partner in Central & Eastern Europe.
 - For example, their bilateral trade increased by 192% from 2013 to 2023.
- The balance of trade is in favor of India, with key exports including textiles, base metals, and chemical products.
 - Indian investments in Poland exceed \$3 billion, while Polish investments in India are estimated at \$685 million.

Sectoral collaboration between India and Poland

- **Mining/Energy-** Poland has expertise in clean coal technologies, contributing to India's mining and power sectors.
- **Agro-food processing-** Poland's advanced food processing capabilities align with India's Mega Food Parks initiative.
- **IT and ICT-** Indian IT companies have a strong presence in Poland, leveraging its strategic location for near-shoring operations.
- **Pharmaceuticals and chemicals-** Poland's dependence on India for critical medicines and raw materials presents opportunities for Indian exporters.
- **Textile sector-** Textile exports from India to Poland have grown substantially, with potential for further expansion.
- **Engineering sector-** Historical collaboration in mining and power sectors continues, with opportunities for further engagement.

- **Defence relations-** India has recently posted a defence attaché in Poland, and Polish companies are increasingly securing defence orders and exploring joint ventures in India.
- A Poland company got the contract to supply warmate loitering munitions to the Indian Army.
- **Educational ties-** Poland has a strong tradition of Indology studies
 - Poland institutions like the Jagiellonian University and the University of Warsaw plays a pivotal role.
- Notable Polish scholars have contributed to Sanskrit translations and received recognition from India.

A defence attaché (DA) is a member of the armed forces who serves in an embassy as a representative of his/her country's defence establishment abroad and in this capacity enjoys diplomatic status and immunity.

- **Cultural ties** – The Indian community in Poland is approximately 25,000 strong, with professionals, students, and traders contributing to local society.
- **Yoga** has a 100-year history in Poland, with a significant number of practitioners and centers promoting the practice.
- Busts and streets named after Indian leaders like **Mahatma Gandhi** and **Rabindranath Tagore** signify the cultural connection between the two nations.
- **Consular relations**- India has an Honorary Consulate in Wroclaw, while Poland has Honorary Consulates in Kolkata and Bengaluru.
- Poland has been included in India's **e-visa scheme** since 2015, facilitating travel for tourism and business purposes.
- **Recent developments** - Polish companies are invited to join Make in India and Make for the world.
- India-Poland ties are upgraded to a Strategic Partnership.

What are the significances of the India-Poland relationship?

- **Strategic location**- Poland is viewed as a potential gateway for India to expand trade and business ties with Europe, particularly after the war in Ukraine.
- **Evacuation drive**- Poland played a key role in helping evacuate Indian students from Ukraine during the Russian invasion in 2022 under the 'Operation Ganga'.
- **Economic gateway**- With its robust industrial base, it is an attractive destination for Indian businesses looking to expand in Europe.
- Poland will hold the next presidency of the Council of the European Union, enhancing its strategic importance for India.
- **Defense cooperation**- Poland's advanced defense manufacturing capabilities present opportunities for collaboration in defense technology and joint ventures, which align with India's push for self-reliance in defense production.
- **Education**- There is growing collaboration with several Polish universities offering scholarships to Indian students.
- **Democracy**- Poland believes that India's interest to support the "democratic world" can help in its struggle against neo-imperialism and military aggression.
- **Reforming institutions** - Both sides agree that reform in the United Nations and other international institutions is the need of the hour to face global challenges.

Poland is the sixth largest economy in the EU and 21st globally, while India is the fifth and soon-to-be third-largest economy in the world.

What are the challenges in India-Poland relationship?

- **Trade related issues**- A significant amount of trade between India and Poland is unofficial, often routed through other countries.
- A lot of cargo coming from India to Poland comes via Rotterdam or other ports all recorded in those respective countries and cargo to India transiting through other countries is labelled as made in EU.
- There is a lack of clarity on how the Indian system operates, which needs to be addressed.
- **External factors**- Poland has primarily focused on China in opening to Asia.
- India's traditional friendship with Russia and its dependence on Russian arms have constrained India's ability to take a definitive stand regarding Russia's aggression against Ukraine.
- **Cultural differences**- While cultural exchanges are growing, there are still significant differences that can lead to misunderstandings or slower progress in people-to-people ties.

What lies ahead?

- Indian businesses need to better educate and showcase themselves to Polish entrepreneurs to capitalize on trade opportunities.
- Enhancing economic ties can further the growth in trade and investment, particularly in sectors like IT, green energy, and pharmaceuticals.
- Increasing academic exchanges, tourism, and cultural programs will help in building a more robust relationship at the grassroots level.

1.4 Sports Governance in India

Why in news?

Dismal performance of India in the Paris Olympic 2024 has turned the focus on the nature and role of sports administration in India.

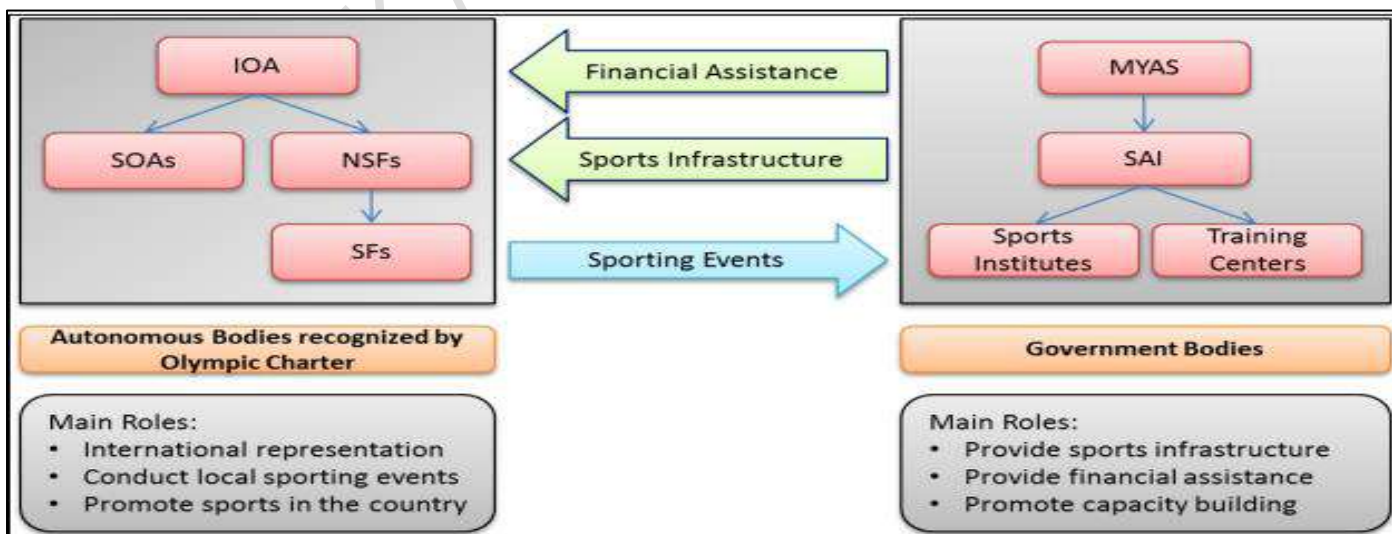
How Sports are governed in India?

- The evolution of sports in India reflects the nation's rich history, culture, and societal changes.
- **Early governance** – They were marked by *local community organization* and regulation of sports activities, especially during pre-colonial times.
- It evolved into formal governing bodies and organizations introduced by colonial administrators for Western sports.
- **Post-Independence governance** - India invested in sports development through institutions like the Sports Authority of India (SAI) that contributes to the development of modern sports governance structures.

Key Organisation in Sports Governance

- It encompasses several pivotal organizations tasked with overseeing the administration, regulation, and promotion of diverse sports
- **MYAS** - Ministry of Youth Affairs and Sports, the central government body steering sports policies, funding, and infrastructure development.
- **IOA** - Indian Olympic Association oversees India's participation in international multi-sport events.
- **SOA** - State Olympic Association
- **NSF** - National Sports Federation, govern specific sports disciplines, collaborating with governmental and international bodies.
- **BCCI**- Board of Control for Cricket in India governs Cricket.
- **AIFF** - All India Football Federation manages football
- **NADA** - National Anti-Doping Agency oversees anti-doping efforts
- **NIS** - National Institute of Sports offers coaching and training.
- **SAI** - Sports Authority of India, the apex national sports organization, manages training centres, talent identification, and financial support for athletes.

• Current governance model



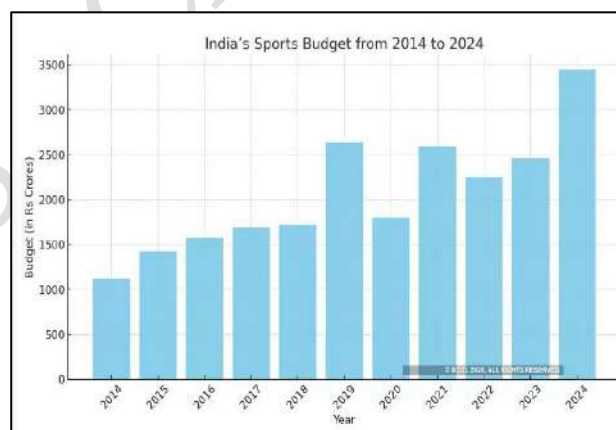
- **Good Governance in Sports** – *National Sports Development Code of India* was enacted in 2011 to promote good governance practices in the management of sports at the national level.
- This code aims to bring transparency and accountability to the functioning of national sports federations (NSFs).

What are the key issues in sports management?

Accountability Issues	Administrative Issues	Developmental Issues
<ul style="list-style-type: none"> • Unlimited Discretionary Powers • Non-transparent Decision Making • Revenue Management Irregularities 	<ul style="list-style-type: none"> • Sponsorships & Media Rights Management • Doping and Related Drug Abuse • Discrimination based on Sex, Region, etc. • Unauthorized Betting 	<ul style="list-style-type: none"> • Cultural Impediments • Infrastructural Impediments

- **Misgovernance of federations** - Internal disputes, governance shortcomings and Third-party influences, not conducting elections in federations.
- Governing bodies for different sports have been suspended, warned or even banned by the international bodies including
 - All-India Football Federation (AIFF), the Indian Olympic Association and Hockey India.
- Many of the federations are now *under the supervision of Supreme Court-appointed Committee of Administrators (CoA)*, which is overseeing the body's day-to-day affairs.
- **Political dominance** – Most of the boards and selection panel is *dominated by persons from political grounds* rather than sports background.
 - Out of 63 vice presidents (average of seven in each sport) of athletics, badminton, boxing, shooting, hockey, archery, weightlifting, swimming and table tennis, only six have a sporting background.
- **Lack of Spending** - India spends *just about Rs.3000 crore* for sports which is *1.13% of China's spending*.
- **Harassments** – *Physical and Sexual harassments* against the sports persons by person within and outside the administration has not been addressed.
- **Scams and Political Controversies** - *India has hosted only the Asian Games and the Commonwealth Games*, which however was marred by alleged scams and political controversies.
- **Lack of sponsorship** – Games *other than Cricket do not have much viewership and sponsorship*.

India won only one silver and 5 bronze medals from India's contingent of 117 athletes went to Paris Olympic 2024 and got 71st spot in the ranking.



What are the impacts of sportsperson in administration?

Benefits of Sportsperson in Administration

- **Domain expertise** - These players have firsthand experience and deep understanding of sports.
- **Better stakeholder management** - Sportspersons are also often *more respected by athletes and coaches*, which can foster a more positive collaborative environment within sports federations.
- It enables the players from marginalized section to overcome the bureaucratic hurdles and engage directly with administration.
- **Athlete welfare** - Players who have risen through the ranks are more in *tune with the requirements of a new player*.
- They are more likely to *understand the challenges* faced during training and competition and prioritise the welfare of athletes.
- **Superior training** - An *athlete-centered approach* would always be handier in providing better training conditions, facilities and support systems (both mental and physical).

- **Reduces favoritism** – Sports person in administration reduces the influences of politicians favoring specific people.

Drawbacks of Sportsperson in Administration

- **Administrative hurdles** - Players who are best in sports may not be good at administration.
- Managerial position requires coordination with people who do not always move ahead with the same goal in mind.
- **Skillset mismatch** - Skillsets required for being an elite sportsperson and administrator are quite different.
- **Decision making challenge** – Differences in the decision-making approach as a sport captain and an administrator.
- Material impact of the administrative decisions takes time to yield results, unlike in game decisions.
- **Lack in back-channel negotiations** – Some issues in sports require back-channel negotiations in which the elite players fail to execute in and politicians handle it better.

What are the impacts of Politicians in administration?

Benefits of Politician in Administration

- **Democratic Administration** - They ensure the checks and balance by keeping everyone in the administration very quickly.
- Politicians in top positions have vast experience in dealing with various stakeholders of any domain.
- **Resource mobilization** - Politicians tend to fare better in galvanizing people, handling media and mobilising resources in getting sponsorships for the game.
- **Better representation** – Politicians can better represent the needs and aspirations of sports in legislature and executive committees.

Drawbacks of Politician in Administration

- **Disconnected from game** - Politicians are absolutely unaware of the activities going on at the ground level.
- Politicians in national sports federations and Indian Olympic Association led to *mismanagement in the administration*.
- **Lack of player-centric approach** – *Detachment with players' life* in the ground tends to make them indifferent towards their problems and they rely on secondary feedback that often negatively impacting the careers of players.
- **Exploiting sports system** – With time, players' and sports' interests take back seat while *financial and personal interests are given priority*.
- Sports may be used for galvanising votes, rigging elections and corruption.
- **Nepotism and Favoritism** - Politicians tend to develop a red-tapism for their own sake.

What lies ahead?

- Prioritizing strategic investment, enhancing infrastructure, and fostering grassroots initiatives.
- Implementing an effective sports governance system as in China for shaping sports policies and strategies.
- Appointing sportspersons at lower level of administration and progressively enabling them to reach the top could be a good beginning.
- Mandating the presence of sportspersons at key decision-making positions.
- Effective implementation of Khelo India programme on mission mode

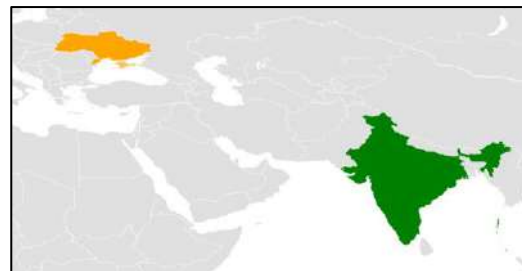
1.5 India Ukraine Bilateral Relationship

Why in News?

Indian Prime Minister has recently visited Ukraine and met his counterpart.

What are the pillars of the India Ukraine relationship?

- India has an extensive bilateral relationship with Ukraine, spanning all spheres of cooperation.
- **Historical ties**
 - **1991**- India recognized Ukraine
 - **1992**- Diplomatic relations were established
 - **2012**- Comprehensive partnership between Ukraine and India was adopted
- **Diplomatic relations**- Three Presidential level visits from Ukraine to India (1992, 2002 and 2012).
- From India, Presidential visit had been in 1993 and 2005.
- In the recent past, Indian and Ukraine PM had meeting on the side-lines of COP26 Summit in 2019, G7 Summit in 2023 (in Hiroshima) and 2024 (in Apulia) respectively.
- Indian-Ukrainian Intergovernmental Commission (IGC) was signed in 1994 to build stronger cooperation on trade, economic, scientific, technical, industrial & cultural aspects.
- **Defence** – Ukraine has been a source of military technology and equipment for India since its independence including for procurement of spares and equipment.
- A Defence Cooperation Agreement was signed in 2012.
- **Science and Technology** - An agreement on co-operation in the fields of S&T was signed initially in 1992 and renewed in 2012.
 - In 2018, both sides agreed to support 10 fields in metals & material sciences, computational science, biological sciences among others.
- **Education** – India accounted for the largest share of foreign students studying in Ukraine.
 - There were around 22,700 Indian students in Ukraine in the 2021-22 academic session and a total of about 2000 Indian students are enrolled currently.
- **Bilateral Trade** - Bilateral trade between the two countries had grown steadily to reaching US\$ 3,386 billion in 2021-22.
- **Communication** – The agreement on visa exemption for the diplomatic passport holders was signed in 2011.
- India has included Ukraine in the e-Visa Scheme in 2014.
- **Humanitarian Assistance** - India was among the first countries to provide humanitarian assistance to Ukraine after the breakout of the ongoing conflict in Ukraine in February 2022.
 - Indian Pharmaceutical Companies have donated about USD 10 million worth of medical aid & financial assistance.
- **Culture** - A Ukrainian Association of Ayurveda and Yoga (UAAAY) was formed as a legal entity in 2018.
- The local Indian community had formed an association called 'India Club' which celebrates Indian festivals & organise cultural events.



The 2024 visit of Indian PM to Ukraine is the first ever visit by an Indian PM to Ukraine, since diplomatic relations were established between the two countries in the year 1992.



A Statue of Mahatma Gandhi was inaugurated in Kyiv in 2020. The area in the park around the statue has been named the "Oasis of Peace".

What are the recent developments?

- During the recent visit of Prime Minister of India to Ukraine, India-Ukraine Joint Statement was released.
- **Elevating partnerships** – Aiming to elevate comprehensive partnership to a strategic partnership in the future.

- **Economy** - Enhancing the *ease of doing business* and encouraging engagement to *explore joint projects*, collaborations, and ventures.
- **Pharma** – Cooperation on drugs and pharmaceuticals, including training and sharing of best practices.
 - MoU on cooperation in the field of Medical Products regulation was signed.
- **Agriculture** – Enhancing bilateral interaction and *market access* for agriculture on the basis of strengths in complementary areas.
 - Agreement on cooperation in the fields of Agriculture and Food Industry was signed in 2024.
- **Defence Cooperation** - Joint collaborations and partnerships for manufacturing in India and cooperation in emerging areas.
 - 2nd meeting of the Indian-Ukrainian Joint Working Group on Military-Technical Cooperation, to be held in India.
- **Culture** – A bilateral Programme of *Cultural Cooperation for the years 2024-2028* for promoting of cultural exchanges and cooperation in the fields of theatre, music, fine arts, literature, library and museum affairs.
- **People-to-people ties** – Sustaining and further expanding people-to-people and cultural exchanges, including through
 - *Scholarships* offered under the Indian Technical and Economic Cooperation programme
 - The General *Cultural Scholarship Scheme* of the Indian Council for Cultural Relations.
- **Education** – They agreed to explore the possibility of *mutual opening of branches of higher education institutions* to meet the educational needs of citizens of both countries.
- **Promoting global peace** - Cooperation in *upholding principles of international law*, including the UN Charter, such as respect for territorial integrity and sovereignty of states.
 - India has attended the *Summit on Peace* in Ukraine, held in Birkenstock, Switzerland in 2024 on peaceful resolution through dialogue and diplomacy.
- **Global food security** – Both appreciated various efforts to ensure global food security, *like Ukrainian humanitarian grain initiative*.
- They also emphasized on uninterrupted & unhindered supply of *agricultural products to global markets*, mainly in Asia and Africa.

What are the challenges in the relationship?

- **Reduction in bilateral trade** – A significant reduction in the annual bilateral trade in goods since the year 2022 due to the challenges related to the ongoing war.
- **India-Russia relationship** - India has had long-standing bilateral relations with first the Soviet Union and then the Russian Federation, marked by strong defence ties.
- **Ukraine peace process** - India remains distant in any peace process that does not involve bringing Russia and Ukraine to the table for talks.
- It had disassociated itself from the Swiss peace summit to end Russia Ukraine War.

Recent efforts for Ukraine-Russia peace process includes the Black Sea Grain Initiative, the IAEA effort, on nuclear safety at the Zaporizhzhia power plant and the latest exchange of Russian and Ukrainian prisoners.

What lies ahead?

- India must articulate its own principles for a ceasefire compromise and lasting peace.
- India will need to recast itself in a more unbiased image in the bilateral relationship.
- Explore strategic partnerships with Ukraine, particularly in the realm of defence manufacturing.

G.S PAPER I

2. HISTORY

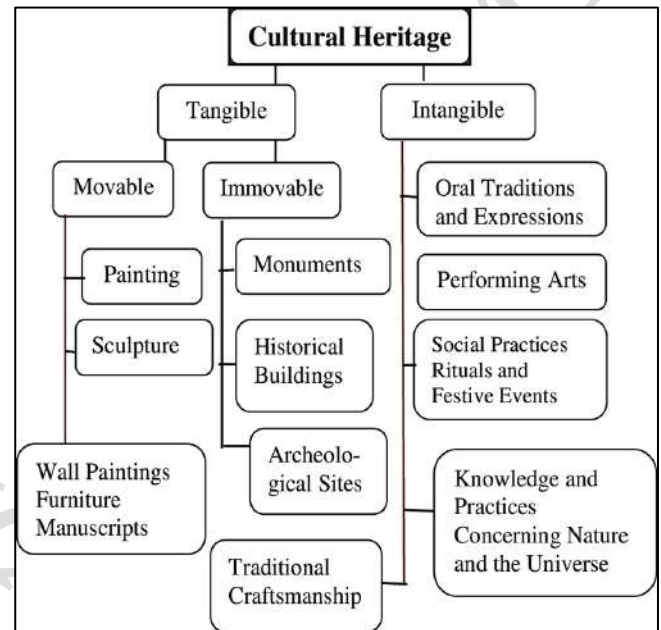
2.1 Cultural Property Agreement

Why in news

Recently, India and the US signed the first-ever 'Cultural Property Agreement' during the 46th World Heritage Committee hosted by India.

What is cultural property?

- **Definition** – *UNESCO defines* it as 'cultural property means property which, on religious or secular grounds, is specifically designated by each State as being of importance for archaeology, prehistory, history, literature, art or science.'
- **Illicit trafficking** – Cultural properties are illegally excavated or exported from their country of origin for monetary gain.
- **Impacts of illicit trafficking** - It deprives people of their history and culture, it weakens social cohesion in the long term.
- It fuels organized crime and contributes to the financing of terrorism.
- The black-market trade in cultural property undermines legitimate sales and can harm the economy, particularly for communities dependent on cultural tourism.
- It affects international relations between the countries of origin and destination.
- **Measures – 1970 UNESCO Convention** on 'Means of Prohibiting and Preventing the Illicit Import, Export and Transfer of Ownership of Cultural Property'.
- It provides a common framework for the States Parties on the measures to be taken to prohibit and prevent the import, export and transfer of cultural property.
- It is the first international legal framework for the fight against the illicit trafficking of cultural property.
- Guiding principles are prevention, restitution and international cooperation.
- It has been ratified by 145 states including India in 1977.
- It is fully in line with the Sustainable Development Goals (SDG) defined in the United Nations 2030 Agenda.



What is Cultural Property Agreement?

- **Historical background** – It is culmination of year-long bilateral discussions and negotiations held on the sidelines of the G20 culture working group meetings.
- It was negotiated by the state department under US law implementing the 1970 UNESCO Convention.
- **Umbrella convention** - This agreement is aligned with the under **Article 9 of 1970 UNESCO Convention**, both India and US are signatories to the convention.
- **Objectives** – It aims to prevent the illicit trafficking of antiquities and retrieval of antiquarian objects to their place of origin.
- It is to facilitate the quick seizure of Indian antiquities at US Customs and ensure their smooth repatriation to India.
- **Provisions** – It restricts the importation into the US of certain
 - Archaeological material ranging in date from 1.7 million years ago through 1770 CE
 - Ethnological material including categories of civic, religious
 - Royal architectural material
 - Religious material and ceremonial items

India joins the ranks of 29 existing US bilateral cultural property agreement partners.

- Manuscripts ranging in from 2nd century BCE to 1947 CE
- The list of items restricted for import in the US will be promulgated by the Government of the US.
- US shall offer to return to India any object or material on the Designate List forfeited to the Government of US.
- **Repatriated articles** – It is not clear where these repatriated artefacts will be situated once returned.
- Most of them would be sent back to the states to which they belong with a “possibility” of having a “special section or a museum” for the repatriated artefacts.
- **Significance** – It is a “ground breaking endorsement” of “*culture as a standalone goal*” in the post-2020 development framework in the New Delhi’s Leaders’ Declaration (NDLD).
- It is step towards securing India’s rich and diverse cultural heritage and invaluable artefacts of our grand history.
- It ensures justice and also paves a way for connecting India with the world to show India’s rich culture and history.

India's Cultural Creative Economy

- It is aligned with the Prime Ministers’ vision of ‘Vikas Bhi, Virasat Bhi’ and the Viksit Bharat Vision 2047.
- **Aims** – To foster vibrant and inclusive ecosystems, unlock new pathways of growth and sustainability and transform our economies and societies while preserving our cultural heritage.
- **Role** – It offers a blueprint for leveraging heritage and creativity for the greater good, benefiting not just India but the entire world by promoting cross-cultural understanding and sustainable development.
- **Culture of repatriation** - In the past decade, preserving Indian artifacts and cultural heritage has become a pivotal aspect of India’s foreign policy.
- If an antiquity is located abroad, the Archaeological Survey of India (ASI) coordinates with the foreign country for its recovery and it has retrieved 357 antiquities from the year 1976.
 - India has repatriated 358 antiquities since 1976, with 345 returned since 2014, mostly from the US.
 - In the last five years, India has repatriated a total, 15 from the UK, and 35 from Australia and one from Italy.
- **Importance of repatriation** - It nurtures cultural stewardship, promote tourism, and stimulate economic growth within local communities.
- It empowers nations to leverage their cultural assets for educational enrichment, social cohesion, and economic empowerment, thereby fostering inclusive and sustainable development pathways.

To know about India’s measures in Antiquity protection, click [here](#)

2.2 Rationalizing Monuments of National Importance

Why in news?

The Archaeological Survey of India (ASI) has started the rationalization process for delisting monuments of national importance.

What are Monuments of National Importance (MNI)?

- **Monuments** - They are remains of our prestigious past, representing culture, art architecture and structural technology of bygone days.
- **MNI** – India has declared **3695 monuments and sites** as of national importance.
- Majority of these were inherited from a colonial-era list of protected monuments, along with others from the princely states.

Article 49 of the Constitution enjoins the State to protect the historical and cultural heritage of the country.
Article 51A stipulates that it shall be the duty of every citizen of India “to value and preserve the rich heritage of our composite culture.”

- **Declaration** - Central Government issues a notification of its intention to declare any ancient monument as MNI by giving 2 months’ notice, inviting views/objections from public.

- After considering the views/objections, the Central Government may declare by publishing a notification in the official gazette.
- **Administration** – It is managed by the Archaeological Survey of India (ASI) under the Ancient Monuments and Archaeological Sites and Remains Act, 1958 (AMASR Act).
 - Archaeological Survey of India (ASI) – It was founded in 1861 by Alexander Cunningham, who is also regarded as the first Director General of ASI.
 - Ancient Monuments and Archaeological Sites and Remains Act of 1958 – It provides for the preservation of ancient and historical monuments, archaeological sites, and remains of national importance.
- **Regulation** – The 100 metre radius of the monument is then considered a 'prohibited area' where there is a ban on construction activities.
- Further 200 meters (i.e. 100+200 meters) is considered a 'regulated area' where there are regulations on construction.

What are the issues in the current MNI list?

- The Economic Advisory Council to the Prime Minister (EAC-PM) in its report in 2023, recommended to rationalise the MNI list.
- The three major problems in current list are
 - Selection Errors
 - Geographically Skewed Distribution of Monuments
 - Inadequate and Geographically Skewed Expenditure on Upkeep of Monuments
- **Selection errors** - A large number of MNI seem not to have national importance or historical or cultural significance.
- The 3 significant errors are
 - Minor monuments considered as MNI.
 - Movable antiquities treated as MNI.
 - Untraceable monuments still being considered as MNI.
- **Geographically skewed distribution** – Though MNI are spread across the country, there is an imbalance in their geographical distribution.
 - Over 60% of them are located in 5 states of Uttar Pradesh, Karnataka, Tamil Nadu, Madhya Pradesh and Maharashtra.
- Other culturally and historically significant states like Bihar, Odisha, Chhattisgarh, and Kerala have disproportionately fewer MNI.
- **Inadequate expenditure** - India's expenditure on monuments of national importance is woefully little and inadequate.
 - In 2019-20 the budgetary allocation for 3695 MNI was only INR 428 crores that is a sum of INR 11 lakhs per MNI.
- **Lack of definition** - Neither the AMASR Act, 1958 nor the National Policy for Conservation (2014) have defined what the term 'national importance' means.
- **Lack of set criteria's** - The 1958 Act also does not have a substantive process/criteria prescribed for identifying a monument as a monument of national importance.

92 monuments and sites that were declared as monuments of national importance were untraceable as per the 2013 report of the Comptroller and Auditor General of India (CAG).

What is delisting of monuments and why it is recommended?

- **Delisting of monuments** – It refers to the process of removing a monument or heritage site from an official list of MNI.
 - In March 2024, ASI began delisting starting with 18 that could not be located.
- It does not necessarily mean the destruction of a monument but rather a reduction in its protection and conservation efforts.
- **Reasons for delisting** – The monument might have lost its historical or cultural significance or for changes in heritage laws or policies.
- If a monument is deemed irreparable or if preservation efforts are deemed unsustainable, it might be delisted.

- **Significance of delisting** – Removing MNI of colonial remnants can help in *modernizing the list* to better reflect current values and historical perspectives.
- It can help in *rationalising the restriction* imposed around the MNI as it can stifle development and create bureaucratic hurdles.
- It helps by enabling *more flexible use of space and resources*.
- Thus, it can indeed *address both symbolic and practical concerns*.

What lies ahead?

- ASI should come up with substantive criteria and a detailed procedure for declaring monuments to be of national importance.
- ASI should publish a book of notifications with detailed information about the provenance of MNI.
- Monuments with local importance should be handed over to the respective states for their protection and upkeep.
- Allocation of funds for the protection of MNI should be increased.

3. GEOGRAPHY

3.1 Geothermal Energy in India

Why in news?

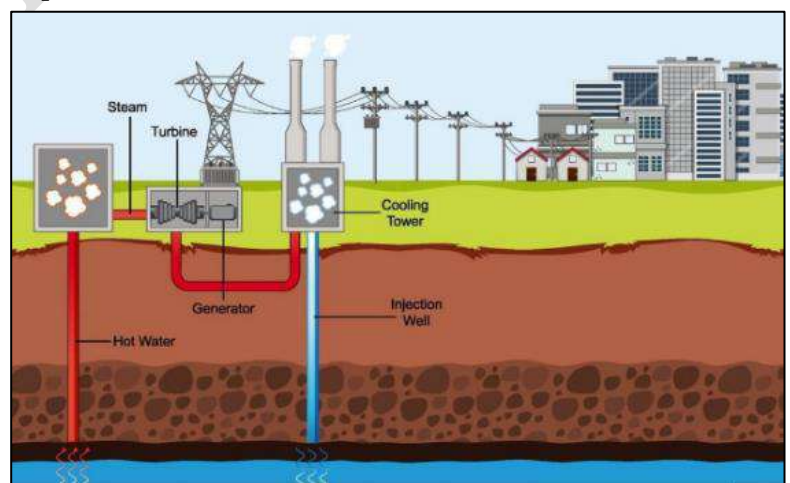
Recently, Minister of New and Renewable Energy has highlighted that Indian government is working on extensive exploration of potential geothermal site in India and in developing pilot plants.

What is geothermal energy?

- **Geothermal energy** - It is the energy that is stored in the form of heat beneath the earth's surface.
- **Usage** - To generate electricity and for other heating applications.
- **Source** - Energy from the formation of the planet and the decay of radioactive isotopes inside earth's core, such as potassium-40 and thorium-232.

Molten rocks formed in the deeper hot regions of earth's crust are pushed upward and trapped in certain regions called 'hot spots'.

- **Extraction** – From the underground pools of steam and hot water trapped in hot spot region in earth crust.
- There are three primary methods of geothermal energy production based on geological conditions and resource characteristics
- **Dry Steam Power Plants** - *Steam from underground reservoirs* is directly used to fuel turbines, generating electricity with remarkable efficiency.
- It is ideal for areas with naturally occurring steam reservoirs.



- **Flash Steam Power Plants** – It is applied in geothermal reservoirs containing water at higher *temperatures greater than 182°C*.
- As this superheated water flows upward through wells under its own pressure, the decrease in pressure causes some of the water to flash into steam which is then separated & used to power turbines.
- **Binary Cycle Power Plants** - It is used in regions with *lower temperature geothermal resources* (between 107-182°C).
- Heat from hot water is used to *boil a secondary working fluid*, typically an organic compound with a low boiling point and the vaporized working fluid drives the turbines.

What are the advantages of geothermal energy?

- **Environmental Benefits** - It is a clean energy source with minimal release of greenhouse gases or air pollutants.
- **Renewable Energy** - Earth's heat is constantly replenished, ensuring a long-term renewable energy source.
- **Reliability and Consistency** – They can generate electricity 24/7, 365 days a year and thus makes it as an excellent source of baseload power, crucial for maintaining a stable electricity grid.
- **Higher energy conversion efficiency** – It can produce more electricity with less energy input compared to many other power generation methods.
- **Limited Land Use** – They require a much smaller land area compared to wind farms or solar panel arrays thus minimizing their impact on the surrounding environment.
- **Energy Independence** - Developing domestic geothermal resources could significantly reduce dependence on imported fossil fuels, enhancing energy security and independence.
- **Reduced energy cost** - Increased power generation will make electricity reliable and affordable for households and businesses.

What is the status of geothermal energy in India?

- **Potential** –Through the report '*Geothermal Atlas of India 2022*', Geological Survey of India, has identified **10 GW** of geothermal power capacity in *350 identified locations* across various regions.

- **4 Major potential regions**

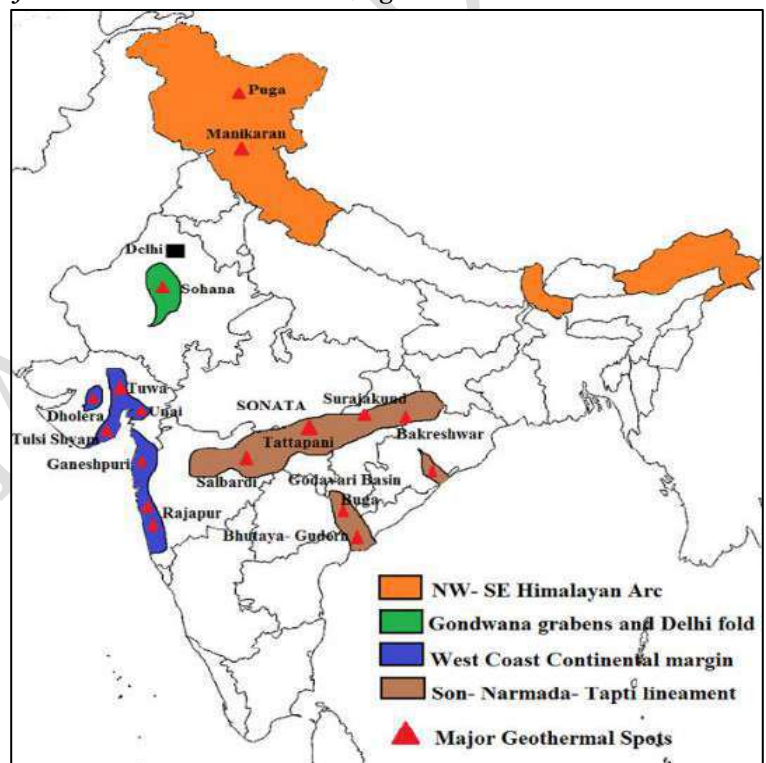
- Northwest-Southeast Himalayan Arc
- Gondwana Grabens and Delhi fold
- West Coast continental margin
- Son-Narmada-Tapti lineament

- Tatapani-Surajkund belt, covers Chhatisgarh and Jharkhand, Cambay in Gujarat with reservoir temperatures about $175\text{ }^{\circ}\text{C} \pm 25\text{ }^{\circ}\text{C}$.

- Areas in Jharkhand, Bihar, MP, Maharashtra, Gujarat & Telangana have reservoir temperatures about $60\text{ }^{\circ}\text{C} \pm 10\text{ }^{\circ}\text{C}$.

- **Current plants** – 2 plants, both are run by ONGC

- **Himachal Pradesh** – Parvati Valley, Manikaran
- **Ladakh** – Puga - Chumathang geothermal sites of



What are the measures taken by India?

- **Pilot Project** - A 20 kW pilot geothermal [power plant](#) has been commissioned by Singareni Collieries Company Limited (SCCL) in the Manuguru area in Telangana which utilizes a closed loop Binary Organic Rankine Cycle Process technology.
- **Indigenous technologies** - Development of technologies through the Renewable Energy Research and Technology Development Programme (RE-RTD) has been successfully demonstrated.
- **Financial support** – Government provides up to 100% financial support to government and non-profit research organizations and up to 70% to industry, start-ups, private institutes, and entrepreneurs.
- **International collaboration** – India has signed MoUs with Iceland, Saudi Arabia and USA on geothermal energy development.
- Renewable Energy Technology Action Platform (**RETAP**), launched in 2023, between India and the USA, has identified geothermal energy as a key area of collaboration.

What are the challenges in developing geothermal energy?

- **High upfront costs** – High initial investment is needed for exploration and setting the plant, thus yet to reach grid-parity.

- **Lesser investment** – High turnaround time of the project discourages private sector investments.
- **Location limitation** – Geothermal energy power plants can be setup in limited locations of geothermal energy availability.
- **Unviability** - Some potential geothermal sites are not considered techno-economically viable due to high altitude, difficult terrain, harsh weather conditions, very short working period and difficulty in evacuation of power.
- **Lack of technical expertise** – India’s technology expertise in extracting geothermal energy is limited.
- **Unintended consequences** – Inadequate understanding about the long term impact of exploiting internal heat of earth.
- **Regulatory hurdles** – Lack of streamlined regulatory process disincentives private sector participation.
- **Seismic impact** – Geothermal energy extraction could trigger seismic events such as earthquakes.
- **Environment pollution** – Release of hot water and steam will affect local biodiversity.

What lies ahead?

- Develop a detailed exploration of geothermal provinces like the Himalayas and Cambay Basin.
- Attract investments through favorable policies, such as allowing 100% FDI for geothermal projects and private participation.
- Build expertise in geothermal technologies and operations through geothermal engineering programs and collaboration with experienced international players.
- Develop and adapt cost-effective geothermal technologies suitable for India’s geological conditions.
- Create a clear and efficient regulatory framework for geothermal development to expedite project approvals.
- Pursue decentralized smaller-scale applications of geothermal energy, such as heating buildings and greenhouses.

3.2 Deep Sea Metals and its Mining

Why in news?

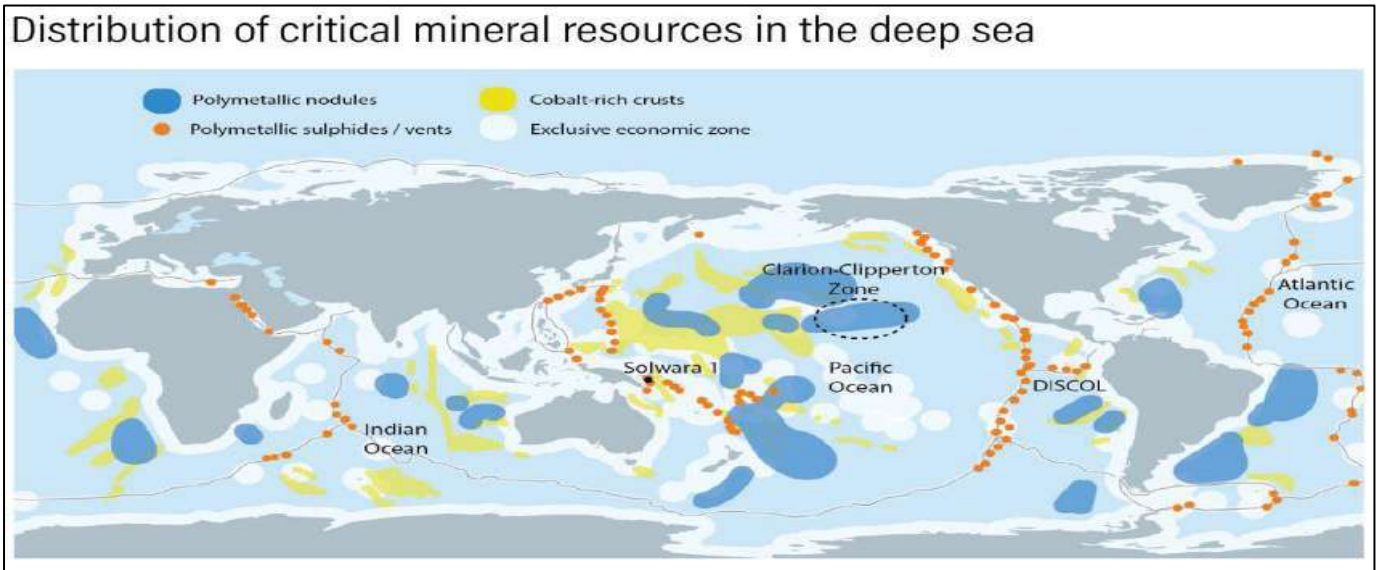
Recently International Sea Bed authority elected new chief and held discussion on international moratorium on extraction of deep sea metals until clear research on their impacts.

What are deep sea metals?

- It refers to the metallic and non-metallic ores present in Deep sea ocean floor.
- **Occurrences** - Deep sea minerals are found at high seas that accounts for more than 50% of the world’s oceans.
- They occur in different forms in different parts of the ocean.
- **Polymetallic nodules** - These are potato-sized lumps formed over millions of years from sediment deposits and are composed mainly of manganese, cobalt, copper and nickel.
- They are found at depths of 4–6 km in all major oceans.
 - **Example** - [Clarion-Clipperton Zone](#) between Hawaii and Mexico holds vast amounts of manganese nodules.
 - India is trying to explore [Carlsberg Ridge & Afanasy-Nikitin Seamount](#) for polymetallic nodules.
- **Polymetallic sulfides** - It contains large amounts of copper, zinc, lead, iron, silver and gold.

The high seas are defined by international law as all parts of the ocean that aren't included in the exclusive economic zone, the territorial sea, or the internal waters of a country, or in the archipelagic waters of an archipelagic country.

- **Cobalt-rich crusts** - CRCs form on sediment-free rock surfaces around oceanic seamounts, ocean plateaus, and other elevated features.



How deep sea mining are regulated?

- **Common rights** – Deep Sea mineral areas in High Seas are classified as the “common heritage of mankind”.
- Raw materials found here belong to everyone, not one particular country.

Deep Sea Mining

- Deep sea mining includes three stages.
- **Prospecting** - Searching for minerals and estimating their size, shape and value.
- **Exploration** - Analysing the resources, testing potential recovery and potential economic/environmental extraction impacts.
- **Exploitation** - Recovering of these resources.
- **Countries opposing the mining** - Germany, Brazil and the Pacific island nation of Palau
- **Countries supporting the mining** - China, Norway, Japan and the microstate Nauru in the Central Pacific.

To know more about deep sea mining, click [here](#).

- **Responsible authority** – Potential mining activities in these regions are the responsibility of the [International Seabed Authority](#) (ISA), as outlined in the United Nations Convention on the Law of the Sea (UNCLOS).
- The ISA has so far issued 31 licenses for exploration and no licenses for extraction yet.

What are the impacts of deep sea mining?

- **Benthic disturbance** - Removing parts of the sea floor disturbs the habitat of benthic organisms.
- **Reduce dissolved oxygen** - Recent study showed that the minerals present in manganese nodules are able to produce oxygen.
- **Affect deep sea biodiversity** – It might affect more than 5,000 different species present in the region.
- Species that have adapted to live in extreme conditions like food scarcity, absence of sunlight and high water pressure become highly vulnerable.
- These creatures are affected by the mining robots.
- **Pollutes the region** – It can create light and noise pollution at deep seas and the possible leaks and spills of fuels and other chemicals used in the mining process can cause chemical pollution.
- **Toxicity of sediment plumes** - Once valuable materials are extracted, slurry sediment plumes are sometimes pumped back into the sea.

Benthic Organisms include animals that live on the sea floor are called benthos. Most of these animals lack a backbone and are called invertebrates. Eg. sea anemones, sponges, corals, sea stars, sea urchins, worms, bivalves, crab.

- It may transport metal complexes trapped in the sediments (e.g., copper, cadmium) that can be released to the water column in concentrations toxic to marine biota.
- **Impact fishing activity** - Areas above the mining areas could be permanently disrupted.
- **Ecosystem damage** - It could permanently damage fragile marine systems.

What lies ahead?

- Comprehensive studies are needed to improve our understanding of deep-sea ecosystems and the vital services.
- Understand the risks of mining comprehensively and ensure effective protection.
- Conduct transparent impact assessments based on comprehensive baseline studies.
- Incorporate circular economic principles to reuse and recycle minerals.
- Create global consensus on sharing the benefits from deep sea mineral resources.

The United Nations Environment Programme (UNEP) emphasizes the need for a comprehensive assessment of the environmental impacts of deep-sea mining. To date, researchers have explored only around 1% of the deep sea area and its potential.

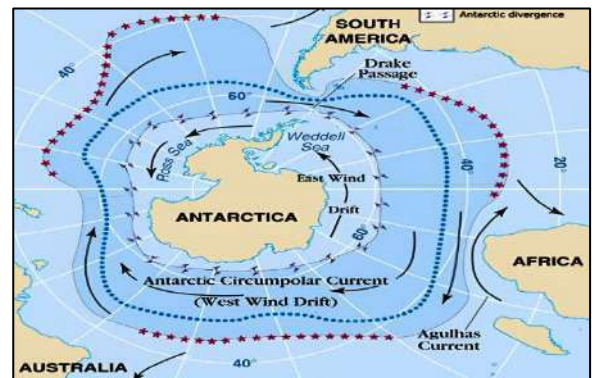
3.3 Southern Ocean

Why in news?

Recently, a study on Southern ocean “Closing the loops on Southern Ocean dynamics: From the circumpolar current to ice shelves and from bottom mixing to surface waves “revealed more details on the dynamic nature of Southern Ocean.

What are the characteristics of Southern Ocean?

- It is also known as the Antarctic Ocean, comprises the southernmost waters of the world ocean.
- It used to be part of the Pacific Ocean and it is separated from other Oceans by currents, not Continents.
- **Location** – It is generally taken to be south of 60° S latitude and encircling Antarctica.
- **Size** - It is the second-smallest of the five oceans.
- **Characteristics** – It experiences *Earth’s strongest winds and largest waves*.
- It is home to *city-sized icebergs*.
 - Antarctic Ice Sheet is the largest ice mass on Earth, equivalent to 58 metres of the global sea level.
 - The ice sheet flows onto the Southern Ocean surface in the form of giant ice shelves.
- It acts as an *ocean hub* as waters from the Atlantic, Pacific and Indian basins converge and mix in Southern ocean.
- It experiences *dramatic seasonal changes* and cold temperatures.
 - During winter, Southern Ocean freezes into a fringe of sea ice, almost doubling the size of Antarctica.
- It encompasses the *biggest ocean current* on the globe, as well as tiny turbulent flows that fit inside a teacup.
 - Antarctic Circumpolar Current (ACC) – It is the longest, strongest, deepest-reaching current on earth and circulates clockwise around the continent, carrying more water around the globe than any other current.
 - Antarctic Slope Current
 - Sub-polar gyres
 - The meridional overturning circulation.



*Southern Ocean acts as a **time capsule** as it takes hundred year for the ocean water from the surface to sink and return to surface. Water returning to the surface today reflects the cooler, pre-industrial climate when it first sank to the ocean depths*

Why Southern Ocean is called as a global engine room?

- It is crucial to Earth’s natural systems.

- **Creates masses of Ice** - Much of the sea ice is produced in small regions of open water, called “polynyas”, formed by strong and cold winds blowing off Antarctica.
- **Contributes to Ocean volume** - As the ice forms, it *ejects salt into the ocean surface* and this extra salt, in addition to cooling effects from the atmosphere, *makes the surface seawater heavier/* dense.
- The dense water sinks into the deep ocean.
 - The resulting dense water mass produced here accounts for **40% of the global ocean volume**.
- It is ultimately *lifted back to the ocean surface* by centimeter-scale turbulent eddies.
- **Forms Ice shelves** – Antarctic ice sheets flows onto the Southern Ocean surface in the form of giant ice shelves.
- **Solar reflector** - Millions of square kilometers of a layer of sea ice acts as a giant solar reflector.
- **Heat sink** – It stores excess heat generated due to global warming.
- **Carbon Sink** – Excess carbon generated by anthropogenic greenhouse gas emission activities are absorbed by them.
- **Regulates sea level** – It controls the flux of heat to the huge ice sheet of Antarctica, the greatest threat to runaway global sea-level rise.
- It shields ice shelves from powerful Southern Ocean waves.
- **Productive ecosystem** - Powerful currents, cold temperatures and nutrient and oxygen-rich waters make the Southern Ocean one of the most productive marine ecosystems on Earth.
- In summer billions of microscopic algae (phytoplankton) proliferate, spreading into blooms large enough to be seen from space.
- **Recent Challenges** - Southern Ocean’s sea ice has dramatically declined in recent years due to global warming.
- Lowest ever recorded sea ice minima in the past two Austral summers.
- Warmer, less salty and more buoyant water is less prone to sinking.
- Thus affecting the ocean current system.

Forms of Ice	
•	Ice sheet – It is also known as a continental glacier, is a mass of glacial ice that covers surrounding terrain and is greater than 50,000 km ² .
•	The only current ice sheets are the Antarctic ice sheet and the Greenland ice sheet.
•	Ice sheets- They are bigger than ice shelves or alpine glaciers
•	Ice shelf – It is a large platform of glacial ice floating on the ocean.

What lies ahead?

2021-2030 is adopted as UN Decade of Ocean Science for Sustainable Development.

- Advance Southern Ocean science by bringing in the scientific and broader community together to protect this vital natural asset.
- Promote technological innovation to develop more cost-effective observing systems such as drones and drifting robotic instruments.
- Governments need to make long-term commitments to scientific study of Antarctica and the Southern Ocean.
- Enhance national and international collaboration to make the best use of available resources.
- Take a multidisciplinary effort to model the Southern Ocean's response to anthropogenic forcing as a key priority.

SWOT satellite is a joint project of the European Union and United States to measure the ocean surface at unprecedented resolution.

3.4 Antarctica’s Deep-winter Heatwave

Why in news?

For the second time in two years, a record-breaking heatwave is sweeping through Antarctica at the height of its winter season.

What are the characteristics of Antarctica?

- **Geography** – It is *one among the seven continents* of the Earth and contains the geographic South Pole.
- **Size** – It is the *5th largest continent*.
- **Atmospheric parameters** – It is, on average, the *coldest, driest, and windiest* of the continents.

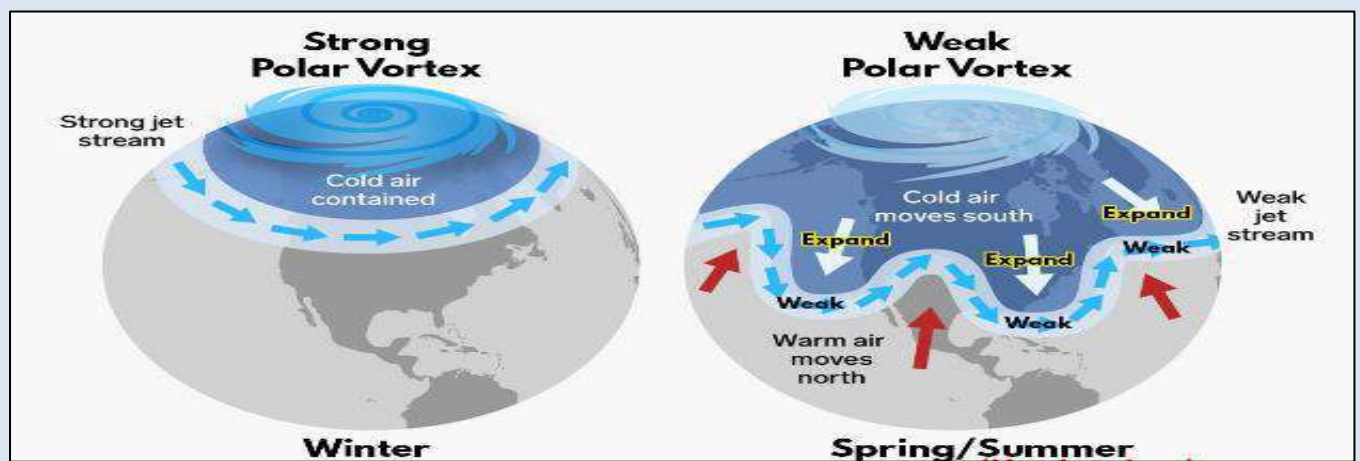
- It is mainly a *polar desert*, with annual precipitation of over 200 mm.
- **Temperatures** – It holds the record for the lowest measured temperature on Earth, -89.2°C (-128.6°F).
 - **Near the coast** – The temperature can exceed 10°C in summer and fall to below -40°C in winter.
 - **Over the elevated inland** – It can rise to about -30°C in summer but fall below -80°C in winter.
- **Source of water** – About 70% of the world's freshwater reserves are frozen in Antarctica.

What is Antarctica's deep-winter heatwave?

- **Normal Deep-winter temperatures** – It usually vary between minus 50 degrees and minus 60 degrees Celsius.
- **Antarctica's Deep-winter heat wave** – For the second time in two years, a heatwave is sweeping through Antarctica at the height of its winter season.
- Heat wave is a period of abnormally high temperatures, more than the normal maximum temperature that occurs.
 - Ground temperatures have been 10 degrees Celsius higher than normal on average since mid-July and up to 28 degrees higher on certain days.
 - In *East Antarctica*, the temperatures are currently in the range of minus 25 degrees to minus 30 degrees Celsius.
 - East Antarctica is the relatively higher-elevation swathe that makes up two-thirds of the world's coldest continent
- **Reasons** – It is mainly due to changes in atmospheric and Oceanic variables in the southern hemisphere especially Antarctica and in Southern Ocean.
- **Weakening of the polar vortex** - It a rare event that is only expected to occur once every two decades on average.

Polar vortex

- It is the band of cold air and low pressure systems that spins around the poles of the Earth in the stratosphere.
- The vortex that usually remains strong and stable during winter in the southern hemisphere keeps the cold air trapped over Antarctica and not letting hot air come in.



- This year, the stability of vortex has been disturbed by large-scale atmospheric waves (periodic disturbances in the fields of atmospheric variables).
- Due to this, the vortex released trapped cold air, and opened the door for warmer air to enter the region.
- As this warmer air travelled downwards from the upper atmosphere, it caused an increase in temperatures.
- **Reduction of Antarctic sea ice** – This June the extent of Antarctic sea ice was the second-lowest ever for that time of year.
- Generally, sea ice plays a crucial role in keeping temperatures down in the Polar Regions.

Atmospheric wave is a periodic disturbance in the fields of atmospheric variables like surface pressure or geopotential height, temperature, or wind velocity.

- It ensures that the air remains cool by acting as a barrier between the cold air and the relatively warmer water below.
- White surface of Sea ice reflects more sunlight (solar energy) back to space than liquid water.
- **Warmer Southern Ocean** – Heat travels to Antarctica from the warmer southern ocean surrounding it.
- **Global warming** – Antarctica is warming at a rate of 0.22 degrees Celsius to 0.32 degrees Celsius per decade – almost twice as fast as the rest of the world.

To know about Arctic Polar Vortex, click [here](#)

IPCC has estimated that the Earth as a whole is warming at the rate of 0.14-0.18 degrees Celsius per decade.

What are the effects of winter heat wave?

- **Ice sheet reduction** - Antarctica's hot winter will lead to further reduction in Antarctic Ice Sheet.
 - The Antarctic Ice Sheet, covering 98% of the Antarctic continent holds more than 60% of the world's total freshwater.
- **Sea level rise** - It can potentially raise global sea levels by hundreds of feet.
 - Antarctica has already lost 280% more ice mass in the 2000s and 2010s than it lost in the 1980s and 1990s.
- **Displacement of people** – Sea level rise will cause coastal cities and population to move away from coastal line.
 - A sea level rise by a few feet will displace the roughly 230 million people who live within 3 feet of the high tide line today.
- **Affects global ocean circulation system** - Melting ice in Antarctica slows down this circulation.
 - Global ocean circulation system regulates climate by storing and transporting heat, carbon, nutrients, and freshwater around the world.
- A slower global ocean circulation system will lead to oceans absorbing less heat and CO2 further intensifying global warming.
- **Reduction in ocean salinity** - Freshwater from melting ice reduces the salinity and density of the surface water.

3.5 Impact of Earthquake on River Course

Why in news?

A recent study suggests that an earthquake about 2,500 years ago might have abruptly altered the course of the Ganga River.

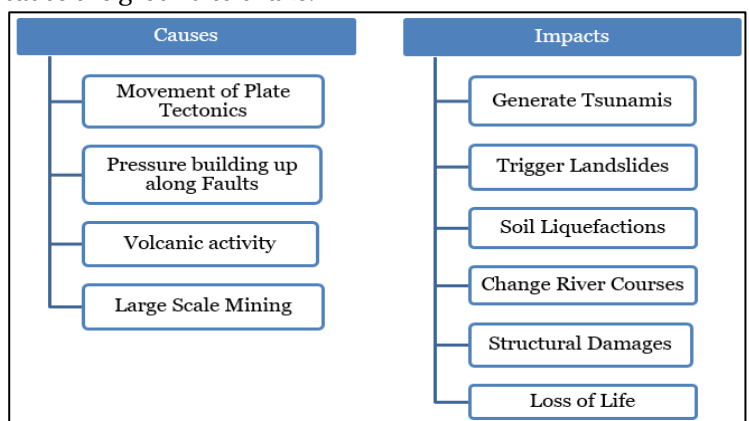
What is an Earthquake?

- It is a sudden and rapid *shaking of the Earth's surface*.
- **Generation** – It is caused by the *release of energy* stored in the Earth's crust which generates *seismic waves*, which propagate through the Earth and cause the ground to shake.

A seismic wave is a mechanical wave of acoustic energy that travels through the Earth or another planetary body.

How earthquake changes river course?

- **Displaces riverbeds**- Earthquake can *cause the ground to shift*, and can alter the course of rivers by moving their beds or changing their direction.
- **Alters water flow patterns**- Shifts in the riverbed or new obstacles can *change the speed and volume of river flow*.
- **Blockage by Landslides**- Landslides due to earthquake can *block rivers and form temporary or permanent dams*.
- **Alters sediment load**- An increase in *sediment flow* into rivers due to landslides or soil erosion, affects river morphology.
- **Creates new channels**- All these factors can result in creating *new pathways for rivers*, leading to the formation of new river channels.



What are the evidences showing impact of earthquake on River Ganga?

The Ganga River, originating in the Himalayas, merges with the Brahmaputra and Meghna rivers before flowing into the Bay of Bengal, forming the world's second-largest river system after the Amazon.

- **Discovery of Paleochannel** - Using satellite imagery, researchers identified the former main channel of the Ganga, about 100 km south of Dhaka, Bangladesh.
- It is approximately 1.5 km wide and extending for about 100 km, runs almost parallel to the current river course.
- **Presence of Sand dikes**- Two large sand dikes were found to the east of the paleochannel showing earthquake-induced liquefaction.
- The sand dikes and their composition, consisting of “fine sands” and “silty muds” provided **conclusive evidence** of a major ancient earthquake.
- **Sources of earthquake** - Researchers found features known as seismites in this area, indicating earthquake activity which might be
 - From a subduction zone to the south and east, where an oceanic crust plate is pushing under Bangladesh, Myanmar, and northeastern India (or)
 - From faults at the Himalayas' base, which are rising due to the Indian subcontinent's collision with Asia.
- **Similar timing of earthquake & avulsion of river course** – The mineral samples from the sand dikes and the paleochannel were tested under optically stimulated luminescence (OSL) dating.
 - **Paleochannel samples** – It reveals that the avulsion occurred around 2,500 years ago.
 - **Sand dikes samples** – It shows that dikes had been formed around 2500 years ago confirming occurrence of earthquake.
- Thus the OSL technique of samples helped in strengthening their hypothesis that the earthquake led to the avulsion.

A paleochannel is a section of an old river that is no longer part of an active fluvial system and carries no more fluvial discharge.

Sand dikes are geological structures formed when sediment, typically sand, is injected into fractures within a rock or sedimentary layer.

Optically stimulated luminescence (OSL) dating technique relies on estimating how long a mineral grain (i.e. a mineral particle less than a few millimetres in size, like quartz grains in sand or mud) has been buried by measuring the amount of natural radiation stored in it.

What are significances of the recent findings?

- It suggests that the impact of large earthquakes can be even more devastating than previously thought because avulsions have caused some of the deadliest floods in human history.
- The cascading impacts of earthquakes and flooding can be severe for heavily populated regions like the Ganges-Meghna-Brahmaputra delta.
- Rivers Ganges are more prone to avulsion now owing to factors like
 - Rapid subsidence, i.e. sinking of the ground near the river banks due to “widespread embankment
 - Climate-change–induced rise in sea levels and extreme weather events
- Thus the lessons learned from this ancient earthquake may hold important insights for navigating the Ganga's ever-changing course in the years to come.

What lies ahead?

- Future research should focus on finding the frequency of such quake-driven avulsions have happened and how such major earthquakes can be forecast.
- Policy makers and the residents of the Ganga delta should prepare themselves against the risk from such avulsions.
- India, Bangladesh and Myanmar should work closely in terms of research, monitoring, preparedness, and support coordination.

3.6 Geological Discoveries about the Moon

Why in news?

Recently, ISRO announced the significant discoveries about the moon based on the data from Chandrayan 3 Mission.

What are the characteristics of Moon?

- **Moon** – It is Earth's only natural satellite that orbits around the Earth at an average distance of 384,400 km (238,900 mi).
- **Formation** – It was formed about 4.51 billion years ago.
- It formed out of the debris from a giant impact between Earth and a hypothesized Mars-sized body called Theia.
- **Physical parameters**
 - Mass – 1.2% of the Earth
 - Diameter – 3,474 km.
- **Physiography** – It is marked by rocky surface, mountains, impact craters, their ejecta, ray-like streaks, rilles.
- **Atmospheres** – It has a very thin atmosphere.
- **Rocky surface** – Moon was initially molten and the minerals in there slowly crystallised as the lava cooled to form rocks of various kinds and is now covered in lunar dust.
- Rocks in moon are of two types
 - The dark volcanic rock
 - The brighter highland rock
- The brightness difference between these two gives the familiar “man in the moon” face or “rabbit picking rice” image to the naked eye.
- Since Moon has a thin atmosphere and lacks volcanic activity, all meteors reach its surface preventing their replenishment with new rocks over time.
- **Moon dust** – Meteorites raining down on the moon beat the moon rocks down to fine dust over many centuries.
- **Mineral compositions**
 - **Outer layer** – Lighter minerals, with Calcium and Sodium
 - **Inner layer** – As it cooled down over millions of years, heavier silicon and magnesium rich minerals like Olivine and Pyroxene sank and formed the inner layers of the Moon.

What are geological discoveries of moon by Chandrayan-3?

- Chandrayaan-3 made a successful landing on lunar surface near the south pole of the moon in 2023 with the rover ‘Pragyan’ that collected data of temperature to seismological measurements over 10 days.
- The rover stopped and deployed an instrument called an alpha-particle X-ray spectrometer (APXS) 23 times which gives evidences about geological evolution of moon.
- **Evidence of ferroan anorthosite** - They are one of the major lunar rock types and are thought to be pieces of the original lunar crust.
- **Uniformity in soil composition** – All 23 samples comprised mainly ferroan anorthosite, a mineral that is common on the Moon. It suggests that the topsoil near the landing site is fairly uniform.
- **Presence of Magma Ocean** – The presence of ferroan anorthosite, a remnants of the ocean of liquid molten rock.
- **Evidence of meteorite crash** – It might have occurred in the region four billion years ago.
- It is thought to have made the South Pole–Aitken basin, about 350km from the site India’s Pragyan rover explored.
- **Presence of minerals** – Traces of Magnesium and Sulphur on the lunar surface.
- Magnesium might have thrown up to surface from deep inside the Moon due to meteorite crash.

Anorthosite, type of intrusive igneous rock composed predominantly of calcium-rich plagioclase feldspar.

Aitken basin is one of the largest craters in the solar system, measuring 2,500 km across and 8 km deep.

To know about discovery by RAMBHA-LP of Chandrayaan-3, click [here](#)

What are the significance of the findings?

- These findings are the first of its kind about the southern hemisphere of Moon.
- **Supports LMO hypothesis** - Lunar Magma Ocean theory states that when Moon was formed 4.5 billion years ago, it began to cool and a lighter mineral called ferroan anorthosite floated to the surface.
- Ferroan anorthosite rocks are very common on the earth and the earth contributed all the anorthosite found on the moon today.
- **Informs about Moon geological evolution** - APXS measurements will serve as the "first ground truth in the south polar highlands" and play a key role in the overall understanding of the origin and evolution of the Moon.
- **Confirms earlier findings** - It confirms the earlier findings of U.S. Apollo missions and the erstwhile Soviet Union's Luna missions from the lunar equator in the 1960s.
 - Before Chandrayaan-3, the main evidence of magma oceans was found in the mid-latitudes of the Moon as part of the Apollo programme.
- **Supports future Missions** – The presence uniform composition on the lunar surface implies that the region can be used as a calibration point for remote sensing operations, and can thus be used for planning future missions.
- This would be a game-changer for space agencies' dreams of building a human base on the Moon.


The lunar magma ocean theory was first proposed by two independent groups in 1970, after rock collected during the 1969 Apollo 11 landing was analysed.

Quick Facts

APXS Spectrometer

- Working – It excites atoms by firing X-rays and alpha particles at it produced from a radioactive mass of curium and analyses the energy produced in order to identify the minerals in the Moon's soil.

HOW DOES APXS WORK?

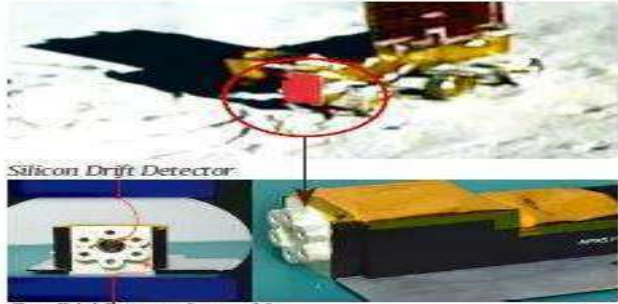


APXS IS a mobile chemical lab used to detect elemental compositions. It is small and lightweight; ideal for space missions to study the composition of rocks and soils of celestial bodies.

IT BOMBARDS a sample with alpha particles (helium nuclei stripped of electrons), and the energy briefly 'excites' atoms of the sample. The atoms return to stable state by emitting x-rays.

X-RAYS emitted from the sample carry a specific amount of energy that is unique to the element it originated from. APXS reads these characteristic emission signatures to determine the composition of the sample.

EMISSION RATE of x-rays provides clues about the concentration of a particular element in the sample. Computers on APXS process the data



(Top) Chandrayaan lander as seen by rover; the APXS instrument. *ISRO*

from the sample (which most often contains multiple elements) to identify the elements present and to quantify their concentration.

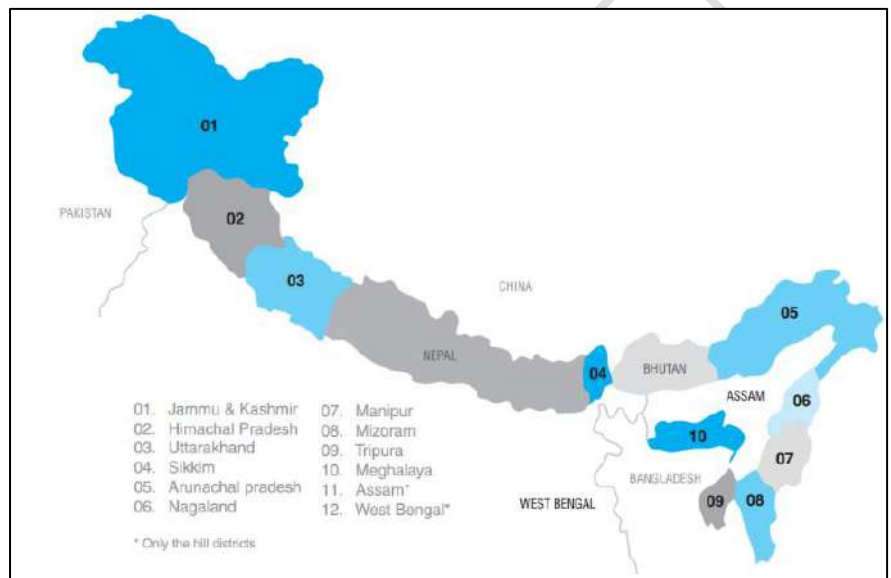
3.7 Challenges of Indian Himalayan Range Towns

Why in News?

Himalayan towns face civic issues due to unique challenges, requiring tailored development, but they often lack the necessary funds and resources.

What is Indian Himalayan Region (IHR)?

- **Location-** It spans thirteen Indian states and union territories of India
 - Ladakh, Jammu and Kashmir, Himachal Pradesh, Uttarakhand, Sikkim, West Bengal, and parts of the northeastern states.
- **Geographical divisions-** They are divided into three main geographical entities
 - **Himadri** - Greater Himalaya
 - **Himachal** - Lesser Himalaya
 - **Sivaliks** - Outer Himalaya
- **Trans-Himalayan Ranges-** The northernmost ranges include the Karakoram Mountains, with the Zaskar and Ladakh ranges lying to the south.
- **Major rivers-** It is home to major rivers such as the Indus, Sutlej, Kali, Kosi, and Brahmaputra.
- These rivers are glacier-fed and carve steep gorges through the Himalayas to flow into the Great Plains.
- **Significance-** It provides water to a large portion of the Indian subcontinent and supports diverse flora and fauna.



Note: J&K (as in picture as (1)) bifurcated into UT of J&K and UT of Ladakh in 2019.

What are the major issues in IHR Towns?

- **Civic challenges** - Himalayan towns, including state capitals like Srinagar, Guwahati, Shillong, and Shimla, face significant issues with sanitation, solid and liquid waste management, and water supply.
- **Ineffective planning-** Planning institutions often fail because they adopt models designed for plains.
- **Resource shortage-** City governments are severely understaffed, with a 75% shortage in human resources.
- For example, in the Kashmir Valley, over 40 urban local bodies have only 15 executive officers, excluding Srinagar.
- **Environmental impact-** In Srinagar, from 2000 to 2020, there was a 75.58% increase in built-up real estate where water bodies eroded by almost 25%.
 - Nearly 90% of liquid waste is discharged into water bodies without treatment, further harming the environment.
- **Inappropriate infrastructure-** Unsustainable infrastructure, poorly designed roads, and inadequate waste management are adding to the problems.
- **Climatic variations-** Changing precipitation patterns and rising temperatures exacerbate these issues, further straining the socio-ecological fabric of the Himalayas.
- **Tourism growth-** The expansion of tourism, often replacing eco-friendly infrastructure with harmful constructions, has a negative impact on biodiversity and ecosystem services.
- **Development pressure-** They are stressing natural resources, leading to water scarcity, deforestation, land degradation, and biodiversity loss.

What are the government initiatives for IHR Towns?

- **National Mission on Himalayan Studies (NMHS)** – It focuses on research, technological innovation, and community-based solutions.

- They are tailored to the unique ecological and socio-economic conditions of the Himalayas.
- **Sustainable urban development Initiatives-** Programs like the *Smart Cities Mission* and *AMRUT* (Atal Mission for Rejuvenation and Urban Transformation) aims
 - To improve urban infrastructure, including water supply, waste management, and sanitation, with adaptations for the Himalayan region's specific needs.
- **Ecotourism initiatives-** Various state governments in the IHR have promoted ecotourism to balance economic development with environmental conservation.
- **Climate Resilient Infrastructure-** The government is investing in *infrastructure projects resilient to climate change*, such as flood control, landslide mitigation, and earthquake-resistant buildings in the Himalayan region.
- **National Mission for Clean Ganga (NMCG)** – It is to *clean and protect rivers* originating in the Himalayas.
- It includes projects of pollution control, sustainable water use, *ecosystem restoration* in towns along the Ganges and its tributaries.
- **CAMPA-** Compensatory Afforestation Fund Management & Planning Authority Funds are allocated for afforestation projects in the IHR.
- It helps to *mitigate the effects of deforestation* and land degradation, aiming to restore ecological balance in urban and rural areas.

What lies ahead?

- *Tailoring urban planning* based on climate resilience and involving local communities in a bottom-up approach.
- A separate chapter on urban financing for the IHR towns should be included in the Finance Commission's report, *increasing intergovernmental transfers to at least 1% of GDP*.
- Emphasis should be on *eco-centric planning processes*, with public participation to ensure sustainability and resilience in urban futures.
- *Promoting ecotourism* is essential for balancing development with environmental preservation.

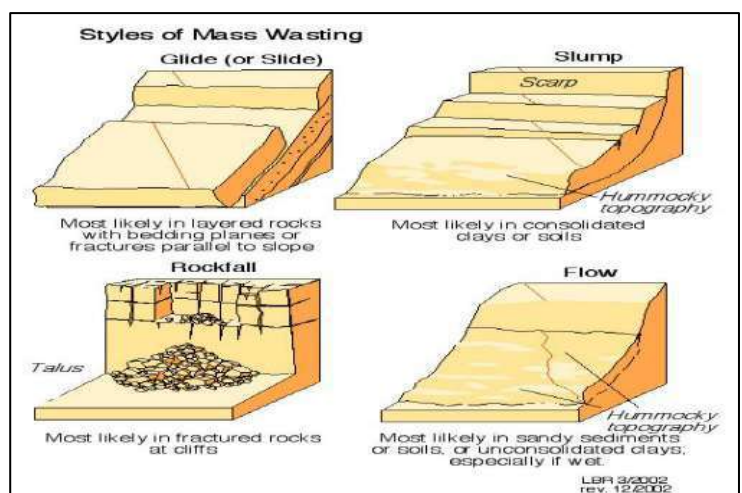
3.8 Sedongpu Mass Wasting

Why in news?

A new study highlighted the impact of high frequency of mass wasting events in the Sedongpu Gully to Northeast India.

What is mass wasting?

- **Mass wasting** - A geological event, of *gravity-influenced movement of rock and soil* down a slope.
- These events may occur very rapidly and move as a flow.
- **Causes** – They are often *lubricated by rainfall* or *agitated by seismic activity*.
- Others includes rapid snowmelt, volcanic eruption, storm waves, rapid-stream erosion, or human activities like grading a new road.
- **Types** – It involves the *slipping, slumping, falling and flowing* of soil or rock down a slope.
- **Determining criteria** - There are various factors which increase the *likelihood and rate of different types* of mass wasting
- **Steepness of slope gradient** – The steeper the slope, the greater the influence of gravity on particles.
- **Rock structure** - *Bedding planes and faults* can increase vulnerability to movements.
- **Rock type** – *Sedimentary and unconsolidated sediments* are more vulnerable to movement than igneous rocks.



- **Level of water saturation** – The *greater the saturation*, the lower the friction between particles.
- **Vegetation cover** – Plant roots help to hold surface together
- **Human activity** – Mining can cause vibrations which trigger movement/poor slope management can lead to undercutting slopes

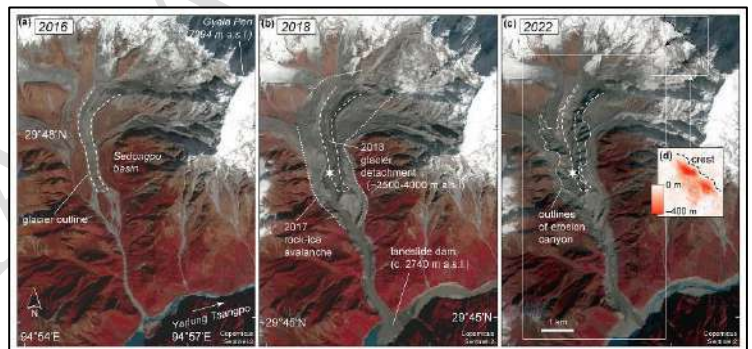
What is sedongpu mass wasting?

Sedongpu Gully

- **Location** – It is located in the catchment of the Sedongpu glacier on the **Tibetan Plateau**.
- Its valley, is 11 km long and covers 66.8 sq. km.
- **Gully** – It is a landform created by erosion from running water, mass movement or both.
- **Great Bend** – Sedongpu river drains into the Yarlung Zangbo, or the Tsangpo River by taking a sharp turn called as great bend.
- It is *close to Tibet's border with Arunachal Pradesh*, where the River Tsangpo flows as the Siang River.
- **Gorges** – It creates a gorge 505 km long and 6,009 metres deep while flowing around Mt. Namcha Barwa (altitude 7,782 metres) and Mt. Gyala Peri (7,294 metres).
 - It is one of the deepest gorges on the earth.



- **Sedongpu wasting** – More than 700 million cubic metres of debris have been mobilised in the Sedongpu gully catchment since 2017.
- **Patterns of sedongpu wasting** - From satellite images, 19 large mass-wasting events were grouped into three sub-patterns
 - Ice-rock avalanche (IRA)
 - Ice-moraine avalanche (IMA)
 - Glacier debris flow (GDF)



What are causes for Sedongpu mass wasting?

- **Long-term warming** - Annual temperature in this area increased at rates of 0.34° to 0.36° C during 1981-2018, which is higher than the global average.
 - Sedongpu basin consists mostly of Proterozoic marble whose land surface temperature ranges from -5° to -15° C, rarely exceeding 0° C before 2012.
- Thus, there is extensive permafrost degradation occurring in the catchment, resulting in the progressive destabilisation of the slopes.
- **Dams** – Big dams such as the Zangmu on the Tsangpo accentuate the threat of mass wasting.
 - China plans to set up a 60-GW project on the Tsangpo, which will have thrice the capacity of the Three Gorges project on the Yangtze, the world's largest hydropower plant.
- **Steep Topography** – Due to its steep topography, it is one of the most landslide-prone locations on the planet.
- **Geographical Instability** – It is prone to earthquakes.
- The 2017 Nyingchi earthquake destabilised the slopes and initiated the current period of instability.

A moraine is a mass of rocks and sediment deposited by a glacier.

- **Other factors** – They have a *highly fractured rock mass* and the presence of *large volumes of sediments* from recent glaciations.

What are its impacts in India?

- The Sedongpu mass wasting has *serious transnational implications* for the Tsangpo-Siang-Brahmaputra-Jamuna basin, especially in India and Bangladesh.
- **Sedimentation** - Addition of major amounts of sediments to the course of the river.
 - *River Brahmaputra carries more than 800 tonnes* of sediment at Pandu in Guwahati, becoming more than a billion tonnes at Bahadurabad in Bangladesh.
- **River Blockage** – Added sediments blocks the river at different locations.
- **River bank erosion** - Increasing sedimentation may make the river more intensely *braided in the Assam plains*, which could lead to more bank erosion.
- **Flooding Hazard** - The sedimentation can elevate the river beds more, accentuating flood hazards.
- **Glacial Lake Outburst Flood**- Breaching of the blockages leads to catastrophic *flash floods in the downstream*.
- These floods were triggered by the outburst of a dam created by the glaciated debris and rock materials generated during landslides.
- **Livelihood Impact** - The channels of the river in Assam and Bangladesh may get choked with sand and silt in the lean season making *navigation difficult* and also *affects fishing*.

Debris flows have occurred in two adjacent gullies, namely Sedongpu Gully (SDP) and Zelongnong Gully (ZLN), since the 1950s.



What lies ahead?

- Monitor the status and trends of geophysical events leading to landslides, rock falls and other erosional processes.

4. SOCIAL ISSUES

4.1 Challenges in Certifying Persons with Disabilities (PwD)

Why in news?

The recent controversy about an IAS officer who allegedly faked her disability certificate has ignited a debate on the reservations granted to persons with disabilities (PwDs) and the disability certification process.

Who are persons with disabilities in India?

- **PwD** – Person with disability or Divyangjan means “a person with long term physical, mental, intellectual or sensory impairment which, in interaction with barriers, hinders his full and effective participation in society equally with others.”
- **Person with benchmark disability** – It refers to a person with *not less than 40%* of a specified disability.
- India has passed the '*Rights of Persons with Disabilities (RPwD) Act*' in *2016* to entitle them with certain specific rights.
- It was passed to fulfill India's obligations under the *United Nations Convention on the Rights of Persons with Disabilities*, which was ratified by India in 2007.
- *21 disabilities* are recognized under the act.

As per 2011 Census, number of persons with disabilities at 2.68 crores implying 2.21% of Indian population.

To know more about Rights of PwDs Act 2016, click [here](#)

What are the challenges by PwDs?

- They face multiple barriers to their effective participation in society and the workforce.
- **Societal rejection** – Rejection by family and community and the deep rooted ableism.
- **Inadequate Infrastructure** – Lack of infrastructure in accessing public establishments and services.
- **Educational barrier** – Insufficient education models, inappropriate exam curricula and formats to meet the needs of various PwDs.
 - As per Census, 2011, literacy rate of the total PwD population is about 55% (male – 62%, female -45%).
 - Only about 5% of PwDs are graduate and above
- **Employment barrier** – Stigma and biases at the hiring stage and promotion hinders the labour participation of PwD
 - 76th round of the National Sample Survey in 2018 found that only 23.8% of PwDs were employed.
- **Inadequate political representation** – They are underrepresented in all three tiers of legislature.
 - No reservation of political seats in Lok sabha, state legislature , local bodies for person with disabilities
- **Inaccurate assessment** - Current population of Persons with Disabilities (PwDs) in the country is not counted accurately.

How are they recognised in India?

- Under the UDID project Disability Certificate and Unique Disability Identity Card is issued to each PwD through online platform by the competent medical authorities notified by the State/UT Government.
- **UDID Card** - Unique Disability Identity card (swavlamban card) is an initiative to create a National Database for PwDs.
- **Disability certification** – It is the basic document that a person with any disability of more than 40% requires in order to avail any facilities, benefits or concessions under the available schemes.
- **Legal basis** - The certificate is issued to persons with disabilities mentioned under the Rights of Persons with Disabilities Act, 2016.
- **Validity** – The certificate is valid for a period 5 years.
- **Certifying authority** – It is the respective Medical boards constituted at a State or district levels.

Reservations for PwDs

- **Aim** - To level the playing field by providing equitable opportunities to PwDs.
- **Education** – 5% in all the government-run and other government-aided higher educational institutions.
- The Persons with Disabilities (Equal Opportunities Protection of Rights and Full Participation) Act, 1995, or the PwD Act, first recognised the right of the disabled person to be employed and promoted in government jobs on equal basis with others.
- **Employment** – 4% in government establishments.

What are the issues in certification systems?

- India's certification system for disabilities also has significant flaws.
- **Outdated Certification system** - The practice of quantifying disabilities by percentage is outdated and not supported by the UN Convention on the Rights of Persons with Disabilities.
- Psychosocial disabilities are assessed based on the outdated IDEAS (Indian Disability Evaluation and Assessment Scale) scale.
- **Duplication in assessment** – Recruiting bodies like UPSC insists on a separate and independent disability assessment.
- This gives rise to the possibility of the two sets of assessments yielding contradictory results.
- **Inaccessible and time consuming process** – It is due to lack of specialists to evaluate various disabilities
- **Lack of assessment resources** – District hospitals are constrained in terms of both infrastructure and resources to meet the complicated assessment guidelines prescribed by the state.
- **Rejection** – Persons with invisible, hidden, or less apparent disabilities, such as blood disorders often are rejected.

Indian Disability Evaluation and Assessment Scale (IDEAS) is a scale for measuring and quantifying disability in mental disorders.

What lies ahead?

- Functional limitations, rather than medical percentages, should be the basis for assessment.
- Focus should be given to address the systematic issues.
- Increasing the infrastructural and human resource capability of state and district hospitals.
- Sensitizing the public officials about needs of persons with disabilities.
- Making the certification process more accessible.

4.2 Child Sexual Abuse

Why in news?

Recently, in a fake National Cadets Corps (NCC) camp in Tamil Nadu, School girls were subjected to sexual assault and abuse.

What is child sexual abuse?

- **Child** – Protection of Children from Sexual Offences Act 2012 (POCSO), defines Child as any person below the age of 18.
- **Child sexual abuse** - It is the sexual activity with a child by an adult, adolescent or older child.
- Sexual assault, sexual harassment and using a child for pornography are the different forms of child sexual abuse.
- **Sexual harassment** – It is when a person with sexual intent
 - Utters/ makes any word or sound or gesture or exhibits any object or part of body to the child
 - Makes the child exhibit his or her body
 - Shows anything to the child for [pornographic](#) purposes.
 - Repeatedly follows or contacts the child either directly or through electronic or other media
 - Threatens to use in any media a real or fake depiction of the involvement of the child in a sexual act
 - Entices the child for pornographic purposes.
- **Sexual assault** - Any act done with sexual intent on a child involving physical contact
 - Touching the private parts of a child or making a child touch the private parts of another person
- **Penetrative sexual assault** – It is a more serious offence where the offender
 - Penetrates his penis into the vagina, mouth, urethra or anus of a child or makes a child do the same.
 - Inserts any other object into the child's body.
 - Applies his mouth to a child's body parts.
- **Using a child for pornography** - Using a child in any form of media (e.g. television channels, internet, etc) for the purposes of sexual gratification.

Status of Child Sexual Abuse in India

- According to National Crime Records Bureau Data 2022,
 - **Child abuse case** – It *increased by 8.7%* reaching a total of 162,000 incidents
 - **Child rape and penetrative assaults** - 38,911
 - **Sexual violence** – It has *surged by 96%* from 2016 to 2022

What are the impacts of child sexual abuse?

- Child sexual abuse can affect psychological and physical well-being, family and intimate relationships, faith, and education and career.
- **Dilutes the interpersonal relationships** – It can cause difficulties in forming intimate and trusting relationships.
- **Affects emotional well-being** - Victims experience depression, lack of trust in authority, thoughts of suicide, anxiety, self-harming and attempted suicide.
- **Deteriorates physical health** - victims and survivors of child sexual abuse are affected by a physical injury such as internal damage and also prone to sexually transmitted diseases.

- **Difficulties in learning** – Victims feel *disengaged in school education* and have learning difficulties due to the trauma.

What are the measures taken by India?

- **Policy measures** – ***National Policy for Children, 2013*** provides for the multisectoral and multidimensional approach to secure the rights of children.
- **Institutional measures** – Organizations work on prevention, punishment of child sexual abuse and protection of children.
 - **NCPCR** – National Commission for Protection of Child Rights, a statutory body under Commission for Protection of *Child Rights Act, 2005*.
 - **SCPCR** - State Commission for Protection of Child Rights, constituted under the 2015 Child Rights Act.
 - **NCW** - National Commission for Women, a statutory body *established in 1992*.
 - **POCSO Court** – They are Fast Track Special Courts (FTSCs) established under *POCSO Act 2012*.
- **Legislative measures** - Protection of Children from Sexual Offences (***POCSO) Act 2012*** to protect children from offences of sexual assault, sexual harassment and pornography.
- ***Juvenile Justice Act 2015*** provides for penalties for committing offences against children.
- **Reporting mechanisms** - ***POCSO e-box*** is an online complaint box for reporting child sexual abuse established by NCPCR.
- ***EBaalNidaan*** is an online complaint registration system for general public to report various violations and deprivation of child rights.
- ***Child Helpline 1098*** is a 24 Hour emergency toll free phone service for children in need of care and protection.

Prevention of Child Sexual Abuse of School students

- Develop a comprehensive pan-India strategy to eliminate all forms of child abuse in schools.
- Implement *physical security systems* such as surveillance technologies, secure entry and exit points.
- Regular *training for staff* on child protection.
- Conduct a *special discreet session* of the parents and management for the purpose of ensuring vigilance of school children.
- Develop policies and protocols for *reporting and addressing* abuse.
- Ensure a fair and *time-bound investigation*.
- Legally enforce child-abuse-free campus infrastructure, both tangible and intangible, in every school.

What are the challenges?

- **Under reporting** – Many cases of sexual abuse go unreported, making it difficult to address the issue.
- **Stigma and shame** – Societal attitudes often stigmatize victims, making it difficult for them to seek justice.
- **Lengthy legal processes** – It is traumatic for victims, often deterring them from coming forward.
- **Limited resources** – Many jurisdictions lack sufficient resources to investigate and prosecute.
- **Close perpetrators** – In most of the case the abuse is done by family persons, school.

What lies ahead?

- Conduct education, awareness campaigns and provide support services for survivors like counselling and legal assistance.
- Ensure perpetrators are held accountable for their actions.
- Promote a culture of respect and equality and removing harmful cultural norms.

In loco parentis is a concept whereby, every teacher, principal, implicitly pledges to act as the parent of each child within the campus, nurturing and safeguarding them throughout their time there.

G. S. PAPER II

5. INDIAN POLITY

5.1 Right to speedy trial

Why in news?

Recently, the Supreme Court has held that the right to speedy trial is a fundamental right under Article 21 while granting bail to former Delhi Deputy Chief Minister in connection with the Delhi Excise Policy case.

Why are the number of under trials high in India?

- **Under trial-** A person detained and held in custody while their case is still pending or not yet fully tried by a court.
- **Presumption of innocence-** Under-trials are presumed innocent until proven guilty.
- **Right to defense-** They have the right to defend themselves in court.
- **Detention or bail-** Under-trials are typically held in detention or on bail while awaiting the trial outcome.
- **Undertrial Prisoners** - As per *National Crime Records Bureau (NCRB)*, in 2022 there were **4,34,302 undertrials** across jails in India, comprising **76% of the total jail population** of 5,73,220.
- A combination of judicial, administrative, socio, economic factors contribute to prolonged periods of incarceration of accused persons.
- **Case Pendency** - Due to huge pendency, the cases take years for its final disposal, which would normally take few months' time.
- **Voluminous evidence** – In some cases large number of witnesses and voluminous documents lengthens the trial period.
- **High rejection in Lower Courts** – Trial and lower courts playing safe while granting bail by neglecting the principle that *bail is a rule and refusal is an exception*.
- **Overburdened judicial system-** A high volume of cases and Very less Judge to population ratio.
- **Provision for adjournment** - The main reason for the delay in the cases is the adjournment granted by the court on unreasonable grounds.
- **Stringent bail conditions** –High bail bondage amount, surety provisions for bail.
- **Stringent Tests** - Stringent tests for bail under special statutes such as PMLA, NDPS and UAPA have
- **Incomplete investigation-** Delays in completing investigations or submitting evidence.
- **Administrative inefficiencies-** Inefficiencies in the administration of justice, including issues with case management, can contribute to delays.
- **Pre-trial detention policies-** Some jurisdictions have policies that favor pre-trial detention for certain offenses or individuals considered a flight risk, leading to longer periods of detention.
- **Socioeconomic factors-** Individuals from marginalized or economically disadvantaged backgrounds may have less access to legal resources and support, increasing the likelihood of prolonged pre-trial detention.
- **High crime rates-** In areas with high crime rates, the number of under-trials can be significant due to the volume of arrests and subsequent legal proceedings.

Triple Test conditions for granting bail under PMLA

- There are “reasonable grounds for believing that (the accused) is not guilty of such offence”
- The accused person is not likely to commit any offence while on bail.
- The accused is not a flight risk.

What is a Bail and its provisions?

- **Bail-** A legal process by which a person accused of a crime is released from custody, usually by providing a financial guarantee, while awaiting trial.
- Granting bail is largely at the court's discretion, guided by the principles of justice and fairness.
- **Aim** - Balance the accused's right to liberty with the need to ensure a fair and uninterrupted judicial process.
- **Avoid detention-** Allows the accused to be free from detention during the pre-trial period.

- **Types of Bail-** Under the Code of Criminal Procedure, 1973, bail can be regular, anticipatory, or interim, depending on the stage and nature of the offense.
- **Regular bail-** It is granted to those already in custody after the arrest.
 - **Bail Conditions** – Financial guarantees with bonds, regular appearances and non-tampering with evidence.
- **Anticipatory bail-** Granted before arrest, anticipating possible arrest.
- To avoid detention if arrest is imminent.
 - **Bail Conditions** - Like regular bail, may include cooperation with investigation.
- **Interim bail-** It is a temporary bail granted while awaiting decision on regular/anticipatory bail.
- Provides immediate relief before final bail decision.
 - **Bail conditions-** Regular check-ins with authorities or restrictions on travel.
- **Compliance-** Failure to comply with conditions can result in bail being revoked, the person being returned to custody and forfeiture of the bondage.

What are the importance of Speedy Trial?

- **Speedy trial-** It is the disposal of cases at the earliest possible so as to make the Judiciary more efficient and trustworthy.
- **Ensuring Justice** – Speedy trial ensures that justice is administered without unnecessary delays and protect individuals from prolonged detention.
- **Fair Justice** - The procedure prescribed by law for depriving a person of his liberty cannot be “reasonable fair or just” unless that procedure ensures a speedy trial.

Article 21 - no person shall be deprived of his life and personal liberty Except according to the procedure established by law.

- **Fundamental Right** – Supreme court held that the right to a speedy trial is implicit in Article 21 of right to life and personal liberty.
- It extends to all stages of the criminal process, including investigation, inquiry, trial, appeal, and revision.
- **Reducing Undertrial prisoners** – Speedy trials is essential to reduce those in jail as under trial prisoner and improve the conditions of prisons.
- **Provisions for Speedy Trial** – Section 436A in the Code of Criminal Procedure (CrPC) provides for release of an under-trial prisoner on bail on undergoing detention for a period extending up to one half of the maximum period of imprisonment specified for an offence under any law.
- **Plea Bargaining** - The concept of plea bargaining has been introduced in the Code of Criminal Procedure, 1973 to enable pre-trial negotiation between the defendant and the prosecution.
- **Judicial guidelines-** In landmark cases like **P. Ramachandra Rao v. State of Karnataka**, the Supreme Court laid down guidelines to ensure the right to a speedy trial.
 - Courts should utilize their powers under **Sections 309, 311, and 258** of the Code of Criminal Procedure to expedite trials.
 - The High Court can intervene under **Article 226 and Section 482** of the CrPC to provide relief if delays are unjustified.

Maneka Gandhi case

The Supreme Court, in 1978, in the held that for the deprivation of life and liberty of a person, two conditions are necessary:

- There should be a law.
- The law should be ‘reasonable’, ‘fair’ and ‘just’.

What lies ahead?

- Reevaluating the grounds for denying bail like seriousness of allegations.
- Ensure that bail is not withheld as a punishment.
- Fixing time limits for investigation, trial and pronouncement of verdict.
- Use of technologies like Artificial intelligence in reducing the work load of the court and summarizing evidence documents.
- Create accountability in giving adjournment of cases.

- Increase the ratio of judges to population for the disposal of cases very fast.
- Promote arbitration wherever possible and in particular small and petty cases.

5.2 Deputy Speaker

Why in News?

The Opposition of 18th Lok Sabha is demanding the post of Deputy Speaker in Lok Sabha.

What is the position of Deputy Speaker in India?

- **Origin in India** – The post of Speaker and Deputy Speaker *originated in India in 1921* under the provisions of Government of India Act of 1919 (Montague-Chelmsford Reforms).
- **Nomenclature** – In 1921, Deputy Speaker was called as *Deputy President* but the Government of India Act of 1935 changed the nomenclatures of Deputy President to Deputy Speaker.
- However, the old nomenclature *continued till 1947* as the federal part of the 1935 Act was not implemented.
- **Constitutional provisions** – **Article 93** states that “The House of the People shall, as soon as may be, choose two members of the House to be respectively Speaker and Deputy Speaker”.
- **Article 178** of Indian Constitution mentions about the position of Deputy Speaker of the Legislative Assembly.
- **Election** – Deputy Speaker is *elected by the Lok Sabha itself* from amongst its members after the election of the Speaker has taken place.
- The Deputy Speaker is elected once a motion proposing his or her name is carried.
- **Timing of appointment** – The Rule 8 of the Rules of Procedure and Conduct of Business in Lok Sabha says that the election of Deputy Speaker “shall be held on such date *as the Speaker may fix*”.
- The election *usually takes place in the second session*, even though there is no bar on having this election in the first session of the new Lok Sabha or Assembly.
- But it is generally not delayed beyond the second session unless there are some genuine and unavoidable constraints.
- **Oath** – While assuming the office of Deputy Speaker, he/ she do *not make and subscribe any separate oath* or affirmation.

Sachidanand Sinha was the Deputy Speaker of the central legislative assembly in 1921.

Ananthasayanam Ayyangar was the first Deputy Speaker of Lok Sabha in independent India.

To know more about **Parliamentary Oath**, Click [here](#)

- **Term** – Once elected, the Deputy Speaker usually continues in office until the dissolution of the House.
- However, he/she may vacate his/ her office earlier in any of the following three cases
 - If he/ she *ceases to be a member of the Lok Sabha*
 - If he/ *she resigns by writing to the Speaker*; and
 - If he/ she is *removed by a resolution* passed by a majority of all the then members of the Lok Sabha (i.e., an effective majority). Such a resolution can be moved *only after giving 14 days' advance notice*.
- Further, when a resolution for the removal of the Deputy Speaker is under consideration of the House, he/ she cannot preside at the sitting of the house, though he/ she may be present.
- Whenever the office of the Deputy Speaker falls vacant, the Lok Sabha elects another member to fill the vacancy.
- **Remuneration** – **Article 97** says that the salary and allowances are determined by the parliament which also includes sumptuary allowances.
- Thus, the Parliament enacted the Salaries and Allowances of Officers of Parliament Act in 1953.
- Deputy speaker comes under the *ambit of 'officers of parliament'*.
- They are *charged on the consolidated fund of India* and thus not subject to the annual vote of parliament.

What are powers and functions of Deputy Speaker?

- **Article 95** of the Indian Constitution mentions about the power of the Deputy Speaker.

- **Relation with speaker** – Deputy Speaker is *not subordinate to the Speaker* but is directly responsible to the house.
- When the Speaker presides over the House, the Deputy Speaker is like any other ordinary member of the house.
- Speaker can resign from the post by writing to the Deputy Speaker.
- **Presiding power** – According to **Article 95(1)**, the Deputy Speaker performs the duties of the Speaker if the post is vacant or when the latter is absent from the sitting.
- In both the cases, he/ she assumes all the powers of the Speaker.
- **Role during joint sessions** – He/she also *presides over the joint sitting* of both the houses of parliament, in case the speaker is absent from such a sitting.
- **Voting power** – While presiding over the house, he/she cannot vote in the first instance and can *only exercise a casting vote* in the case of a tie.
- **Special privileges** – Whenever he / she is appointed as a member of a parliamentary committee, he/she *automatically*
- Deputy Speaker acts as a *chairman of “Committee on becomes its chairman. Private Members’ Bills and Resolutions.”*
- **Role in IPG** – The Deputy Speaker of Lok Sabha is an *ex-officio vice-president* of Indian Parliamentary Group.

After the first Speaker, G V Mavalankar, died in 1956 before his term ended, the then Deputy Speaker M Ananthasayanam Ayyangar filled in for the remaining tenure of Lok Sabha from 1956 to 1957.

The Indian Parliamentary Group (IPG) is an autonomous body, was formed in the year 1949 in pursuance of a motion adopted by the Constituent Assembly.

What is current position of Deputy Speaker?

- The previous Deputy Speaker was *Thambi Durai during the 16th Lok Sabha (2014-19)*.
- **Vacant** – This constitutional post was *vacant during the entire period of 17th Lok Sabha from 2019 to 2024*.
- The Opposition had the post of Deputy Speaker continuously from 1990 through 2014.
- **Challenges** – The *Constitution does not specify a time frame* for making the appointments.
- It is this gap in the provision that allows governments to delay or avoid appointing a Deputy Speaker.
- **Way forward** – Constitutional experts have pointed out that both Article 93 and Article 178 use the words “shall” and “as soon as may be” – indicating that not only is the election of the Speaker and Deputy Speaker mandatory, it must be held at the earliest.

Usually, the post of Speaker comes from the ruling party (or ruling alliance), the post of Deputy Speaker goes to the opposition party (or opposition alliance) saving some exceptions.

5.3 Science of Protest

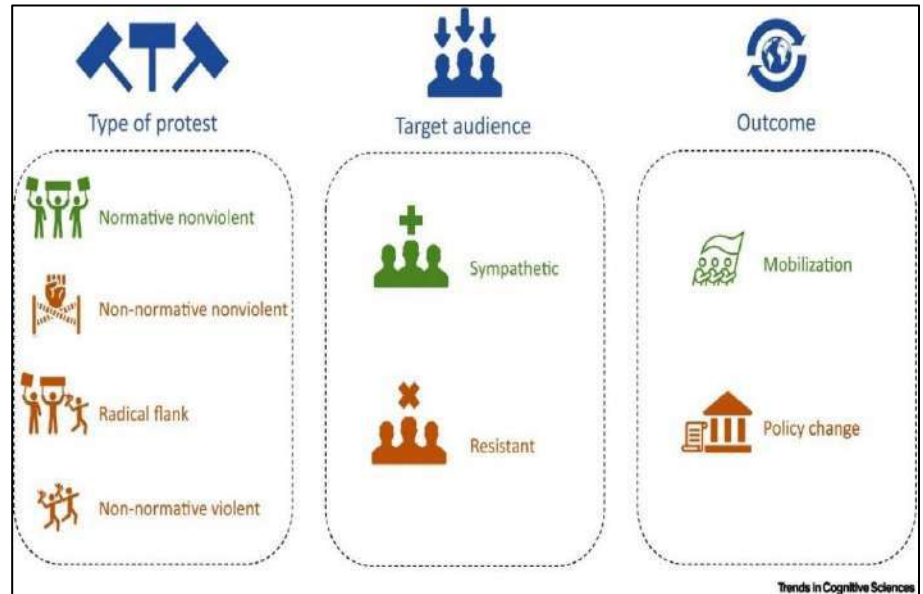
Why in News?

A global study stated that protests are increasingly seen as a way to express disagreement or a lack of faith in institutions.

What is a protest?

- **Protests** – A protest is an action which involves the *occupation of space over a long period of time* by camping, usually in public places, to express *strong disagreement with something*.
- **Objectives** – To publicly express views on unfair policies and laws, to dissent from them, to shape minds & form public opinion against them, to speak to and against the government, to challenge it.
- **Causes** – It may be due to the political decisions, social injustices to people, climate change impacts among others.
- **Short term impacts** – It can influence media coverage, public opinion, policy, and politics.
- **Long term impacts** – Protests can also help to spur longer-term changes in public opinion yet such influences are harder to trace.
 - **For example:** *Civil-rights protests in the 1960s* and the *Black Lives Matter demonstrations in 2020* changed voting behaviour and even flipped elections.
- **Success factors** – The study by Pearson suggest some factors that are responsible for success of protests.

- Large protests seem more effective than small ones
- Non-violent protests appear to be more potent than violent ones
 - **For instance**, Non-violent protests such as the Philippines' People Power Revolution, were successful in ousting Dictator Ferdinand Marcos in 1986.
- Unified goals might achieve more than diffused demands do
- Repression by police, for instance can win more support for protesters.



- **Example:** The repression by Columbia University in New York City to arrest student protesters for Gaza peace reportedly sparked an escalation in media coverage, resulting in a wave of student protests across parts of the US and abroad.
- Conversely, violent protests are often labelled as riots and disorder by the media.

What is the status of protests across the world?

- **Increase of protests** – The study reveals that global tally of **protests tripled since 2006**.
- **Higher political protests** – 300 protests and revolutionary campaigns between 1900 and 2006 aimed to dethrone national leaders.
- **Success of mass movements** – Every movement that mobilised at least 3.5% of a population was successful as mass participation enables political leverage.
 - **For instance:** The Take Back Parliament campaign in 2010 in UK saw success that influenced the UK referendum in 2011 for electoral reforms.
- **3.5% Rule** – Any protests require this level of participation to ensure change but the figure can be misleading.
- A much larger number of people are probably supporting a successful revolution even if they aren't visibly protesting.
- **Non-violent disruptive protests** – Little is known about this methods.
 - **For example:** Just Stop Oil and Extinction Rebellion, which include throwing soup on paintings, glueing themselves to government or oil company offices, and blocking traffic.
- Multiple surveys suggests that disruptive methods can stimulate negative opinions on an issue.
- **Major protests** – It include the Arab Spring and Occupy movements of the 2010s and the global Black Lives Matter protests in 2020.
- Farmer protests have erupted in countries such as Germany, Belgium, and India over new regulations.

What is status of protest in India?

- **Historical protests** – The background of the Indian Constitution is formed by its anti-colonial struggle.
 - **For instance:** Gandhi's satyagraha movements including civil disobedience movement in 1930 (salt satyagraha).
- Protests have also offered points of inclusion and participation to the voices that are not part of the mainstream as seen in the protests for creation of Andhra or the Chipko movement.
- **Constitutional recognition** – The Right to protest peacefully is enshrined in the Indian Constitution
- **Article 19(1)(a)** – It guarantees the freedom of speech and expression.
- **Article 19(1)(b)** – It assures citizens the right to assemble peaceably and without arms.
- **Article 19(2)** – It imposes reasonable restrictions on the right to assemble peaceably and without arms.

- **Article 51A** – It makes it a fundamental duty of every citizen “to safeguard public property and to abjure violence”.
- **Reasonable restrictions on protests** – They are imposed in the interests of
 - The sovereignty and integrity of India
 - The security of the State
 - Friendly relations with foreign States
 - Public order, decency or morality or
 - In relation to contempt of court, defamation or incitement to an offence.
- **Supreme Court** – In ***Ramlila Maidan Incident v. Home Secretary, Union of India & Ors. Case (2012)***, it had stated, ‘Citizens have a fundamental right to assembly and peaceful protest which cannot be taken away by an arbitrary executive or legislative action.’
- **Recent protests** – The ***farmers' protest in India during 2020*** was the largest among those studied between 2006 and 2020, with an estimated 250 million participants.
- ***2020 strike against the CAA-NRC citizenship*** matrix in India involved 250 million.

The International Day of Non-Violence is observed on 2 October, the birthday of Mahatma Gandhi, leader of the Indian independence movement and pioneer of the philosophy and strategy of non-violence.

What lies ahead?

- The Right to protest is one of the core principles on which democracy survives and thrives.
- However, when a protest turns violent, as seen in some places in recent protests, it defeats the very purpose of the protest.
- While enjoying the rights, one must adhere to one’s duties and responsibilities in a democratic society.

5.4 Leader of Opposition in the Parliament

Why in News?

The 2024 general election is historic as it resulted in the numerically largest Opposition in the Lok Sabha and also saw the debate on the Leader of the Opposition (LoP) come alive.

Who is leader of opposition?

- **Historical background** – Though the leader of the Opposition are *not mentioned in the Constitution* of India, they are mentioned in the Parliamentary Statute.
- The post of the Leader of the Opposition in the Indian Parliament has been a *statutory position since 1977*.
- However, this statute does *not define the functions* of the Leader of the Opposition.
- Traditionally, he will be a very *senior member of the principal Opposition in the House* who commands great respect and has wider acceptability among the parties in the Opposition.
- **Official recognition** – The position of Leader of Opposition was officially described in ***The Salary and Allowances of Leaders of Opposition in Parliament Act, 1977***.
- For the first time, it ***defined the term Leader of the Opposition***.
- **Leader of opposition** – He/she is “the Leader in that House of the party in opposition to the Government having the *greatest numerical strength and recognised as such by the Chairman of the Council of States or the Speaker of the House of the People, as the case may be*”.
- **Criteria for recognition** – There are *two conditions* that need to be fulfilled to recognise a person as LoP.
 - The party should be *numerically the biggest one* in opposition to the government.
 - The party should be recognised by the Speaker as a party, as such if it has *10% of the strength* of the House.
- But this provisions is a direction issues to Speaker ***to recognise the party in a Parliament and not about the Leader of Opposition***.

Recognition of an Party in Lok Sabha

- Under a direction of the Speaker issued in the 1950s, in (Direction 121).
- **Directions 121** – This direction was issued in 1950s, for the *recognition and categorisation of parliamentary parties* for the sake of providing them certain facilities in Parliament.
- In order to get recognition as a party in the House, it should have a *minimum of 10% members in that House*.
- **Concerns** – Some say that, only a party which has 10% of the strength of the House can put forth its claim to the post of LoP.
- But this direction *does not deal with the recognition of the LoP* rather it recognises the party in the house.
- **10th Schedule of Indian Constitution** – With this enactment, the categorisation of parties into parties and groups by the Speaker/Chairman (Lok Sabha/Rajya Sabha) irrelevant.
- Under this schedule, all political parties, irrespective of the number of Members that they have in the Houses, are “parties”.
- The term ‘group’ is not recognised by the Schedule.

To know about Tenth Schedule (10th schedule), click [here](#)

What position does the Leader of Opposition have in India?

- He/she enjoys the status of a minister and is paid by the government.
- **Seating in the house** – The Leader of Opposition sits in the *front row to the left of the Chair*.
- **Special privileges** – He/ she enjoys certain privileges on ceremonial occasions like *escorting the Speaker-elect* to the rostrum.
- The Leader of Opposition is also entitled to a *seat in the front row during the Address by the President* to both Houses of Parliament.
- **In order of precedence** – The Leaders of Opposition in Lok Sabha and Rajya Sabha **come at No. 7**, along with Union Cabinet Ministers, the National Security Advisor, the Principal Secretary to the PM, the Vice-Chairperson of the NITI Aayog, former PMs, and Chief Ministers.
- **Role** – The main duty of the Leader of Opposition is to serve as the *voice of the opposition* in the House.
- **Representative in selection committee** – The Leader of Opposition is the opposition’s *representative in the high-powered committees* headed by the Prime Minister for *appointment* to key posts such as the
 - Director of CBI
 - Central Vigilance Commissioner
 - Chief Information Commissioner
 - Chairperson and Members of the National Human Rights Commission
 - Lokpal

An official booklet on Parliament published in 2012 says the Leader of Opposition in Lok Sabha “is considered as a shadow Prime Minister with a shadow Cabinet, ready to take over the administration if the Government resigns or is defeated on the floor of the House”.

What are the significances of having a strong opposition in the parliament?

- **Improves quality of governing** – Strong opposition would be reflected in improved quality in the
 - Admission of questions
 - Content of the answers
 - Debate on Bills
 - General debates such as the debate on the motion of thanks, urgent matters of public interest
 - Admission of adjournment motions
 - Reference of Bills to the committees for detailed scrutiny, and so on
- **Bringing awareness to civilians** – As the prime minister in waiting, he has the responsibility to inform the nation about the failures of the government based on truth and with a great sense of responsibility.
- **Promotes discussion and deliberation** – In the House he has primacy in debates and other interventions.

Where the Leader of Opposition in the Lok Sabha has not been recognized as such, the Leader of the single largest group in opposition of the Government in the Lok Sabha shall be deemed to be the Leader of the Opposition.

- He can demand the presence of the Prime Minister in the House when it debates serious issues.
- **Channel of communication** – According to the British tradition, the Prime Minister directly informs the Leader of the Opposition about major policy initiatives.
- **Upheld accountability of the government** – It is the well-accepted parliamentary tradition that the Speaker permits the Leader of the Opposition to make interventions on any matter without any notice.

Status of LoP in recent times

- **Vacancy in the 16th & 17th Lok Sabhas** – There was *no LoP because of following 10% criteria*.
- The Congress, the largest opposition party, won 44 and 52 seats in the 543-member House after the elections of 2014 and 2019 respectively.
- Thus it got less than *54 seats which is the threshold* to secure the post of LoP
- **2024 general election** – It is perhaps for the first time that the Lok Sabha has such a huge number in the Opposition.
- With over 234 Members in the Opposition benches, the House is almost evenly divided.
- This has, no doubt, boosted the morale of the Opposition which, to a great extent, can influence the running of the House.

What lies ahead?

- The people of India have given the political class a great opportunity to restore normalcy in Parliament.
- The Leader of the Opposition should constantly remind the ruling Benches of the need to normalise Parliament.

5.5 Coalition Government

Why in news?

Recently, Coalition politics has made a comeback at the national stage after 10 years of a de facto one-party rule.

What is a coalition government?

- **Coalition** - The term 'coalition' is derived from the Latin word '*coalitio- which means 'to grow together'*'.
- Thus, technically, coalition means the act of uniting parts into one body or whole.
- Politically, coalition means an alliance of distinct political parties.
- **Coalition government** – When several political parties join hands to form a government and exercise political power on the basis of a common agreed programme or agenda.
- **Basis of coalition** – It is a direct descendant of the exigencies of multi-party system in a democratic set-up.
- It is a *phenomenon of a multi-party government* where a number of minority parties join hands for the purpose of running the government.
- **Forms of alliance** – It can be formed in two ways
 - Pre-poll alliance
 - Post-election alliance
- **Power Sharing** - Power is distributed among the coalition partners, with key positions such as the Prime Minister or Chief Minister and various ministerial roles shared according to pre-agreed terms.
- **Features** - Coalitions are formed for the *sake of some reward, material or psychic*.

Ivor Jennings described the leader of Opposition as the 'alternative Prime Minister'.

- It implies the existence of at least two partners.
- The underlying principle of a coalition system stands on the simple fact of temporary conjunction of specific interest.
- It is not a static but a dynamic affair as coalition players and groups dissolve and form new ones.
- The keynote of coalition politics is compromise, and rigid dogma has no place in it.
- A coalition government works on the basis of a minimum programme, which may not be ideal for each partner of the coalition.
- Pragmatism and not ideology is the hallmark of coalition politics.
- The purpose of coalition adjustment is to seize power.

	Majoritarian democracy	Consensus democracy
1. Executive	Concentration of power in one-party and bare-majority cabinet	Power-sharing in broad coalition cabinet
2. Relations between government and parliament	Cabinet dominance	Balance of power
3. Political parties	Two-party system	Multi-party system
4. Electoral system	Majoritarian and disproportional	Proportional representation
5. System of interest groups influence	Pluralism	Corporatism
6. Government structure	Unitary and centralised	Federal and decentralised
7. Parliament	Concentration of legislative power in unicameral legislature	Strong bicameralism
8. Type of Constitution	Flexibility, simple procedure of amendment or unwritten constitution	Rigidity, complex procedure of amendment
9. Judicial review	Absent or weak	Strong
10. Central bank	Controlled by executive	High degree of autonomy

What are factors for emergence of coalition government in India?

- **Decline of single-party dominance** - The decline of the Indian National Congress's dominance in the late 1960s and 1970s led to a more fragmented political landscape, requiring coalition arrangements to form governments.
- **Rise of regional parties** - The emergence of strong regional parties with significant voter bases contributed to the fragmentation of national parties, making coalition necessary to achieve a majority.
- **Diverse electorate** - India's diverse electorate, with varying regional, linguistic, and cultural interests, led to the formation of coalitions to address the interests of different groups and regions.
- **Internal party fragmentation** - Fragmentation within major parties, often results in the formation of splinter groups that align with others to form a coalition.
- **Strategic political alliance** - Strategic alliances between parties, either to counter common rivals or to leverage shared interests, have led to the formation of coalition governments.
- **Post-Emergency political landscape** - After the Emergency period (1975-1977), there was a push for more inclusive and representative governance, leading to the rise of coalition politics as a way to reflect a broader spectrum of political views.
- **Electoral system** - At times, the first-past-the-post electoral system may ensure that no single party wins an outright majority thus prompting for coalition partnerships.

PERIOD	COALITION	PRIME MINISTER	PARTY IN SUPPORT
1977-1979	JANTA PARTY	MORARJI DESAI	CONGRESS PARTY (O)
1979-1980	JANTA PARTY	CHARAN SINGH	JANTA (S)
1989-1990	NATIONAL FRONT	V.P. SINGH	JANTA DAL
1990-1991	SAMA/WADI JANTA PARTY	CHANDRA SHEKAR	JANTA DAL (S)
1996-1997	UNITED FRONT	H.D. DEVEGOWDA	JANTA DAL
1997-1998	UNITED FRONT	I.K. GUJRAL	JANTA DAL
1998-1999	BJP-LED COALITION	A.B. VAJPAYEE	BJP
1999-2004	NDA	A.B. VAJPAYEE	BJP
2004-2009	UPA-I	MANMOHAN SINGH	CONGRESS
2009-2014	UPA-II	MANMOHAN SINGH	CONGRESS
2014-2019	NDA	Narendra Modi	BJP
2019-2024	NDA	Narendra Modi	BJP
2024-current	NDA	Narendra Modi	BJP

What are the implications of coalition government?

Coalition Government	
Merits	Demerits
<ul style="list-style-type: none"> • Diverse and <u>inclusive government</u>. • Strengthens centre-state relations and <u>federalism</u>. • Promotes <u>deliberations and discussion</u> in decision making. 	<ul style="list-style-type: none"> • Holding multiple parties together are prone to <u>unstable government</u>. • Competing interests and agendas can <u>affect national aspirations</u>.

<ul style="list-style-type: none"> • Develops unified agendas and ensure more <u>balanced policy making</u>. • Regional and minorities parties <u>can have a say</u>. • It can <u>enhance accountability</u> by ensuring that different viewpoints and interests are represented and scrutinized. 	<ul style="list-style-type: none"> • Shifting political alliances can <u>impact policy decisions</u>. • Negotiations can lead to <u>delayed decision making</u> process. • Reconciling to different parties can result in <u>policy gridlock</u>. • It can sometimes <u>dilute the core ideologies</u> of participating parties.
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5.6 Election system of India and France

Why in news?

A French left-wing coalition recently won the most seats in the elections but fell short of a majority and faces a hung parliament and potential political paralysis.

How the elections are held in France?

- France holds two national elections for the general public to participate in
 - The Presidential election
 - The Legislative election
- **Two-round system** - - It is a simple election of candidates. Usually, 2 rounds of voting is held.
- The first round sees voting between all candidates.
- Should a candidate achieve the majority, they are elected President immediately.
- If not, a second round is held between the two candidates with the highest vote percentage.
- In order to be eligible for the second round, candidates must have obtained a number of votes equal to **at least 12.5%** of the total number of registered voters.
- The winner is elected president for a term of 5 years.
- **Term** - The elected representatives hold the position for a period of 5 years.
- **Qualification** - Polling stations are open to any French citizen over the age of 18 and on the electoral roll.

What are the similarities between Indian government system and French government system?

- **Term** – The President is elected for 5 years in both India and France.
- **Multiple rounds of voting** - In case of no majority in the first round both systems undergo multiple rounds of voting to gain a majority party to win the elections.
- **Electoral College** – Both the systems have the electoral colleges to choose their presidents and legislative assembly heads.
- **Ballot system** – Both the countries uses the secret ballot system to not reveal the identity of the voter.
- **Absolute Majority** – Both the systems requires absolute majority (50%+1) to form a government, if no party attains majority during the rounds then it is a hung parliament.
- **Role of the President** - In both systems it is similar as the president is the head of state and commander-in-chief of the armed forces.
- The President in both countries also has the power to grant pardons, appoint judges, and to sign bills into law.

What are the difference between Indian government system and French government system?

Feature	Indian System	French system
System of Government	Parliamentary	Semi-presidential
Executive	The President is the ceremonial head, the real executive power is with the Prime Minister and Council of Ministers	The President has significant executive powers along with the Prime Minister

President's Role	Largely ceremonial, elected indirectly	Significant powers, elected directly
Prime Minister	Leader of the majority party in the Lok Sabha, real head of government	Appointed by the President, must have support of Parliament
Parliament Structure	Bicameral (Lok Sabha and Rajya Sabha)	Bicameral (National Assembly and Senate)
Election of Upper House	Elected by members of State Legislative Assemblies and by the President for nominated members	Elected by an electoral college including local elected officials
Dissolution of Lower House	Can be dissolved by the President on the advice of the Prime Minister	Can be dissolved by the President
Amendment Process	Requires a special majority in Parliament and, in some cases, ratification by half of the State Legislatures	Requires a simple majority in both houses of Parliament or a referendum

What is Hung Parliament?

- A Hung Parliament refers to a Parliament wherein ***no party has a working majority***.
- It occurs when neither of the parties has gained an outright majority and the Parliament is equally balanced.
- Hence, no party can automatically assume control over the executive.
- When this situation occurs, the government has ***3 choices*** left -
 - Form a coalition government
 - Form a minority government
 - Conduct re-elections.
- A Hung Parliament is not a time-specific phenomenon.
- Even when a party or a pre-electoral alliance has gained the majority and formed the government, a reduction in the membership of this party of alliance can cause a Hung Parliament.

Majority needed in India	Majority needed in France
<ul style="list-style-type: none"> • A party or a coalition <i>must bag more than 50% seats in the Lower House</i>, which is the Lok Sabha. 	<ul style="list-style-type: none"> • In the first round candidate must secure absolute majority (50%+1). • If no person qualified in the first round, second round is held between the two candidates with the highest vote percentage.
<ul style="list-style-type: none"> • Members - There are a total of 543 seats in the Lok Sabha, with two nominated members making it 545. 	<ul style="list-style-type: none"> • Members - 577 members are elected to the National Assembly. • A party needs a majority of 289 to form the executive body and elect their prime minister.

What are the reasons for a hung parliament?

- **Strength of regional parties** - Regional parties have dominated national politics thereby making it difficult for the national parties to form a government.
- **Low election turnout** - India has an election turnout of 60% since the first elections and this percentage is not rising. Due to low turnout, the possibility of a hung parliament enhances.
- **International scenario** - In India, the concept of Hung parliament has been inspired by international situations. 90% of the governments formed in Denmark have resulted in a hung parliament. Norway, Sweden, Germany and many other European nations have seen Hung Parliaments.
- **Defection** - The 10th Schedule of the Indian Constitution permits political parties to change their parties after the elections if one-thirds of the party decides to split.

What are the impacts of Hung parliament?

- **Political instability** - With no party having a majority, forming a stable government becomes challenging. This can lead to frequent changes in government, political alliances, and coalitions, causing uncertainty.
- **Policy Paralysis** - Legislative decision-making can become sluggish as coalition partners may have divergent views and interests. This can lead to delays in policy formulation and implementation.
- **Compromised Governance** - In a bid to maintain coalition support, the ruling party may have to make concessions, potentially compromising on key policy decisions and governance standards.
- **Economic Uncertainty** - Political instability and policy paralysis can lead to economic uncertainty, affecting investor confidence, stock markets, and overall economic growth.
- **Frequent Elections** - If coalition governments fail to sustain, it can lead to repeated elections, imposing a financial burden on the exchequer and causing voter fatigue.
- **Checks and Balances** - a hung parliament can enhance checks and balances, preventing any single party from exercising unchecked power and encouraging more inclusive governance.

5.7 RTE in Private Schools

Why in News?

The Bombay High Court recently quashed Maharashtra's rule exempting private schools within one kilometer of government schools from reserving 25% seats for weaker sections as per Right to Education.

Why there is a trend of exempting RTE mandate in private schools?

- **Right to education** – Every child of the age group of **6 to 14 years** shall have the right to free and compulsory education in a neighbourhood school till the completion of his or her elementary education.
- It mandated by
 - **Indian Constitution** - *Article 21A* of Fundamental Rights
 - **Legal provision** – The Right of Children to Free and Compulsory Education (RTE) *Act, 2009*.

To know more about Right to Education, click [here](#)

- **RTE mandate in private schools** – It is dealt by Section 12(1)(C) RTE Act.
- **Section 12 (1)(C)**- It mandates 25% reservation of seats to children from socio-economically backward sections in private schools.
- Students admitted under this quota are given fee concessions, with the state government meant to reimburse private schools for the same.
- **Significance** – It strives to bring parity and equality of opportunity for all children.
- **Exemptions** – The private schools within a one km radius of a government or government-aided school would not have to set aside 25% of seats for students from disadvantaged backgrounds.
- Instead, students in these neighbourhoods considered for admission into said government or government-aided schools first.
- This exemption also applied to private schools established in the future satisfying the requisite criteria.
- **Reasons for exemption** – Allowing admission to private schools near the vicinity of government or government aided schools reduce the enrolment in government/ aided schools.
- Private schools and teachers' organisations have also highlighted that state governments have often failed to reimburse the fees for students admitted through this quota.
 - In 2023, the Maharashtra English School Trustees Association (MESTA) threatened to boycott RTE admissions citing pending payments of Rs 1,800 crore in reimbursements.
- **Judiciary** – The Bombay High Court had quashed and set aside the Government of Maharashtra notification of exempting private schools.
- It held that the provision was “ultra vires (beyond legal authority) of RTE Act, 2009 and Article 21 of Constitution and declared the notification to be ‘void’.

Previously, Kerala in 2011 and Karnataka in 2018 had also exempted private schools from following the 25% Quota under Right to Education.

- It noted that “Section 12 (1) (c) of the RTE Act casts a duty on every unaided school *irrespective of its distance* from the government/aided schools” and the same is ‘unconditional.’
- While state government argued by noting to ‘save public money’ as it is already spending substantial amounts on expenses for state-run and private schools, the HC noted that the financial constraint cannot come in the way of statutory mandates.

What are called as neighbourhood schools?

- **Neighbourhood school** – It is a school located within the defined limits or area of neighbourhood, as notified by the state government under the RTE rules.
- It relates to the availability of a school within safe and accessible distance from the habitation where a child lives.
- It means the nearest primary/upper primary school within walking distance from the child’s residence.
- **Legal provisions** – Section 3(1), 6, 8(b), 9(b), 10, 12(1)(C) of RTE Act deals with neighbourhood schools.
 - **Central RTE Rules** - It contain the position of the Central Government in regard to neighborhood school which is applicable to Union territories without legislature for opening new schools.
 - **State/UT Rules** – It is applicable in all other states and UT’s.
- **Distance parameters** – The central RTE Rules have notified the area or limits of neighbourhood to factor in distance norms of
 - **1 kilometer** – For children in *classes I-V*
 - **3 kilometer** – For children in *classes VI-VIII*
- **Distance relaxation** – In places with difficult terrain where there may be risk of landslides, floods, lack of roads and in general, danger for young children in the approach from their homes to the school.
- **Implementation** – The Government has to ensure availability of neighbourhood schools for all children within **3 years of the implementation** of the Act.
- **Importance** – According to RTE Act, it is meant to be a *site for inclusion*, so that the school becomes a *common space for education*, and children’s education and schooling does not get differentiated on caste, ethnic group and class lines.
- **Freedom of choice** – The RTE Act does not restrict the choice of the child to seek admission in school which may not be in immediate vicinity, or the neighbourhood of the child’s residence.

What lies ahead?

- Establish a streamlined and transparent process for reimbursing private schools for RTE quota students.
- Ensure all schools have basic facilities such as functional toilets, boundary walls, and adequate classrooms.
- Develop a standardized framework for the implementation of RTE provisions to ensure consistent quality of education across all states.

6. GOVERNMENT POLICIES AND INTERVENTIONS

6.1 Anti-cheating Laws for Competitive Examinations

Why in news

Recently, the Bihar Assembly has passed Bihar Public Examinations (PE) (Prevention of Unfair Means) Bill, 2024.

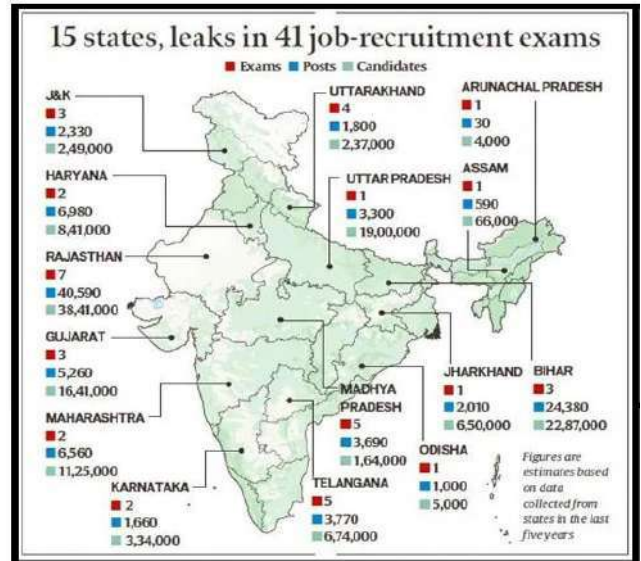
Why cheating legislation is needed in India?

- **Cheating** – It takes place when an examinee attempts to attain academic credit through dishonest, disrespectful, irresponsible, untrustworthy, or unfair means.

- Leakage can *occur in any of processes* of the examination like while setting the question paper or in the exam centre or during evaluation/tabulation.
- In India** – There is increase in instances of cheating in examination and the most frequent issue is paper leaks which occurred not only in various state exams but also in pan-India examinations.

Pan-India paper leaks

- NEET-UG 2024 Exam
- NTA-UGC 2024 Exam
- Central Teachers’ Eligibility Test (CTET) 2023
- According to data analysed by India Today’s Open-Source Intelligence (OSINT) team,
 - 64 major exams across 19 states since 2019
 - Uttar Pradesh reported maximum cases; Rajasthan, Maharashtra follow



- **Consequences of cheating** – It *undermines the principles of meritocracy*.
- It could lead to the *recruitment of incompetent individuals* in key government positions, which could have detrimental effects on public service delivery, governance, and overall development.
- It *perpetuates inequalities* by favoring those who could afford to pay for leaked exam papers or engage in fraudulent activities.
- It create widespread *frustration among the youth* who worked relentlessly for the exam.

What are features of bill?

- **Need** - In recent months, the Bihar government has faced increased scrutiny due to a CBI investigation revealing that gangs in the state leaked the **NEET-UG 2024 medical entrance exam paper**.
- Bihar has faced multiple paper leaks causing cancellations of government recruitment exams.
- **Bill** - The Bihar Public Examinations (PE) (Prevention of Unfair Means) Bill, 2024
- **Aim** - To *tackle the question paper leaks and other malpractices* in government recruitment examinations.
- **Punishments** – All offences are set to be cognizable and non-bailable.
 - **For individuals found guilty** - Imprisonment ranging from 3 to 5 years and a fine of ₹ 10 lakh.
 - **For service providers** – A penalty of ₹1 crore, a suspension of their services for up to 4 years, and even the seizure of assets in cases of organised crime.
- **Recovering costs** – e part of the examination costs will be recovered from offending service providers.
- **Investigation authority** – It is to be officers of the rank of Deputy Superintendents of Police (DSP).
- **Significance** – It is in line with the central law – the Public Examinations (Prevention of Unfair Means) Act, 2024.

In 2023, States like Rajasthan, Jharkhand, Uttarakhand, and Gujarat have passed an anti-cheating legislations.

The Public Examinations (Prevention of Unfair Means) Act

- **Launch** – It was passed in 2024
- **Aim** – To curb unfair practices in public examinations.

- **Coverage** – Examinations being conducted for recruitment by all the central government recruitment agencies

- Union Public Service Commission
- Staff Selection Commission
- Railway Recruitment Board
- National Testing Agency
- Institute of Banking Personnel Selection
- Central government departments



- It covers not only job-selection exams but also major educational entrances like JEE/NEET.
- **Provisions** – It defines various offences related to unfair means, such as paper leaks, the use of fake websites, and collusion with service providers.
- It empowers police officers not below the rank of Deputy Superintendent of Police or Assistant Commissioner of Police to investigate offences under the Act.
- **Penalties and Punishments** – It includes a minimum jail term of 3-5 years and a fine up to Rs. 1 crore.
- It holds service providers engaged for exam conduct liable with fines up to Rs 1 crore and a 4-year ban on their involvement in public exams.

What are the challenges?

- **Policy issues** – Many state still does not have any laws and existing laws may not adequately cover all forms of cheating.
- **Lack of standardization**- There is no uniform legislation across all states, leading to varying standards and enforcement practices.
- **Technological Challenges**- The rapid advancement in technology often outpaces existing legislation.
- This makes it difficult to address new types of cheating, such as sophisticated online cheating methods and cyber fraud.
- **Enforcement issues**- Lack of adequate resources and training for law enforcement agencies.
- Notably, there have been no convictions so far under the existing Acts in various states.
- **Lack of awareness and education**- Often students, educators, and exam administrators lack the knowledge about the legal consequences of cheating.

What lies ahead?

- Make provisions for synching union and state government in anti-cheating measures.
- Raise public awareness about the ethical and legal ramifications of cheating can help in building a culture of integrity.
- Review and evaluate the effectiveness of anti-cheating measures regularly.
- Utilize technology to prevent cheating like AI-based monitoring systems.

6.2 GST on Health Insurance

Why in News?

Insurance premiums for health and life policies have increased this year, and with the 18% GST, insurance has become less affordable for many people.

What are the importance of health insurance?

Insurance

- It is a legal agreement between the insurance company (insurer) and the individual (insured).
- **Agreement** – The insurance company promises to compensate for the insured's losses upon the occurrence of a specified event (contingency).

- **Contingency** – It is an *event that causes a loss*, such as the death of the policyholder or damage/destruction of property.
- **Insured's Role** - The insured *pays a premium* in exchange for the insurer's promise to cover the losses.
- **India** – It is the *fifth largest life insurance market* in the world's emerging insurance markets, growing at a rate of 32-34% each year.
- The *Insurance Regulatory and Development Authority of India (IRDAI)* is the regulatory body that oversees and regulates the insurance sector in India

- **Health insurance** - An assurance which provides immediate financial help in case when any medical emergency arises.
- **Quality health care**- Insured individuals often have access to a wide network of hospitals and healthcare providers, ensuring quality care.
- **Improved diagnosis**- Health insurance plans often cover preventive services, such as regular check-ups and screenings, leading to early detection and treatment of diseases.
- **Timely Treatment**- Health insurance ensures that individuals can access timely medical care without worrying about immediate payment, leading to better health outcomes.
- **Coverage of Medical Costs**- Health insurance helps cover the high costs of medical treatments, surgeries, and hospital stays, reducing the financial burden on individuals and families.
- **Reduces Out-of-Pocket Expenses**- With health insurance, a significant portion of medical expenses are covered by the insurer, minimizing the amount paid directly by the insured.
- **Reduction in Poverty**- By reducing out-of-pocket medical expenses, health insurance helps prevent families from falling into poverty due to medical emergencies.



What are the implication of GST on Insurance?

- **Pre-GST Taxes**- Life insurance premiums were subject to 15% service taxes (Basic Service Tax, Swachh Bharat cess, Krishi Kalyan cess).
- **Increase in Tax Rate**- Transition from 15% to 18% with the introduction of GST in 2017.
- **Current GST Rate**- 18% on health and life insurance policies.
- **Impact of GST**- Increased premiums due to the inclusion of service tax.

Aspect	Argument in support	Argument against
Rationale for GST imposition	Recommended by the GST Council, a constitutional body.	High GST rate of 18% on insurance premiums is the highest in the world and increases the cost for policyholders.
Revenue generation	GST on insurance generated Rs 21,256 crore in the last three financial years and Rs 3,274 crore from the reissuance of health policies.	High GST rate leads to high premiums, which can deter people from purchasing insurance policies, thus impacting insurance penetration.

Medical and retail inflation	The rise in inflation, especially medical inflation, justifies the need for GST to cover increased costs.	High medical inflation and frequent premium hikes have led to declining policy renewal rates, especially affecting senior citizens and low-income groups.
Tax deductions	Insurance premiums are eligible for deductions under Sections 80C and 80D of the Income Tax Act, 1961, including the GST component.	The high GST rate still imposes a significant burden despite tax deductions, making insurance less accessible.
Global comparisons	Other markets like Singapore and Hong Kong have no GST or VAT on insurance, making it easier to sell insurance without additional tax burdens.	High GST rates in India need to be rationalized to make insurance more affordable and achieve goals like "Insurance for All by 2047."
Simplification and transparency	GST replaces multiple indirect taxes, simplifying the tax structure and bringing more transparency.	Initial confusion and complexity in understanding the new tax regime can burden insurance companies and policyholders.

What lies ahead?

- **Reduce GST on essential insurance products-** The government could consider reducing the GST rates on essential insurance products like health and life insurance.
- **Keep uniform GST rates-** Establishing a more uniform GST rate across different types of insurance products could simplify the tax structure and reduce administrative burdens.
- **Streamline Input tax credit (ITC) claims-** Simplifying the process for claiming input tax credits for insurance companies can help in reducing the overall tax burden.
- **Cross-Sector coordination-** Facilitate better coordination between the insurance sector and other sectors to streamline ITC claims and minimize disputes.
- **Policyholder education-** Launch awareness campaigns to educate policyholders about the importance of insurance and the impact of GST on premiums that could help in maintaining and potentially increasing insurance penetration.
- **Regulatory collaboration -** Encourage collaboration between the GST Council, insurance regulatory bodies, and industry stakeholders to address sector-specific issues and streamline GST processes.
- **Adopt advanced IT solutions-** Leverage technology to simplify GST compliance, such as automated GST filing systems and real-time tax reconciliation tools.

6.3 India's Policy on Refugees

Why in News?

India has allowed former Bangladesh Prime Minister Sheikh Hasina to stay in India since her forced departure from Bangladesh, despite India having no official refugee policy.

Who are refugees?

- **Refugees** – They are people *forced to flee their own country* and seek *safety in another country* and are unable to return to their own country because of feared persecution.
- **Key international convention - 1951 Refugee Convention** and its **1967 Protocol** to protect refugees.
- They provide the universal definition of who is a refugee and outline the minimum standards for their treatment.
- **Principle of Non-Refoulement** – It states that refugees have a *right not to be sent back to their country of origin* if their life or freedom would be at risk.
- Countries that have signed the Convention are obliged to treat refugees according to the standards outlined.
- **Role of UNHCR** - United Nations High Commissioner for Refugees is the official UN Refugee Agency.

A refugee is a legal term that carries with it certain protections that refugees are entitled to. The term 'migrant' does not have an international legal definition.

- It promotes States' accession to the Convention and helps governments translate it into national laws.

How India deals with refugees?

- **Constitutional provisions**
 - **Article 21** (right to life)
 - **Article 14** (protection against arbitrary actions)
- **Judiciary** – The Supreme Court has ruled that non-return of refugees is part of the right to life.
- **Foreigners Act & Indian Passport Act** – Refugees entering without a visa are treated as illegal immigrants under these laws.
- **Citizenship Amendment Act (CAA)** - It provides a pathway to citizenship for non-Muslim illegal immigrants from neighboring countries, which has faced criticism for being discriminatory.
- **Lack of national policy**- India does not have a formal national policy or law specifically dealing with refugees.
- **Non-signatory to UN convention** – India is **not a signatory** to the 1951 UN Convention or the 1967 Protocol.
- **UNHCR in New Delhi** – It handles refugee status determination (RSD) for asylum-seekers from non-neighboring countries and Myanmar.

Instance of Refugee situation in India

- **Partition of India (1947)** – It led to massive movement of people from Pakistan to India seeking refugee status.
- **Tibetan refugees (1959 onwards)** - Following the failed uprising against Chinese rule in Tibet, the *14th Dalai Lama, along with thousands of Tibetans, fled to India.*
- **Chakma and Hajong refugees (1964-1969)** - The Chakma and Hajong communities from the *Chittagong Hill Tracts of East Pakistan* migrated to India due to religious persecution and displacement caused by the construction of the Kaptai Dam.
- **Bangladeshi refugees (1971)** - During the Bangladesh Liberation War, millions fled East Pakistan (now Bangladesh) due to military atrocities and genocide.
- **Afghan refugees (1980s onwards)** - Due to prolonged conflict in Afghanistan, including the Soviet invasion, Taliban rule, and subsequent unrest, many Afghans sought refuge in India.
- **Sri Lankan Tamil refugees (1983 onwards)** - The civil war in Sri Lanka led to anti-Tamil pogroms and widespread violence which led to thousands of Sri Lankan Tamils sought refuge in India, primarily in the state of Tamil Nadu.
- **Rohingya refugees (2012 onwards)** - Facing persecution in Myanmar's Rakhine State, many Rohingya Muslims fled to neighboring countries, including India.

What are the problems faced by refugees in India?

- **Temporary measures** – Policy that India has adopted for protecting refugees is an adhoc administrative policy on refugees.
- **Discriminatory laws** - Citizenship Amendment Act 2019 (CAA), provides citizenship only to Hindu, Christian, Jain, Parsi, Sikh and Buddhist immigrants persecuted in Bangladesh, Pakistan and Afghanistan.
- **Inconsistent laws** – Since refugee law does not exist in India there is no uniformity in the treatment of refugees in the country.
 - After the end of the Sri Lanka civil war in 2009, India has encouraged return through the method of voluntary repatriation.
 - Termining Rohingya in India as “illegal” (in contrast to calling them refugees in Bangladesh) and pledging to send them back to Myanmar.
- **Social exclusions** – There is physical and emotional exploitation by the local residents since they are not citizens of India.
- **Deprivation of basic rights** – Basic necessities of life such as food, shelter and employment are not provided to them and privileges are also not conferred.

India is very reluctant to sign 1951 Refugee Convention as refugees are defined as people who have been deprived of their civil and political Rights but not their economic rights.

What are the steps needed to have a fair refugee policy in India?

- **Ratifying international conventions** - India should consider ratifying the 1951 Refugee Convention and its 1967 Protocol, which set out the rights of refugees and the obligations of states to protect them.
- **Formulating national refugee law** - India should enact a comprehensive national refugee law to provide a legal framework for the protection and management of refugees, distinguishing them from other migrants and ensuring their rights.
- **Ensuring access to basic human rights** – It includes healthcare, education, and legal protection.

- Providing refugees with the right to work and earn a livelihood, which helps in their integration and reduces dependency on state resources.
- **Seeking international assistance** – It includes seeking financial aid, technical support, and resettlement opportunities for better management of refugees.
- **Involving civil society** - Engage civil society organizations, NGOs, and refugee communities in the policy-making process to ensure that refugee voices are heard, and their needs are addressed.

To know more about World Refugee Day, click [here](#)

7. GOVERNANCE

7.1 Supreme Court on sub-categorisation of Schedules Castes (SCs)

Why in news?

In a recent judgment, a seven-judge Bench of the Supreme Court by a 6:1 majority ruling has permitted State governments to sub-classify SC/STs to advance the cause of affirmative action.

What is the constitutional position Scheduled Castes in India?

- **Recognition** – Under the **Article 341(1)** of the Indian Constitution, the President of India can officially designate certain groups as Scheduled Castes (SCs) in any State or Union territory.
- The said designation of SCs for states has to be done in consultation with the Governor and then be publicly notified.
- **Changes** – **Article 341 (2)** allows the Parliament to include or exclude any caste or tribe from the list.
- **Educational upliftment** - **Article 15 (4)** enables the State to make special provisions for the advancement of the SCs and STs.
 - Article 15 (4) was added through first constitutional amendment act of 1951
- **Article 15 (5)** enables state to making any special provision for the advancement of the SCs and STs regarding their admission to educational Institutions.
- It also includes the private educational institutions, whether aided or unaided by the State, except the minority educational Institutions.
 - Article 15 (5) was added by the 93rd Amendment Act, 2005.
- **Article 46** deals with promotion of educational and economic interests of SCs, STs and other weaker sections.
- **Employment provisions** – **Article 16 (4A)** allows the State to make any provision for reservation in matters of promotion, with consequential seniority, in the services under the State in favour of the SCs and STs which are not adequately represented in the services under the State.
- **Article 16 (4A)** was added by the 77th Amendment Act of 1995 and it was modified by 85th Amendment Act of 2001 to include the provision of the consequential seniority.
- **Article 335** deals with the claims of scheduled castes and scheduled tribes to services and posts.
 - Article 335 in Part XVI is considered as a Directives outside Part IV of DPSP.
- **Political representation** – The reservation of seats for SCs and STs in the Lok Sabha on the basis of population ratios.
- Originally, it was to operate for ten years (ie, up to 1960), but it has been extended continuously since then by 10 years each time and now, under the 104th Amendment Act of 2019, this reservation is to last until 2030.

What is the recent issue and verdict?

- **Current case** – It was an appeal against the High Court judgement, which had struck down a state law empowering the government to sub-classify SC/STs for grant of quotas.

- **Issue** – The High Court in *State of Punjab v Davinder Singh case* had struck down the Punjab government order to provide 50% seats to Balmikis and Mazhabi Sikhs out of the seats reserved for SCs.
- It was done by referring to *Chinnaiyah case of 2005*, where the court had held that sub-classification amounted to tinkering with the Presidential list by the State legislature which is violative of Article 341(2).
- **Verdict** - *States have a right to sub-classify SCs* notified in the Presidential List with an objective to provide them "more" preferential treatment in public employment and education.
- SCs inclusion in the President's List by the Parliament under Article 341(2) did not mean they were a "uniform and internally homogenous unit" incapable of further sub-classification.
- **Article 341(2)** does not create an integrated homogenous class.
- It requires the States to justify the sub classification based on quantifiable and demonstrable data.
- It also explicitly prohibits State governments from earmarking 100% reservation for a sub-class to the exclusion of other castes in the President's List.
- Four of the seven judges on the Bench separately said the government should extend the "creamy layer principle" to SCs and STs, like in the case of Other Backward Classes (OBC) category.

To know about the background of sub-categorization of SCs, click [here](#)

How sub-categorisation and creamy layer works in India?

- **Sub-categorisation** - A process of creating sub-groups within the existing categories for granting separate quotas for those who are more backwards among the communities in the Scheduled caste.
- **Need** – It aims to address the intra-category inequalities and ensure a more equitable distribution of benefits and opportunities among the most deprived and marginalised sections of society.
- **In India** – It is [currently followed for OBCs](#).
- **Creamy Layer (CL)** – It refers to relatively affluent and better-educated members of a community.
- They are excluded from reservation benefits in government jobs and educational institutions.
- **Origing in India** - It was *stressed by Supreme Court in Indra Sawhney Case of 1992* to introduce the concept of 'Creamy layer' while providing reservation for OBCs.
- In 1993, **Ram Nandan committee** was constituted to identify creamy layer among OBCs.
 - Income criteria for CL in Backward Class – Rs.8 Lakh.

The term 'Creamy Layer' was introduced by the Sattanathan Commission in 1971.

Tamil Nadu Arunthathiyars Reservation Act, 2009 gave separate reservation of 3% to Arunthathiyar community.

Why sub-categorization of SC/ST is needed?

- There is increased push for extending the principles of sub-categorization of OBC to SC castes as well.
- **Diversity** – Scheduled caste list consists of diverse groups of caste, races, and tribes of varying level of backwardness.
- **Substantive equality** – Social position of the constituents among the castes/groups is not comparable and substantive equality seeks to address these inherent differences to ensure actual fairness.
- **Dominant group** – Despite reservation, some sub-castes are grossly underrepresented compared to other dominant SCs and STs.
- **Principle of the unequals** - Unequal's have to be treated unequally to bring "real equality".
- **Article 14** – Same law applies only to those who are "similarly situated".
- **Distributive justice** – To prevent concentration of the state resources with the same economically advanced section among SC's.
- Excluding those already benefitted enables the unreached strata to get the benefit.

- **Temporary nature of reservation** – Originally, it was envisaged as a temporary means to achieve social equality and excluding those benefited will reduce the need for reservation.

What are the challenges?

- **Constitutional issue** – States did not have the power to change the Presidential List of Scheduled Castes.
- Different socio-economic states – Same sub-caste will be at different socio economic position in different states and there will be confusion in state classification in central list.
- **Deciding the criteria** – Difficulties in finding the rational principle for sub classification.
- **Lack of caste Survey** – A quantifiable and demonstrable data is needed for providing more preferential treatment to a comparatively more downtrodden group within the class.
- **Vote bank politics** – It can lead to exploitation by political parties.
- **False exclusion** – Exclusion of deserving members of the dominant community from the benefit.
- **Rigidity of caste system** – Sub classifying the caste may strengthen caste hierarchy system.
- **Weak certification system** – Possibilities of obtaining non creamy layer certificates through fraudulent means.
- **Social vs Economic backwardness** - Special treatment is given to the Scheduled Caste because of the social injustice of untouchability that they have suffered through ages.
- Economic backwardness is temporary deprivation whereas the social backwardness is due to historical subjugation.

What is lies ahead?

- Ensure that the existing schemes & government benefits first reach these sections before any sub-categorisation as recommended by NCSC and NCST.
- Prevent the politicization of the issue.
- Conduct caste census to have concrete data to support sub-categorization.
- Ensure that the sub categorization does not affect the communal harmony among the community.
- Make special measures to identify the deprived in the excluded communities.

7.2 Credibility of SEBI

Why in news?

The Hindenburg Research has levelled allegations of conflict of interest against the chairperson Securities and Exchange Board of India (SEBI).

What is SEBI?

- **SEBI** – The Securities and Exchange Board of India (SEBI) is the regulatory body for securities and commodity market in India.
- **Establishment** – It was established in 1988 as an executive body and was given statutory powers in 1992 through the SEBI Act, 1992.
- **Objective**– It aims to protect the interests of investors in securities and to promote the development of, and to regulate the securities market and for matters connected therewith or incidental thereto.
- **Management** - It is managed by its board of members called as SEBI Board
 - **Chairman** - Nominated by the Union Government of India
 - **Two members** - From the Union Finance Ministry
 - **One member** - From the Reserve Bank of India

- **Remaining five members** – They are nominated by the Union Government of India, and out of them *at least three should be whole-time members*

What is credibility issue in SEBI management?

- There is an allegations of conflict of interest against the chairperson of SEBI.
- **Conflict of interests in SEBI** – It is any personal interest or association of a board member, which is likely to influence the decision of the Board in a matter, as viewed by an independent third party.
- Accepting gifts by Board members.
- Holding or having held any post, other employment or fiduciary position in the past five years.
- Dealing in shares based on unpublished price sensitive information.

How SEBI regulates conflict of interest of its board members?

- SEBI has introduced a separate code **for ‘Code on Conflict of Interests for Members of Board’**.
- It has been adopted by the Board in 2008.
- It aims to ensure that it conducts in a manner that does *not compromise its ability* to accomplish its mandate or undermine the public confidence in the ability of Member(s) to discharge his responsibilities.
- **Code** – It requires extensive disclosures and even provides a procedure for the public to raise conflict of interests.
- It provides that SEBI member shall take all steps necessary to ensure that any conflict of interest does not affect any decision of the Board.
- Disclosure of shares of the board member and their family holdings within 15 days of the assumption of Office.
- Disclosure of substantial transactions within 15 days of such a transaction.
- Members are not allowed to deal in shares based on unpublished price sensitive information.
- Members are not allowed to hold any other office of profit or professional activity.
- They are not allowed to accept any gift from a regulated entity and if received, it must be hand it over to the General Services Department of the SEBI.
- Disclose any post, other employment or fiduciary position” which they hold or have held in the past five years, in connection with any regulated entity.

What are challenges in ensuring credibility of SEBI?

- **Lack of Transparency** – As per the ‘Code on Conflict of Interests for Members of Board’ the disclosures shall be kept confidential, except in certain circumstances.
- This can lead to potential misconduct and cover-up by bad actors.
- **Circularity of the scrutiny** - SEBI chairperson determines if a member of the board has a conflict of interest and the board determines if the chair does.
- This process gives rise to the possibility of quid pro quo arrangements.
- **Regressive Lokpal amendment** – Statutory requirement under Lokpal and Lokayuktas Act, for public disclosure was removed in 2016.
- It was replaced with a clause empowering the Union government to make rules to determine the form and manner of disclosures.
- **Privacy issues** - Digital Personal Data Protection (DPDP) Act has amended the RTI Act to exempt all personal information from disclosure.

Lokpal and Lokayuktas Act, enacted in 2014, was the statutory requirement for public disclosure of the assets and liabilities of public servants, including those of their spouses and dependent children.

What lies ahead?

- Reform relevant codes and laws to ensure public disclosure of assets, liabilities and conflict of interest.

- Include family members, close relatives and other known persons in the disclosures.
- It shall include past associations of the person and family members with any listed companies.
- Ensure transparency in the functioning for SEBI management board.
- Institute impartial judicial or parliamentary enquiry to ensure fairness in the investigation.

Supreme Court has ruled that disclosure of information related to asset, liabilities and performance evaluations of public servants, all come within the scope of the privacy exemption.

7.3 Financial Health of Municipal Bodies

Why in News?

As the monsoon sweeps across India, Cities in particular, bear the brunt of the fury of rains and Municipal corporations find themselves perennially underprepared for these seasonal crises.

What are urban municipal bodies?

- **Urban Local Self-Governance** – It is a system of governance of urban areas through the representatives elected by the people.
- **Urban Municipalities** – They are *lowest unit of governance* in cities and towns.
- They are also known as *Urban Local Bodies* (ULBs)
- **Indian Constitution** - The *original constitution doesn't contain* the provisions for Municipal bodies.
- **74th Constitutional Amendment Act of 1992** established a framework for Municipalities
 - **Part** – IX A
 - **Articles** – 243P to 243ZG
- This amendment, also known as *Nagarpalika Act*, came into force on 1st June 1993.
- **Constitution of Municipalities** - **Article 243Q** deals with the constitution of Municipalities in urban areas in every state
 - **Nagar Panchayat** – For a transitional area, an area in transition from a rural area to an urban area.
 - **Municipal Council** – For a smaller urban area
 - **Municipal Corporation** – For a larger urban area
- According the constitutional mandate, they are constituted under specific laws enacted by the state legislature to govern cities, towns, and other urban localities.
- **Powers and functions** – They are constituted for *local planning, development and administration* in the urban areas.
- They are tasked with *providing essential civic amenities* such as water supply, sanitation, roads, public health, and urban planning within their jurisdiction.

How do they manage their finances?

- Fiscal governance – It involves managing revenue and expenditure to ensure **effective governance and service delivery** at the local level.
- State legislatures may authorize a Municipality to levy, collect, and appropriate taxes, duties, tolls, and fees.
- It may assign to a Municipality taxes, duties, tolls, and fees levied and collected by the State Government.

Revenue	Expenditure
<ul style="list-style-type: none"> • Tax Revenue • Non-tax Revenue • Other receipts • Shared Revenue • Grants in aid • Loans 	<ul style="list-style-type: none"> • Public Services • Social services • Infrastructure Development • Administrative costs • Maintenance Costs • Debt Servicing

Revenues Sources of Municipal Bodies

- **Tax revenues** – Property taxes, advertisement taxes, taxes on animals, vacant land taxes, taxes on carriages and carts.
- **Non-tax revenue** – User charges, municipal fees, sale and hire charges, lease amounts.

- **Other receipts** – Fees, fines, lapsed deposits, rent on tools and plants, e tc.
- **Shared revenue** – Entertainment tax, surcharges on stamp duty, professional tax, and motor vehicles tax.
- **Grants-in-aid** – Plan grants made available through planned transfers from upper tier of government under schemes.
- Non plan grants are made available to compensate for the loss of income and some specific transfers.
- **Loans** – They are borrowed for capital works from the central and state governments, banks and other government agencies.

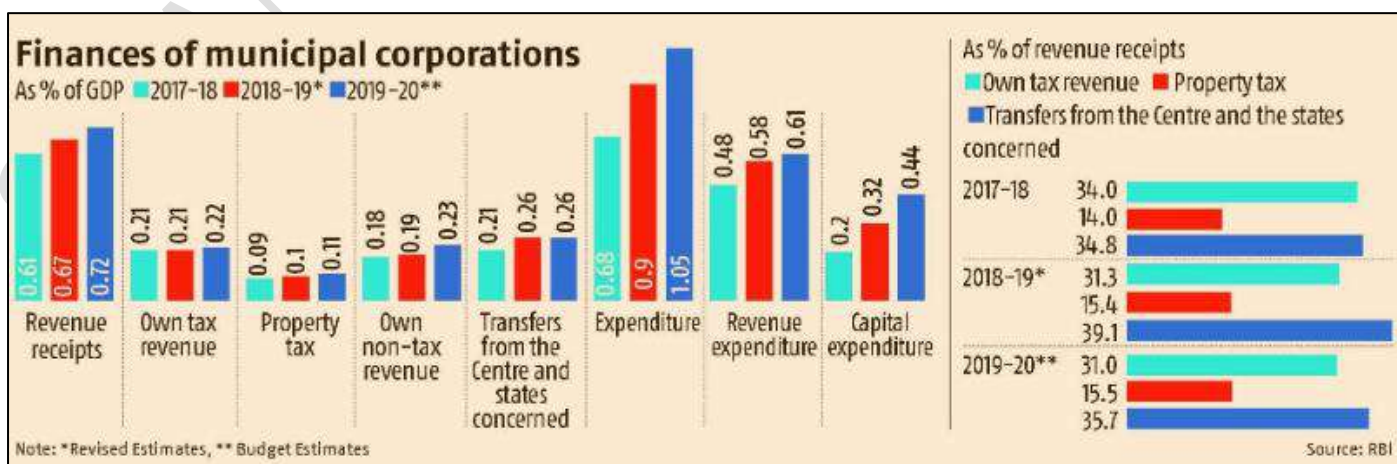
Expenditures of Municipal Bodies

- **Public services**- Funding for emergency services, waste management, street lighting, and public transportation.
- **Social services**- Funding for social programs such as housing subsidies, public health initiatives, and recreational facilities.
- **Infrastructure development**- Construction and maintenance of roads, bridges, public buildings, parks, and utilities like water and sewer systems.
- **Administrative costs**- Salaries, benefits, and operational expenses.
- **Debt servicing**- Payments towards interest and principal on loans and bonds issued.
- **Maintenance costs** - Regular maintenance of public facilities, and infrastructure to ensure longevity and safety.

What are their financial challenges?

- **Financial inadequacy** – Until 2019-20, municipal corporations’ revenue receipts accounted for *less than 1% of India’s GDP*.
- **Decline in own revenue collection** – ICRIER study reveals that municipalities’ ability to raise their own revenues saw a sharper *decline from 0.33% of GDP to 0.23%* in the same period.
- A significant portion of these revenues, nearly one third comes from their own tax revenue (OTRs), with property taxes constituting almost half of this segment.
- *Property tax figures dwarfed the entire OTRs* of municipal corporations in Delhi, Bangalore, Chennai, and Hyderabad.
- **Higher dependence on transfers** – Transfers from the central and state governments form a slightly larger share in revenue receipts than OTRs.
- The dependence on state and central transfers underscores a *persistent vulnerability*.
- **Impact of GST** - The implementation of Goods and Services Tax (GST) has *subsumed several taxes*, such as Octroi, which were the prerogative of municipal corporations, exacerbating their dependence on state and central transfers.

Property taxes contributed just 13.19% of revenue receipts for the Brihanmumbai Municipal Corporation (BMC), India’s wealthiest local body, over the past 5 years.



- **Lesser allocations** – While the 15th Finance Commission, in its 2nd report, recommended grants amounting to 4.36 trillion for local governments from 2021-22 to 2025-26, *up to 67% was earmarked for rural local bodies*.

- **Lower disbursement of funds** – The actual disbursement has *lagged recommendations by about 15%*, primarily due to municipalities failing to meet stipulated conditions, as per RBI report on municipal finances.
- **Non-constitution of SFCs** - Many states have not established State Finance Commissions in a timely and regular manner.
- **Insufficient capital expenditures** – Currently, capital expenditure constitutes about half of the total expenditure of most corporations, though it still *falls short in places like Chennai*.
- Capital expenditure, crucial for urban development and disaster preparedness, *remains a miniscule portion* of the country's economic size.

What lies ahead?

- *Increase the revenue assigned* to urban local bodies from states as they are highly vulnerable during extreme weather events.
- Reduce the regulation norms for disbursing the full allocated funds.
- Promote selling of municipal bonds.
- Form partnerships with private sector entities can bring in expertise and funding for infrastructure projects.

Municipal bonds are debt securities issued by municipal authorities to fund public projects such as infrastructure development, public schools, and utilities.

7.4 Statutory Regulatory Authorities (SRAs)

Why in news?

The recent allegations against the SEBI management board has brought to the fore the overall management issues in statutory bodies.

What are statutory regulatory authorities (SRAs)?

- **SRAs** - They are *government authorities* created under the *legislations of parliament and state legislatures*.
- **Powers** – They have the powers of
 - **The legislative** - Formulating regulations
 - **The executive** - Enforcing regulations
 - **The judiciary** - Quasi-judicial powers
- **Role** - It is to *regulate various economic and legal activities* in the country.
- They are created to ensure distance regulatory decisions from political considerations and efficient administration.
- **Apolitical administration** – It is *to ensure independence from "politics"* and to distance regulatory decisions from political considerations.
 - For instance, the interest rate set by RBI shall not be influenced by the electoral objectives of the incumbent political party.
- It is to make investigations and prosecution by investigation agencies at arm's length from politics.
 - **Example:** Central Bureau of Investigation (CBI)
- **Administrative Efficiency** - Technical expertise and subject matter knowledge of the regulated domain is integrated with civil administration through regulatory bodies.

Functions of Self Regulating Authorities

- ✦ Industry Specialised Knowledge- Direct Market Contact
- ✦ Industry Motivation- Direct Substantial Involvement
- ✦ Contractual Relationship- Efficient Control over Players
- ✦ Transparency & Accountability- Accessibility to Public
- ✦ Flexible Compliance Programs- Responses to changes
- ✦ Coordination & Information Sharing- Better Framework

What are the various SRA in India?

- In India – There are *over 20 SRAs at the Union level*, spanning sectors such as finance, telecommunications, electricity, water, food safety etc.

Sectors	Regulatory Bodies
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Banking	<ul style="list-style-type: none"> • Reserve Bank of India-RBI Act, 1934 • Small Industries Development Bank of India- SIDBI Act, 1990 • National Bank for Agriculture and Rural Development-NABARD Act, 1982
Capital Market	<ul style="list-style-type: none"> • Securities and Exchange Board of India-SEBI Act 1992
Insurance	<ul style="list-style-type: none"> • Insurance Regulatory and Development Authority of India-IRDA Act, 1999
Pension	<ul style="list-style-type: none"> • Pension Fund Regulatory & Development Authority-PFRDA Act, 2013
Information, Communication and Technology	<ul style="list-style-type: none"> • Telecom Regulatory Authority of India-TRAI Act , 1997
Quality Standards – Food, Pharmaceuticals	<ul style="list-style-type: none"> • Food Safety and Standards Authority of India-FSSAI Act, 2006 • Bureau of Indian Standards-BIS Act, 1986 • Central Drugs Standard Control Organisation-Drugs and Cosmetics Act, 1940

What are the issues in SRA management?

- **Lack of autonomy** – Appointment and Removal of Chairperson and members are done by the executive government and the subordinates by SRA, with different degrees of government involvement.
- Investigation of SRA members by executive investigation agencies like CBI and CVC affect their independent functioning.
- **Dominance of government officials** – The senior level people in almost all SRAs are largely former/serving government officials.
- In part, this is because the appointment process is dominated by the executive government with nominal external expert participation.
- **Inconsistency in service conditions** - The tenures and service conditions of many of the chairperson and board members are *varying and unpredictable*.
- **Wide discretion** – *Lack of specificity* in the provisions of statutory bodies.
 - *RBI Act* simply says that the governor of the RBI can be removed by the government.
 - Whole-time members & chairman of the *SEBI* can be removed by the government, if there is anything that renders their continuation detrimental to the public interest.
- **Inadequate provisions** - *Lack of process definition* in the statutory laws to deal with disciplinary matters and alleged misdemeanours of SRA functionaries.
- **Conflict of Interest** – Appointment of industrial person of same sector in the management of regulatory bodies often causes conflict of interest between their personal interest and activities of the body.

SRAs in India directly regulate over 75% of India's gross domestic product

CCI law is the only SRA legislation that requires an inquiry by a Supreme Court judge (like for UPSC members) before removal.

What lies ahead?

- *Institute oversight mechanisms* for regulators, who oversee markets, without compromising their autonomy.
- *Ensure autonomy* in the processes of appointment, discipline and removal of chairperson and member of the body.
- *Ensure security of tenure and service* conditions to the regulatory authorities.
- Form commissions like Financial Sector Legislative Reforms Commission to frame codes like Indian Financial code for other sectors also.
- Create *separate frameworks for discipline and integrity* of non-civilian board members but based on the same underlying principles of civil servant.
- Appoint more independent persons as board members.
- Ensure accountability through clarity of functions and role and ensure audit by the Comptroller and Auditor General of India.

7.5 Governance of New Delhi

Why in news?

The Supreme Court has ruled that the Lieutenant Governor (LG) of the National Capital Territory (NCT) of Delhi can nominate 10 aldermen to the Municipal Corporation of Delhi (MCD) on his own without the aid and advice of its council of ministers.

How is Delhi governed?

- **Before independence** - *In 1911*, Delhi was made the capital of India by the colonial British government.
- **Post-independence** – At the time of the commencement of the Constitution in **1950**, it was a Part C State of Chief Commissioner's Province.
- **Establishment of legislature** – The Government of Part C States Act 1951 established a Legislative Assembly in Delhi.
- **UT Status** - During the States reorganization in 1956, it was made a Union Territory by the **7th Constitutional amendment act, 1956**.
- It also abolished its Legislative Assembly & Legislative Council.
- **Metropolitan Council** – It was set up the **Delhi Administration Act, 1966**, for providing a representative government in Delhi.
- **Special Status** - As per the recommendations of the Balakrishnan committee, the **69th constitutional amendment (1991)** was enacted to grant special status to Delhi.

In 1989, the Balakrishnan Committee was set up by the Union Government recommended that Delhi should continue to remain a Union Territory. It also suggested to assign a special status along with institution of a legislative assembly for Delhi.

69th Constitutional Amendment, 1991

- **Constitutional changes** - It inserted **Article 239AA and 239 AB**, under Part VIII of the constitution
 - **Renaming** – Union territory of Delhi as the National Capital Territory of Delhi.
 - **Administrator** – He/she was designated as the Lieutenant Governor.
 - **Legislature** – It provided a Legislative Assembly and council of ministers for the NCT of Delhi.
 - Their seats are filled by members elected directly from territorial constituencies within the NCT.
 - **Chief Minister** – He/ She to be *appointed by the President* and other Ministers are appointed by the President on the advice of the Chief Minister.
 - Ministers hold office during the pleasure of the President.
 - **Supremacy of Union** – Subjects of public order, police and land were excluded from the Delhi government and Union government has control over them.
 - **Article 239AB** laid out provisions that would come into force in case of the failure of constitutional machinery in Delhi.
 - It outlines the discretionary powers of the LG, and the Chief Minister's duty to provide information to the LG.
- **Enlargement of discretion powers of LG** - National Capital Territory (Amendment) Act 2023 was enacted to empower the LG to exercise his *sole discretion on several matters* including
 - Those recommended by the National Capital Civil Services Authority and summoning, prorogation & dissolution of the Delhi Legislative Assembly

What are the federal issues in Delhi Administration?

- The National Capital Territory of Delhi enjoys a peculiar federal status with features of both a State and a Union Territory.
- **Constitutional position of LG** – The power and functions of LG in *matters of 'Aid and Advice' and 'Concurrence'* often comes in conflict with Council of Ministers head by Chief Minister of Delhi.
- **Presidential reference** - *Lack of Clarity in Article 239 AA* with respect to referring matters to the President.
- **Power of nomination** - Nomination of 10 aldermen to the Municipal Corporation of Delhi (MCD) by Lieutenant Governor.

- **Control of civil service**– The power to appoint and regulate the service matters of Delhi servants often conflicted by the Delhi Chief Minister and Lieutenant Governor.
- The recent Delhi Services Bill proposes to establish National Capital Civil Services Authority, wherein again dilutes the Delhi's autonomy.
- The constant tussle between various layers of government ruptures such a chain of accountability.

Case / Amendment	Brief description	Implication
Govt of NCT of Delhi vs Union of India (UOI) (2016)	The Delhi High Court ruled that the LG of Delhi exercised complete control of all matters relating to the NCT of Delhi	It made the appointed LG the executive head, reducing the powers of the elected government of Delhi
Govt of NCT of Delhi vs UOI (2018)	On appeal against the Delhi HC judgment, the Supreme Court held that the LG was bound by the 'aid and advice' of the council of ministers headed by the Chief Minister of Delhi except on matters relating to public order, police and land	This restored the powers of the elected government of the NCT of Delhi in matters of day-to-day administration
Government of NCT of Delhi (Amendment) Act, 2021	It required the council of ministers to obtain the opinion of the LG before any executive action on matters specified by the LG	This amendment tilted the balance of power again in favour of the LG
Govt of NCT of Delhi vs UOI (2023)	A Constitution Bench of the Supreme Court in May 2023 had held that the Delhi assembly and government shall have legislative and executive powers over 'services' except in relation to public order, police and land	This restored the powers of the elected government of the NCT of Delhi in matters of day-to-day administration including postings and transfers.
Government of NCT of Delhi (Amendment) Act, 2023	It created the National Capital Civil Service Authority for deciding on matters relating to 'services'. This authority will consist of the Chief Minister, the Chief Secretary and the Home Secretary of Delhi	This had the effect of again reducing the importance of the elected government and Chief Minister in decisions relating to 'services'

What lies ahead?

- **Ensuring the triple chain of accountability** – It was mentioned in spirit of the judgment of the Supreme Court in 2023
 - The officials are accountable to the ministers
 - The council of ministers are collectively responsible to the legislative assembly
 - The legislative assembly members are accountable to the people
- **Territorial reorganization** - The portion of capital territory of 'New Delhi' that houses most of the central government offices and foreign embassies could be brought under the complete control of the Centre along the lines of U.S. capital district of Washington DC.
- The rest of the areas may be brought under the powers of the Delhi assembly.
- **Promote cooperation** - Promote cooperation among the governments of Union, Union Territory and Local government.
- Ensure that the powers of government elected by people is not eroded.

7.6 SDG Financial Gap

Why in News?

In the recently held 'Voice of Global South Summit', Union Finance Minister raised the issue of the SDG-financing gap faced by developing countries.

What is SDG?

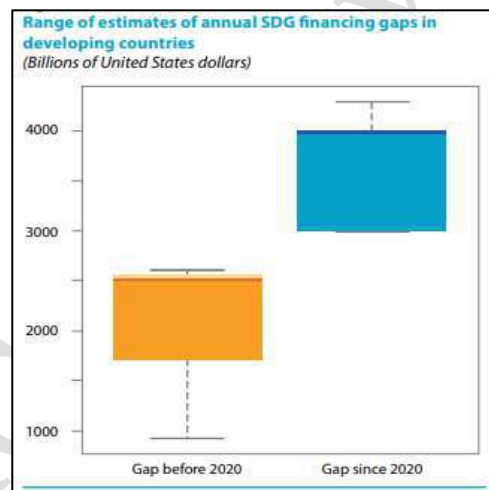
- **SDGs**- Sustainable Development Goals are objectives established by the United Nations in 2015 to address major global challenges by 2030.
- It is officially known as 'Transforming our world: the 2030 Agenda for Sustainable Development', a set of 17 Goals with 169 targets.
- **Purpose**- To create a more equitable, sustainable world by tackling issues like poverty, inequality, climate change, environmental degradation, and justice.

- The SDGs framework sets targets for **231 unique indicators** related to economic development, social welfare and environmental sustainability.
- **India**– It is a **signatory** and has committed to achieve these goals.

In the 4th edition of SDG India Index by Niti Aayog, India had made progress, obtaining a score of 71 in 2023-24, up from 66 in 2020-21 and 57 in 2018.

What is SDG financial gap?

- Achieving the economic transitions needed to reach the SDGs will **require investments at unprecedented scale**.
- **Investment needs**- Developing countries need **approximately 4 trillion USD annually**.
- Over 2 trillion USD is required specifically for energy transition (SDGs 7 and 13).
- Sizeable capital expenditure is required also in water, sanitation, and infrastructure.
- **SDG financing gaps**- **Investments are failing** to meet required levels.
- SDG financing and investment gaps are estimated **between USD 2.5 trillion and USD 4 trillion annually** as per the 'UN's 2024 Financing for Sustainable Development Report (**FSDR 2024**)'.
- **Debt pressures**– Most financing is in the form of non-concessional loans, adding to debt pressures.
- **Debt servicing vs. Climate adaptation**- **60% of low-income countries** spend each year **around five times more on debt servicing** than on climate adaptation.
- **Insufficient climate-finance** - Despite developed countries met their climate-finance targets for the first time in 2022 by raising 115.9 billion USD, yet they are insufficient for meeting all Nationally Determined Contributions.



What are the other reasons for lagging in achievement of SDGs?

- With just six years remaining, the current progress for most developing countries falls short of what is required to meet the SDGs.
- Not a single one of the 17 goals is on track to be achieved by the 2030 deadline.
- **Weak political commitment**- Inconsistent commitment from governments can hinder progress, especially in countries where political instability prevails.
- **Inadequate data collection**- Reliable and comprehensive data is often lacking, making it difficult to measure progress accurately.
- **Climate change**- Ongoing environmental challenges and climate change impact various SDGs, making it difficult to achieve targets related to clean water, health, and sustainable cities.
- **Lack of institutional capacity**- Many countries lack the institutional capacity to effectively implement and manage SDG-related programs.

How India manages its financial needs for SDG?

- **Budgetary allocations**- Indian government allocates funds to SDG-related initiatives through its **national budgets and NITI Aayog plans**.
- Each plan outlines specific goals and the associated financial requirements.
- Both **central and state governments** contribute to SDG financing, with various **schemes and programs** designed to address specific goals such as poverty alleviation, education, and health.
- **Collaborations**- India encourages **partnerships between the public sector and private companies** to leverage additional resources and expertise.
- **Corporate social responsibility funding** - Under the Companies Act, large corporations are required to invest a portion of their profits into social and environmental initiatives, which can support SDG-related projects.
- **Foreign aid and grants**- India receives financial assistance from international organizations, development agencies and other bilateral and multilateral donors.

According to the International Monetary Fund's report, India's investment needs to meet its climate-change adaptation, and mitigation targets are sizable, estimated at 4-8% of gross domestic product per year.

- **FSDR 2024 report** – *India is benefiting* from growing interest from multinationals, which see India as an *alternative manufacturing base* in the context of developed economies' supply chain diversification strategies.
- **Development loans**- India often takes concessional loans from international financial institutions to fund large-scale projects related to SDGs.
- *National Development Bank* is planning to issue 30% cent of its loans in national currencies between 2022 and 2026, including South African rand and *Indian rupee denominated bonds*.
- **Green bonds**- India has *introduced green bonds to raise funds* for environmentally sustainable projects, supporting goals related to climate action and clean energy.
- **Dedicated institutions**- Institutions like the NITI Aayog play a crucial role in coordinating SDG efforts, monitoring progress, and advising on resource management.

What lies ahead?

- Close financing gaps for SDG/climate investments (both public and private) at scale and with urgency.
- Close policy and architecture gaps, and reform international institutions.
- Close credibility gaps and trust deficits both international and domestically.
- Formulate and finance new development pathways.
- Effective *management of public debt and deficit* is crucial, with a focus on directing government spending towards developmental goals.

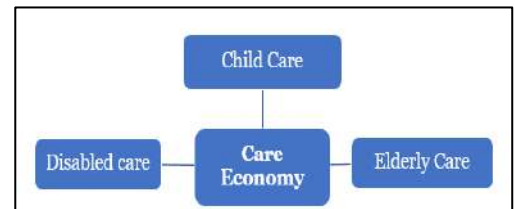
7.7 Care Ecosystem

Why in news?

Recently, the need for addressing low female labour force participation rate (LFPR) through care economy has been highlighted.

What is Care Ecosystem?

- **Care economy** – It comprises of care work, *both paid and unpaid*, and direct and indirect care, provided within and outside the household.
- **Direct Care** – These are personal, and relational care activities, such as feeding a baby.
- **Indirect care** – It include activities like cooking and cleaning.
- **Unpaid care** – These are caring work without monetary compensation.
 - For example, nursing an ill partner or cooking for a family member.
- **Paid care** – It includes those works for exchange of some form of remuneration.
 - For example, services offered by domestic workers.
- Care workers are hired directly by families or through placement agencies, nursing bureaus, hospitals, home healthcare companies, and not-for-profit organisations, among others.



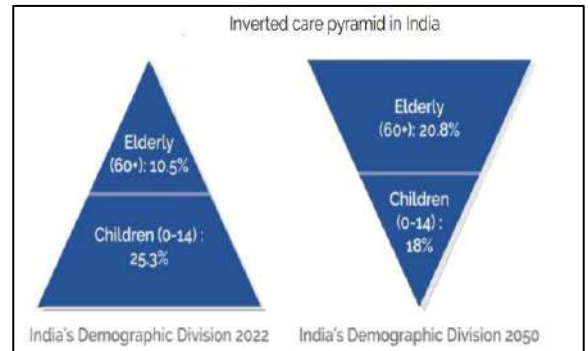
Why care economy is important?

- **Protecting depending population** – It helps in addressing the demand for childcare and care for the elderly increasing in all regions.
- **Addressing demographic change** - India's demographic landscape is expected to change between 2020 to 2050, necessitating more elderly care.
- **Facilitating for demand** - The demand for external support in the form of hired caregivers is rising in urban and peri-urban areas.
- **Meeting changing societal structure** - As India's economy undergoes rapid transformation, our society is also increasingly urbanizing and nuclearizing at an unprecedented rate.

- People are moving from villages to cities and the joint family structure is being replaced by smaller nuclear entities.
- **Higher economic potential** – Investments in establishing care infrastructure and care services can unlock economic potential for India's economy
- It can create new business opportunities and can generate jobs, especially for women.

What is the status of Indian women in care economy?

- Healthy development of the care economy in India is necessary to support the primary caregivers in our society.
- Women are primary caregivers across the life course of household members.
- **Women in care economy** – As of 2022, 36.5% of females were employed as unpaid family workers as related to 9.3% of males.
- 37.5% of FLFPR comprises of women who are not paid for the work they do, which is separate from domestic work.
- The difference between female and male unpaid family labour employment is higher in rural areas than in urban areas.
- Women aged 15-64 years spend about three times more time daily than men in unpaid domestic work.
- Economic value of women's unpaid domestic and care work in India ranges between 15% - 17% of GDP.
- For women to participate in the economy, their care responsibilities need to shift elsewhere.
- **Challenges** - There are no standardised processes and it lacks minimum wages, employment standards, safety and security measures, and quality standards for care by hired workers.
- **Steps to offload women's care responsibilities**
 - Reduce unpaid family labour employment
 - Relief from unpaid domestic work
 - Reduce Domestic Care Burden



What are the measures taken in India?

- **Anganwadi network** - Some State governments have focused on building support services through the existing Anganwadi network.
- **Increased budget allocation** - In the 2024-25 Budget, there has been a 3% increase in the Ministry of Women and Child Development's budget for the integrated childcare and nutrition programme (Saksham Anganwadi and Poshan 2.0 scheme).
- **Community based Crèches** - Crèches for children are operational with partnership between government and non-government bodies.
- **Skilling and certification** – Various apex bodies are involved in the skilling and certification of different cadres of care workers.
 - Home Management and Care Givers Sector Skill Council (earlier Domestic Workers Sector Skill)
 - Healthcare Sector Skill Council
 - National Skill Development Corporation
- **International coordination** - The ILO Resolution on Decent Work and the Care Economy was adopted by the International Labour Conference during its 112th Session, in June 2024.
 - G20 Bali Care Economy Dialogue, have provided comprehensive recommendations to governments.
- **Delhi Declaration** – It was prepared under India's leadership of G20 in 2023 that calls upon the G20 countries to
 - Promote investment in the availability and accessibility of social protection, and to affordable care infrastructure
 - Address the unequal distribution in paid and unpaid care and domestic work
 - Promote the continued participation of women in education and employment

What lies ahead?

- Formulate a comprehensive policy to define the care ecosystem from a life course perspective.
- Review the existing models of Community based Creches for replicability, financial sustainability, and scalability.
- Develop a more widespread network of creches suitable to the local context and populace is required in rural, tribal, and urban areas to facilitate the participation of women in the workforce.
- Developing a needs-based assessment of the mix of care services required across age groups, socio-economic status, and geographies.
- Address the gap in the training, skilling, and certification of a mix of care workers.
- Map supply-side actors and institutions including the public, private, and non-profit sectors.

Quick Facts

Female Labour Force Participation

- **LFPR** - Labour Force Participation Rate denotes the percentage of persons in labour force (i.e. working or seeking or available for work) in the population.
- It consists of both employed and unemployed individuals, but not those who are inactive (due to education, discouragement, caring duties, retirement, disability, etc.)
- **FLFPR** – It is the percentage of women aged 15 and older who are economically active.
- It indicates how many women are part of the labour force
- **FLFPR in India** - According to the Economic Survey 2023-24, the FLFPR in India was 37% (2022-23) against a world average of 47.8% (2022).
- **Recent trends** - FLFPR increased from 23.3% in 2017-18 to 37% in 2022 and there is upward trend of female LFPR from 24.6% in 2018 to 36.6% in 2022 in rural India.

7.8 Death Penalty for Rape

Why in news?

After the brutal rape and murder of a doctor on duty at a Medical College and Hospital, there has been increased voices seeking the death penalty for the accused.

What are the penal provisions against rape crime?

- **Definition of Rape** - Section 63 of [Bhartiya Nyaya Sanhita](#) (BNS) has extensively defined the act of rape under various circumstances including against will, with or without consent.
- In India, rape is the fourth leading crime against women.
 - **NCRB** – Crimes against women increased to 4,45,256 in 2022 from 4,28,278 in 2021 in India
 - 7.1% of total crimes against women are rape and 18.7 % cases are assault with intent to outrage modesty.
- **Punishment for rape** – **Section 64** of BNS provides for minimum 10 years of imprisonment.
- **Section 69** of BNS provides 10 years of imprisonment for having intercourse with a woman by deceitful means or by making a promise to marry a woman without any real intention.
- **Rigorous imprisonment** - Section 66 of BNS provides for rigorous imprisonment of minimum 20 years and Section 65 be invoked for rape on a woman under 16 years of age.
- **Life imprisonment** - Anyone found guilty of rape more than once punished with imprisonment for life.
- **Death penalty** – **Section 66** of BNS for causing death or resulting in persistent vegetative state of victim.
- Section 65 of BNS provides Death sentence for rape on a woman under 12 years of age.
- **Sections 64, 65 and 70(2)** of BNS provides death penalty for gang rape of a woman under the age of 18.

- **Exception to marital rape** - Section 63 of BNS states that sexual intercourse or acts by a man with his wife, the wife not being under 18 years of age, is not rape.

Why rape convicts need capital punishments?

- **Need of death penalty** –A death penalty is a legal process in which a person is executed as a punishment for a crime by the state.
- Sexual crimes violates the victim's fundamental right of right to life and personal liberty under **Article 21** of the Indian Constitution.
- It violates the victim's body, mind, and privacy.
- For the same reason, India has been labelled as the most hazardous country for women.
- **Previous instances** - In ***Laxman Naik v. State of Orissa (1994)***, a 7-year-old girl was sexually abused by her uncle, where the perpetrator was sentenced to death.
- The Nirbhaya Gang Rape case 2013, also known as the ***Delhi Gang Rape case***, is a well-known example of capital punishment.

According to courts in India, death sentences contradicts Articles 19, 20, and 21 of the Indian Constitution. However, it is acceptable for offences such as waging or attempting to wage war against the government of India, murder, dacoity with murder, criminal conspiracy, etc.

What are the issues with death sentence for rape?

- In situations of rape, capital punishment is a contentious subject in India and it involves deep rooted complexities and implications.
- **Ineffective deterrence** - Empirical evidence suggests that the threat of execution does not effectively deter criminals from committing rape
 - In Iran, where the regime imposes severe penalties for rape, has higher sex crime rates than India.
- **Complex nature of rape** - The motivations behind sexual violence are complex and often intertwined with deep-seated issues like power dynamics, misogyny, and societal norms that devalue women.
- **Fails to address core factors** - The simplistic notion that harsher punishments will scare potential offenders into compliance fails to address the underlying social causes.
- **False sense of security** - It risks creating a false sense of security, diverting attention from the need for comprehensive prevention strategies that tackle the root causes of sexual violence.
- **Reinforces patriarchal structure** - The use of capital punishment in rape cases can inadvertently reinforce the very patriarchal structures that contribute to gender-based violence.
- **Victim killing** - Introduction of capital punishment could lead to an increase in victim killings, as perpetrators might resort to murder to eliminate witnesses.

According to the Working Group on Human Rights, the murder rate has declined consistently in India over the last 20 years despite the slowdown in the execution of death sentences since 1980.

What lies ahead?

- Focus on rehabilitation and societal change to address the systematic challenges against rape.
- Make broader legal and cultural reforms that address gender inequality, challenge harmful norms, and promote respect for women's rights.

Verma Committee on Death Penalty for Rape Cases

- **Justice Verma Committee** - It was constituted to recommend amendments to the Criminal Law to provide for quicker trial and enhanced punishment in sexual assault against women which submitted its report in 2013.
- **Recommendation** - It did ***not recommend death penalty*** for rape even for the rarest of rare cases as it would be a regressive step in the field of sentencing and reformation.
- It does *not necessarily act as a deterrent* against such crimes and does not address social foundation of rape.
- **Alternatives** – Increase the sentence from 7 years to 10 years, 20 years, and life, but “short of death”.
- For crimes making a person to be in a persistent vegetative state, shall be punished with rigorous imprisonment for rest of natural life.

8. BILATERAL ISSUES

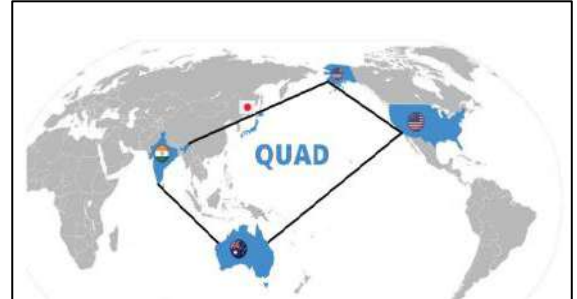
8.1 QUAD Foreign Minister's Meet 2024

Why in news

Recently, the Quad Foreign Ministers met in Tokyo to reaffirm their commitment to the international order and enhance stability and prosperity in the Indo-Pacific.

What is QUAD?

- **QUAD-** Quadrilateral Security Dialogue, is an *informal strategic forum of security*.
- **Establishment-** It was established **in 2007**, which was first proposed by Japanese Prime Minister Shinzo Abe.
- The group met for the first time in 2007 on the sidelines of the Association of South East Asian Nations (ASEAN).
- **Objectives-** To keep *Indo-Pacific Sea routes free* from military or political influence and counter Chinese dominance.
- To promote a rules-based global order, freedom of navigation, and work for a free, open, prosperous and inclusive Indo-Pacific region.
- **Members-** USA, India, Australia, and Japan.



The United States will host the next Quad Foreign Ministers' meeting in 2025.

India to host QUAD Summit 2024

What are key affirmations in the meeting?

- **UN Charter-** It reviewed progress from previous Quad meetings, reaffirming commitment to the UN Charter, *a free and open Indo-Pacific, and sustainable development goals*.
- **Women participation** – They affirmed the important role of women and girls in the *prevention and resolution of conflicts* and in peacebuilding.
- **Health Security** – As part of commitment under the **Quad Health Security Partnership**, the Quad efforts in 2024 include training for public health specialists from Southeast Asia to build capability to respond to regional health emergencies.
- **Information environment** - They reaffirmed to protect the information environment by *supporting media freedom* as well as addressing foreign information manipulation and interference.
- **Emerging technologies-** It also focused on *critical and emerging* technologies (CET), and cyber security.
- They welcome the establishment of the **Quad Cyber Ambassadors Meeting** and intend to accelerate their capacity building projects such as
 - The conference on cyber capacity building in the Philippines
 - The forthcoming **Quad Cyber Bootcamp in India.**
- **Space technologies** – They recognized the essential *contribution of space-related applications* and technologies in the Indo-Pacific.
- We call upon all States to contribute to the safe, peaceful, responsible, and *sustainable use of outer space*.
- **Climate crisis** – They recognized the urgent need to address the climate crisis and recall their commitment to the Quad Statement of Principles on *Clean Energy Supply Chains* in the Indo-Pacific, and the Clean Energy Supply Chains initiative.
- **SDG** – They affirmed in their *commitment to the full implementation* of the 2030 Agenda for Sustainable Development in a comprehensive manner that is balanced across 3 dimensions – economic, social and environmental.
- **Gaza ceasefire** – They **welcomed UNSC Resolution S/RES/2735** (2024), and strongly urge all parties concerned to work immediately and steadily toward the release of all hostages and an immediate ceasefire.
- **Supporting ASEAN's role** - They reaffirmed their strong support for ASEAN leadership in seeking a resolution to the Myanmar crisis, including through the implementation of

Under the Quad Climate Change Adaptation and Mitigation Package (Q-CHAMP), QUAD nations continue to work together with Indo-Pacific partners to enhance climate and clean energy cooperation as well as promote adaptation and resilience to climate impact.

- The Five-Point Consensus
- The constructive efforts of the ASEAN Chair and ASEAN Special Envoy to Myanmar
- **Humanitarian assistance** - It was identified as a critical area for collaboration, reaffirming the importance of ASEAN centrality in regional affairs.
- **Maritime conflicts**- It covered East and South China Sea maritime conflicts and planned a Quad maritime legal dialogue.
- **Connectivity** – They reaffirmed their commitment to improving the region’s connectivity through the development of resilient infrastructure like Quad Partnership for Cable Connectivity and Resilience, including the establishment of the
 - Cable Connectivity and Resilience Centre in Australia
 - Training of over 1,000 telecom officials and executives in the region under the United States CABLES program
- They also applaud the expansion of Quad Infrastructure Fellowships to more than 2,200 for project developers and managers in the Indo-Pacific.

What are the concerns expressed in the summit?

Ukraine Crisis	It demands a just peace in Ukraine, condemns force, <u>and stresses humanitarian aid</u> and international law.
North Korea	It condemns North Korea's missile and nuclear activities, <u>urging adherence to UN Security Council denuclearization</u> resolutions.
Myanmar Situation	It urges an <u>end to violence in Myanmar</u> , backing ASEAN’s peace efforts and addressing regional issues like cybercrime and human trafficking.
Middle East Peace	It condemns Middle East terrorism, <u>supports Gaza humanitarian aid</u> , and advocates for a two-state solution for Israel and Palestine.
Red Sea Security	It condemns attacks by Houthis on vessels in the Red Sea, emphasizing the importance of <u>navigational rights and safety</u> .

What lies ahead?

- Evolve partnership that delivers outcomes and offers solutions to regional and international challenges.
- Continue to focus on reinforcing regional collaboration and exploring new avenues for cooperation for extending benefits beyond the Quad nations to the broader international community.

8.2 India-Vietnam Bilateral Relationship

Why in news?

During the recent visit of the Vietnamese PM to India, both nations signed many agreements to deepen strategic partnership and enhance cooperation.

What are the key highlights of Vietnam’s PM’s visit to India?

- They have signed nine agreements in the fields of customs, agriculture, legal, radio and television broadcast, culture and tourism.
- **Strategic partnership** – They signed the Plan of Action for the implementation of the Comprehensive Strategic Partnership for the period of **2024-2028**.
- **Strengthen bilateral dialogue** – It also includes the Joint Commission for Economic, Trade, Scientific and Technological Cooperation for mutual benefit.
- **G & B cooperation** – Both agreed to reinforce cooperation at the level of governments and businesses for increasing two-way trade, investment and technological partnership.

- **Removing trade barriers** – Both concurred that the ongoing review of the [ASEAN-India Trade in Goods Agreement](#) should generate a more user-friendly, simple and trade-facilitative regime for both countries.
- **Investments** – Both agreed to continue efforts to promote investment flows between the two countries.
- **Defence cooperation** – Both commended the effective implementation of [the Joint Vision Statement on India-Viet Nam Defence Partnership towards 2030](#).
- An **Army Software Park** was established in Vietnam with the support of the Government of India.
- **National Maritime Heritage Complex**- Both have signed a MoU to develop the National Maritime Heritage Complex (NMHC) in *Lothal, Gujarat* to showcase historical ties through artifact exchanges, technological collaboration, and educational initiatives.
- It will feature a [world-class lighthouse museum](#), the largest open aquatic gallery, and India's grandest naval museum, among others.
- **Economic Ties**- The leaders discussed enhancing bilateral trade, aiming to increase it from *\$14.8 billion to \$20 billion*.
- **Fintech** – Both encouraged the development of a framework to promote bilateral cooperation in financial innovation and digital payments.
- **Maritime Security**- They unveiled new initiatives, including a [\\$300 million credit line for Vietnam's maritime security](#).
- **Education** - The ***Centre of Excellence for Software Development and Training*** was established in Ho Chi Minh City, Vietnam, with Indian cooperation.
- **South China Sea**- The visit underscores both countries' commitment to [strategic autonomy and multi-alignment amidst regional tensions](#), particularly concerning China's influence in the South China Sea.
- **Strengthening ASEAN-India ties** - The leaders appreciated the [ASEAN-India Joint Statement on Cooperation](#) on the [ASEAN Outlook on the Indo-Pacific \(AOIP\)](#) for Peace, Stability, and Prosperity in the Region.

What are the pillars of the India-Vietnam Relationship?

- **Political Relations**- India and Vietnam upgraded their relationship to a [Comprehensive Strategic Partnership in 2016](#) reflecting their strong political ties and mutual commitment.
- There have been regular high-level exchanges between the two countries.
- **Trade Relations**- India and Vietnam have seen significant growth in *bilateral trade, reaching around USD 15 billion* in recent years.
- India's exports to Vietnam amounted to *USD 5.47 billion*, and *Vietnam's exports to India were USD 9.35 billion*.
- **Bilateral investments**—[India's investments in Vietnam](#) include infrastructure, technology, industries, agriculture, innovation and startups, semi-conductors, renewable energy and electricity generation, biogas and polyester fabrics, among others.
- [Vietnam's investments in India](#) include agriculture, agro-processing, aquaculture, wood processing, bamboo and forestry products, hospitality and tourism, e-vehicles, healthcare and services in India.
- **Defence** - India and Vietnam have robust Defence ties.
- India has provided Vietnam with Defence equipment and training and both have conducted *joint naval exercises 'VINBAX'*.
- **Education and capacity building** - Bilateral development cooperation under the framework of ***Mekong-Ganga Cooperation*** through quick impact projects, ITEC training and educational scholarships.
- **Mutual support in the global arena** - Both collaborate in various international forums, including the [United Nations and the World Trade Organization](#).
- Vietnam supports India's membership in UN Security Council.
- **Maritime security** - Both countries have a shared interest in maintaining freedom of navigation in the South China Sea, where Vietnam has ongoing territorial disputes with China.
- **ASEAN ties** - Both countries work closely within the framework of ASEAN to address regional challenges and enhance economic integration.

The 2024 visit of the Vietnam Prime Minister to India marks the first time a Vietnamese PM has travelled to India in a decade.

- India supports Vietnam's role in ASEAN and its contributions to regional stability.
- **Connectivity**—There has been an *increase in direct flights* between the two countries, which has expanded two-way travel and tourism flows.
- **Indian Diaspora** - The Indian community in Vietnam numbers around 8500, and the majority of them are based in and around *Ho Chi Minh City (HCMC)*, with a couple of thousand living in and around Hanoi.



What is the significance of the India-Vietnam relationship?

- Vietnam's location in Southeast Asia positions it as a *crucial partner for India in balancing China's growing influence in the region*.
- Vietnam is a rapidly growing economy, and India-Vietnam bilateral trade has reached 15 billion US dollars.
- The current geopolitical realities call for closer cooperation between New Delhi and Hanoi.
- Their collaboration among institutions can *voice issues of interest to the Global South*.
- Greater student, faculty and research exchanges between universities, think tanks and other institutions of the two countries are in the line of
 - India's 'Viksit Bharat @ 2047' and
 - Viet Nam's vision to become a high-income developed country by 2045
- Indian PM has said Vietnam is an *"important partner" in India's Act East Policy and Indo-Pacific vision*.
- Enhanced defence cooperation based on mutual interest and priorities of the two countries will contribute to greater *stability in the wider Indo-Pacific region*.

8.3 Bangladesh Crisis and its Impact on India

Why in News?

In Bangladesh, Sheikh Hasina had resigned as Prime Minister and fled the country as the army took control.

What are the reasons for crisis in Bangladesh?

- **Political causes** – Consecutive elections in 2014, 2018, and 2024 were allegedly rigged with the opposition either boycotting or being forced out of the contest following crackdowns.
- **Undemocratic governance** - The personal authoritarianism of Hasina, once seen as an icon for democracy, has grown steadily over the years
 - Mass arrests of political opponents, activists, and dissidents
 - Forced disappearances and alleged extrajudicial killings
 - Crackdown on press freedoms, NGOs, and critics, including Nobel laureate Muhammad Yunus.
- **Biased quota system in jobs** - In a time of economic distress and acute job scarcity, the restoration of a 30% quota in coveted government jobs for freedom fighters and their progeny.
- It unleashed waves of protests by students and young people.
- **Infiltration of terrorist forces** – The ranks of the protesting students had been infiltrated by cadres of the Jamaat-e-Islami and other Islamist forces.
- **Impact of Covid pandemic** – It had hit the Bangladeshi economy hard and stalled its celebrated growth model.
- **Economic crisis** - The collapse of demand abroad impacted Bangladesh's textile and garment industry, the engine of its manufacturing-led growth.
- The current rate of inflation is close to 10%.
- **Decreasing FOREX** - Since 2022, the Bangladeshi taka has depreciated more than 40% against the dollar, and its reserves of foreign currency have more than halved.
- **Increasing debt** – Its total external debt had crossed \$100 billion by the end of the 2023.
- **Role of external powers** - Some experts blame China and Pakistan for the unrest, suggesting they want to end Hasina's moderate Islamic rule.

How India-Bangladesh relations fared under Hasina government?

- **Political relations** - Since 2009, Sheikh Hasina has been a key ally for India and fostered economic, social, and cultural ties.
- **Security** - Her tenure saw eradication of anti-India terrorist groups and this has helped bring relative peace to India's Northeast.
- **Boundary dispute settlement** - Maritime and land boundary issues were resolved.
- **Economic ties** - Bangladesh is India's biggest partner in the subcontinent and India is Bangladesh's second biggest partner in Asia after China.
- **Infrastructure & Connectivity** – India has also emerged as a major source of power for Bangladesh.
- India extended three lines of credit worth \$8 billion for infrastructure development since 2016.
- Joint projects include the Akhaura-Agartala cross-border rail link and Khulna-Mongla Port rail line has significantly reduced travel time and boosted tourism and trade.

What are the impacts on India?

- **Political implications** – Her departure after a 17-year tenure means that India has lost a trusted partner in the region.
- India would face some questions from the new regime in Dhaka about giving refuge to an unpopular leader and there is a real risk of blowback from the Bangladeshi people as well.
- India's backing of her, despite allegations of rigging in elections, has been a bone of contention between India and the West.
- **Potential refugee influx** – Instability in Bangladesh could lead to an influx of refugees into India, posing a security challenge.

- **Security issues** – Fear of a return to Islamist radicalism in its eastern neighbourhood.
- When Opposition parties in Bangladesh have ruled the country, India has had an unpleasant experience with anti-India terror outfits operating across the India-Bangladesh border.
- **Economic implications** – There is a possibility of stalling the free trade agreement (FTA) between India and Bangladesh.
- It could jeopardize growing trade ties and restrict movement of people and goods.
- Indian manufacturing and infrastructure companies having business or project operations or supply linkages therein are likely to witness some disruption and uncertainty in the near term.
- On a positive front, it could result in a short-term shift of garment orders to India but India wishes for the normalcy to return.

The LoC and the border with Pakistan is hot again, and the Indian Army is in a long standoff with the PLA in eastern Ladakh. The Myanmar border is also extremely volatile

What lies ahead?

- India should move beyond romanticizing the 1971 liberation of Bangladesh and should express its readiness to engage with a successor government.
- India as a vibrant multi-party democracy, should support the expression of popular will in a sensitive neighbouring country.
- This may also go some way in diluting the negativity born out of the admittedly close relations between the two governments and Indian and Bangladesh leaders.
- Avoid the temptation to brand the ongoing political change as anti-India or anti-Hindu.
- India needs to take proactive measures to mitigate the impacts of the crisis and ensure continued economic stability and growth.

8.4 Challenges of India's Investment in Bangladesh

Why in news?

The latest political crisis in Bangladesh will impact Indian companies operating in Bangladesh.

How foreign investments are protected?

- **Foreign investments** – It refers to the investment in domestic companies and assets of another country by a foreign investor.
- **Protection measures** - There are three basic legal frameworks broadly apply to foreign investment.
 - Domestic laws
 - Contractual agreements
 - International laws
- **Domestic laws** – Legal safeguards of the country where the investment is made.
- **Contracts** – It may have been signed between the foreign investor and the government of the host state, or among foreign investors and companies of the host state.
- **International Laws** – Laws contained in applicable treaties, customs, and general legal principles that have attained the status of international law.
 - **For example**, Bilateral Investment treaty (BIT)
- **Challenges** – The domestic law of the host state is unreliable as it can be changed unilaterally by the state.
- The contracts may be of limited value when it comes to challenging the sovereign actions of the state that adversely affect foreign investment.

What is bilateral investment treaty (BIT)?

- **Need** – International law cannot be changed unilaterally and can be used to hold states accountable for their sovereign actions.
- When protecting foreign investment, the most crucial instrument in international law is a bilateral investment treaty (BIT).

- **BIT** - A reciprocal treaty between two countries aimed at protecting investments made by investors of both countries.
- **Role** – It protect investments by imposing conditions on the regulatory behaviour of the host state, thus preventing undue interference with the foreign investor's rights.
- **Provisions** – It restrict the host state from unlawfully expropriating investments.
- It imposes obligations on host states to accord fair and equitable treatment (FET) to foreign investment and not to discriminate against foreign investment.
- It enable investors to sue the host state before an international tribunal if the host state has breached its treaty obligations which is known as investor-state dispute settlement (ISDS).
 - According to the United Nations Conference on Trade and Development (UNCTAD), by the end of 2023, the total number of known ISDS claims stands at 1,332.
- **Significance** – It promotes foreign investments, protect the investments through dispute resolution mechanisms.

How India's investment in Bangladesh can be protected?

- **India's investment** – Indian companies have invested in Bangladesh in sectors such as edible oil, power, infrastructure, fast-moving consumer goods, automobiles, and pharmaceuticals.
- **Protection means** - Indian companies can use the Bangladesh domestic laws, contracts and international laws to protect their investments from regulatory risks.
 - For instance, Bangladesh's Foreign Private Investment (Promotion and Protection) Act.
- **India-Bangladesh BIT** – It was signed in 2009 that contains investment protection features
 - For instance, unqualified FET provision allows Indian companies to challenge Bangladeshi sovereign regulatory conduct.
- **BIPPA** - Bilateral Investment Promotion and Protection Agreement was signed in 2015, a type of BIT designed to foster and safeguard investments between the two nations.
- **Joint Interpretative Notes (JIN)** – It was adopted in 2017 to clarify the meaning of various terms in the 2009 treaty, adopted on India's insistence.

While India has unilaterally terminated almost all its BITs, the one with Bangladesh continues to exist.

What are the challenges for India's investments in Bangladesh?

- **Political crisis** - The interim/ new government may adopt a hostile attitude towards Indian companies.
- It might change the existing laws or adopt new regulatory measures that may adversely impact Indian capital.
- **Issues with JIN** – It was done without considering whether India has an offensive or defensive interest vis-à-vis a specific country.
- It has diluted the investment protection features of the BIT.
 - For instance, taxation measures are excluded from the ambit of the BIT.
- It has been designed from the perspective of the capital-importing country to safeguard its regulatory conduct from ISDS claims.
- Between India and Bangladesh, New Delhi is the capital exporter, and Dhaka is the importer.
- Ironically, the JIN that India developed might work to the advantage of Bangladesh, and not the Indian capital operating there.

What lies ahead?

- India should facilitate high-level visits from both countries to reinforce the commitment to the BIT.
- India must adapt its investment treaty practices to balance both host and home country interests, ensuring robust protection for its investments.

8.5 Unrest in Balochistan

Why in news?

In the past few weeks, Balochistan, in Pakistan, has witnessed large-scale protests.

What is the issue in Balochistan?

Balochistan

- **Geography** - It is a region with a distinct cultural and historical identity that is now divided between three countries mainly Pakistan, Iran and Afghanistan.
- **Formation** - In 1947, the Khan of Kalat announced the formation of an independent state in Balochistan and signed the instrument of accession in 1948 with Pakistan.
- **Annexation of Gwadar** - At the time of Pakistan's independence, Gwadar was part of the Sultanate of Oman.
- After prolonged negotiations with Oman, Pakistan was able to purchase Gwadar in 1958.
- **One Unit Scheme** - In 1955, various provinces and ethnic areas in West Pakistan were subsumed into a single province.
- It resulted in considerable centralisation of power and negated the basic principles of federalism.
- After much opposition, it was abolished in 1970 leading to the emergence of provincial assemblies, including in Balochistan.



- **Recent issue** - The Baloch Yakjehti Committee (BYC) had called for a Baloch Raaji Muchi in the Gwadar port city to highlight various issues like
 - Human rights violations
 - Resource exploitation
 - Government's inability to provide basic amenities
- Also, there is a steady uptick in the attacks by Baloch insurgent groups on security forces, CPEC projects, including other targets, such as on the Pakistan Stock Exchange in Karachi.
- **Crackdown** - The security forces' crackdown and blockade of major towns and cities, such as Gwadar, Hub, Mastung and Quetta.
- **Consequences** - It resulted in a sharp increase in the prices of necessities such as food, medicine, and petrol.

What are the reasons for current uprisings in Balochistan?

- **Dismissal of provinces** - The provincial governments were routinely dismissed.
- **Lack of provincial autonomy** - Islamabad continued to have a significant say in the governance of the province.
- **Economic neglect** - The region continues to be one of the most backward regions in Pakistan.
- The exploitation of these resources has not resulted in substantive economic benefits for the local population.
- **Deprived social development** - The region's performance is less than satisfactory even with respect to child, youth, and labour development indicators.
- **Extra-judicial killings** - The security forces, as a part of their counter-insurgency operations, reportedly resort to enforced disappearances, extra-judicial killings and fake encounters.
- **Lack of local participation** - Infrastructure projects with external assistance and without adequate local stakeholder participation has exacerbated the Baloch grievances
- **Threat of Chinese** - The possible militarisation of the Gwadar port and fencing has raised concerns among locals of losing access to large parts of the coastline.

Balochistan accounts for 44% of the country's landmass with significant mineral resources, such as copper, gold, coal, and natural gas.

What is the role of China in this issue?

- China has emerged as a major player in Balochistan's geopolitical and economic matters.

- It has invested in mining, energy, airports and expressway projects as part of the China-Pakistan Economic Corridor (CPEC).

China Pakistan Economic Corridor (CPEC)

- It is a 3,000-kilometer-long network of infrastructure projects.
- **Route** - It begins in Kashgar, China, traverses through the length of Pakistan and ends in Gwadar.
- **Goal** – To make a secure and shorter path for China to get energy from the Middle East.
- It helps china avoid the existing route from the Straits of Malacca between Malaysia and Indonesia to secure energy imports.



- **Control over Gwadar Port** - A Chinese firm has taken the Gwadar port on a 40-year lease and is involved in constructing and operating it.
- **Influence over Persian Gulf** - A Chinese naval presence will enhance its ability to project power into the Persian Gulf and to protect its energy supplies via the Strait of Hormuz.
- **Impacts** - Even a decade after the initiation of the CPEC, there have been no tangible gains for their people.
- The presence of Chinese trawlers closes to Gwadar prompted protests from the local fishing community that demanded an end to illegal fishing.
- The province's demography is changing rapidly as non-locals have moved into Balochistan to work on infrastructure projects.

Gwadar is located close to the Strait of Hormuz, a shipping route that witnesses substantive oil transportation.

What is India's stake in Balochistan matter?

- **Issues over Indo-Pak relations** - Islamabad has repeatedly accused India of fomenting attacks and creating issues in Balochistan.
- Historically, the separatist and anti-state elements in Balochistan have also been linked to Afghanistan and India.
- **CPEC infiltration in India** - CPEC route passes through the controversial territories of Gilgit-Baltistan and Kashmir between India-China and India-Pakistan respectively.
- **Impact Chabahar port** - Chinese development at Gwadar port might affect India's efforts in the Middle East region and Chabahar port in Iran.

What lies ahead?

- Pakistan establishment should listen to voices calling for a prudent approach to address the challenges in Balochistan.
- Pakistan should work to solve the province's burning issues, such as the missing persons and socio-economic disparity.

G.S PAPER III

9. ECONOMY

9.1 PCA Framework for UCBs

Why in News?

Recently, the Reserve Bank of India releases Prompt Corrective Action (PCA) framework for Primary (Urban) Co-operative Banks (UCBs).

What is Prompt Corrective Action (PCA) Framework?

- **Introduction** – RBI initiated the Scheme of Prompt Corrective Action (PCA) in 2002.
- **PCA** – A system that the RBI imposes on banks showing signs of financial stress.

- The regulator considers banks as unsafe if they fail to meet the standards on certain financial metrics or parameters.
- **Applicability** – It is applicable to *both banks and NBFCs*.
- It will apply to
 - All deposit-taking NBFCs, excluding government companies,
 - All non-deposit taking NBFCs in the middle, upper and top layers.
- **Significance** – It will stop bad lenders from going worse rather than brushing the issue aside.
- Safer NBFCs will translate to a safer overall financial system.

What are the features of the PCA framework on UCBs?

- **Urban Cooperative Banks (UCBs)**, though not formally defined, refers to primary cooperative banks located in urban and semi-urban areas.
- **PCA framework for UCBs** – It will replace the existing Supervisory Action Framework (SAF) and come into effect from April 1, 2025.
- It is largely *principle-based* with *fewer number of parameters* as compared to the SAF, without any dilution in the supervisory rigour.
- **Aim** – To provide flexibility to design entity specific supervisory action plans based on the assessment of risks on a case-by-case basis.
- **Criteria's** - The norms to invoke framework for weak UCB are
 - Capital adequacy ratio (CAR) up to 250 bps below the required CAR
 - Net NPAs above 6.0% but below 9.0%
 - Incurring losses during two consecutive years.
- The breach of any risk threshold may result in invocation of PCA.
- **Coverage** - It will be applicable to UCBs with deposits above 100 crores.

Categories of UCBs

- UCBs have been categorized into four tiers
- **Tier 1** – It consists of UCBs with deposits *up to Rs 100 crore*.
- **Tier 2** – It is those with deposits *above Rs 100 crore and less than Rs 1,000 crore*.
- **Tier 3** – It will consist of UCBs with deposits *above Rs 1,000 crore and less than Rs 10,000 crore*.
- **Tier 4** – It would have UCBs with deposits *above Rs 10,000 crore*.

- **Exemption** - *Tier 1 UCBs have been excluded* from the PCA framework for the present.
- However, they shall continue to be subjected to enhanced monitoring under the existing supervisory framework.
- **Invocation** - A bank will generally be placed under PCA Framework based on the *Reported and Audited Annual Financial Results* and the *ongoing Supervisory Assessment*.
- However, RBI may impose PCA on any bank during a year in case the circumstances warrant.
- **Withdrawal of PCA** – It will be considered if no breaches in risk thresholds in any parameters are observed as per four successive quarterly financial statements.
- **Other features** - The fixed limit of Rs 25,000 for capital expenditure restrictions on UCBs under SAF has been removed.
- The revised framework enables the Supervisors to decide the limit depending upon their assessment of each entity.

What are the significance of RBI's PCA?

- **Early intervention**- PCA acts as an early warning system, allowing the RBI to identify and address potential issues in a bank before they become severe.

- **Financial stability-** It helps maintain the overall health of the banking sector, ensuring financial stability and protecting depositors' interests.
- **Risk management-** Banks under PCA are required to improve their risk management practices, reduce non-performing assets (NPAs), and enhance their capital adequacy.
- **Regulatory oversight-** PCA imposes restrictions and mandates corrective actions on banks, such as limiting dividend distribution, branch expansion, and high-risk lending, to prevent further deterioration.
- **Restoring confidence-** By monitoring and enforcing corrective measures, PCA helps restore confidence in the banking system among investors, depositors, and the public.

Quick Facts

- **NPA** – An asset becomes non-performing when it ceases to generate income for the bank.
- It is a loan or advance for which the principal or interest payment remained overdue for a period of 90 days.
- It can be classified depending on the length of time overdue and probability of repayment
 - Substandard asset
 - Doubtful asset
 - Loss asset,
- **Capital Adequacy Ratio** – It is also known as capital-to-risk weighted assets ratio (CRAR), a measurement of a bank's available capital expressed as a percentage of a bank's risk-weighted credit exposures.
- Two types of capital are measured
 - **Tier-1 Capital**, which can absorb losses without a bank being required to cease trading.
 - **Tier-2 Capital**, which can absorb losses in the event of a winding-up and so provides less protection to depositors.
- It is used to protect depositors and promote the stability and efficiency of financial systems.

9.2 Indexation

Why in News?

The withdrawal of the indexation benefit in the long-term capital gains (LTCG) tax regime is one of the most contentious changes in the Union Budget 2024-25.

What is indexation?

- **Indexation-** It adjusts the original purchase price of an asset or investment to neutralize the impact of inflation over the holding period.
- **Purpose-** To ensure a more realistic calculation of gains or losses upon sale or redemption.
- **Calculation-** The income tax (I-T) department uses cost inflation index (CII) to calculate the inflation-adjusted cost of acquiring a specific assets.
- Every year, the central government publishes CII through its official gazette.
- The cost of acquisition thus arrived at, is called the indexed cost of acquisition.
- **Indexed Cost of Acquisition** = $\frac{\text{Cost of Acquisition} * \text{CII of year of sale}}{\text{CII of year of purchase}}$
- **Base year** – Initially, I-T department had set 1981 as base year which was revised to **2001**, with a **base value of 100**.
- Each year's index is computed relative to this base.
- **Usage-** Adjusted purchase price after factoring in inflation, used for calculating capital gains or losses.
- **Importance-** Adjusting to inflation increases acquisition cost, thus reducing the long-term capital gains tax.

*The **cost inflation index (CII)** is a means to measure inflation, which is used in the computation of long-term capital gains concerning the sale of assets. It takes into account the Consumer Price Index (CPI) for a given year for urban non-manual employees for the preceding year.*

What are the positive and negative impacts of indexation?

Positive Impacts of Indexation	Negative Impacts of Indexation
Tax savings- Reduces tax liability by accounting for inflation.	Complex calculations- Requires detailed record-keeping and complex calculations.
Realistic gains- Provides a more accurate reflection of actual gains by adjusting for inflation.	Inequity- May benefit those with longer holding periods more than short-term holders.
Incentivizes long-term investment- Encourages holding assets longer to benefit from indexation.	Administrative burden- Adds administrative burden for both taxpayers and tax authorities.
Fair valuation- Ensures fair valuation of assets by considering inflation over the holding period.	Market distortion- May create distortions in asset prices and investment decisions.
Reduced tax evasion- Discourages underreporting of gains by aligning tax calculations with inflation.	Variable impact- Benefits vary widely based on inflation rates and holding periods, leading to uncertainty.

What is the recent changes in indexation?

- **Removal of indexation** – Budget 2024-25 eliminates indexation benefits for all assets like property, gold, and other unlisted assets.
- On exemption is on property acquired prior to 2001.
- **Tax rate** – After 23rd July 2024, sale of houses bought after 2001 will attract 12.5% (long-term capital gain tax).
- Depending on the amount involved the actual tax rate could go up to 14.95% (12.5% + 15% surcharge + 4% cess).
- **Other changes in LTCG** - It is reduced from 20% to 12.5%.
- Investments in **Section 54EC bonds** or using gains for buying/constructing residential real estate continue to exempt LTCG from tax.
- **Impact** – This change is likely to lead to higher capital gains tax on sale of long-term capital assets.
- It will hurt middle-class investors who had diversified into real estate.
- Concerns were raised about higher LTCG tax liability, particularly in the residential real estate sector.
- **Lack of grandfathering-** Criticism for not extending indexation benefits for purchases made over the past 24 years.

What is the Government's justification?

- **Simplification of tax structure-** The changes simplify the capital gains tax structure.
- **Uniform tax rates-** It benefits both taxpayers and tax authorities.
- **Taxpayer benefits-** The new regime benefits most taxpayers without causing financial loss.
- **Tax savings-** Substantial tax savings are expected for most taxpayers.

What is Capital Gain Tax?

- **Capital asset** – It is any kind of property held by an individual, such as buildings, lands, bonds, equities, debentures, and jewelry.
- It excludes stock-in-trade, agricultural land, and certain specified bonds.
- **Capital Gain Tax** – Any profit or gain arising from the sale of a capital asset is deemed as capital gains.
- **In India** – It is charged by tax under the Income-tax Act, 1961.
- **Classification** – They are classified depending on the period for which the capital asset has been held
 - Short-term capital gains (STCG)
 - Long-term capital gains (LTCG)

		STCG Tax	LTCG Tax
Holding Period	Listed Asset	Less than 12 months	More than 12 months
	Others	Less than 24 months	More than 24 months
Tax Rate		<u>20% for specified financial</u> assets (previously 15%) taxed at applicable slab rate for other assets	Flat rate of <u>12.5% for all</u> asset classes
Indexation Benefit		Not applicable	<u>Removed</u> for all assets, simplifying the calculation
Exemption Limit		Not applicable	<u>Increased</u> from ₹1 lakh to ₹1.25 lakh for equity-related investments
Applicable Assets		All assets, with specific rates for equity-related investments	All assets, including property, gold, and unlisted shares
Changes post-Budget 2024		Increase in rate for equity-related investments; holding period simplified	Uniform tax rate introduced; holding period simplified

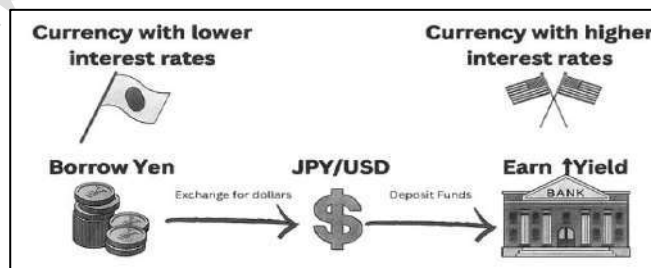
9.3 Unwinding of Yen Carry Trade

Why in news?

Recently, global stock markets experienced their steepest decline in decades, driven by fears of a US recession, escalating West Asian geopolitical tensions, and the unwinding of the yen carry trade.

What is carry trade?

- **Carry trade** – It is a popular investment/ trading strategy where *investors*
 - **Borrow money** – In a currency *with low interest rates*
 - **Invest in an asset** – Denominated in a currency *with higher interest rates*.
- **Aim** – To profit from the interest rate differential.
 - **For instance**, a trader may borrow in Country A's currency (1% interest rate) and invest in Country B's currency (5% interest rate), earning a net interest rate differential of 4%.
- **Risk factors** - One significant risk is exchange rate volatility, as currencies can fluctuate dramatically due to economic factors or geopolitical events.
- The changes in interest rates or central bank policies can impact carry trades significantly.
- The unwinding of carry trades can also have a profound impact on forex markets.
- **Impact of exchange rate** – Apart from gaining through interest rate differentials, traders also anticipate capital appreciation of the invested currency against the borrowed currency.
 - If the higher-yielding currency appreciates – They can benefit from both the interest rate differential and capital gains.
 - If the invested currency depreciates – It can erode or even negate any potential profits.
- **Impact of unwinding carry trades** - When market sentiment changes, traders tend to unwind their carry trades by
 - Selling the higher-yielding currency and
 - Buying back the lower-yielding currency
- It can lead to rapid currency depreciation and increased volatility.



Currency Trade

- **Currency trade** – It refers to buying and selling national currencies with the goal of making a profit or hedge business against possible fluctuations in exchange rates.
- It is also known as foreign exchange (forex or FX) trading.
- **Participants** - Individuals, institutions and sovereign governments.
 - *For example:* An Indian tourist planning to attend Paris Olympics will exchange their Indian rupees for Euros.
- **Basis** – There is no central location and is an electronically connected network of traders across the globe.
 - A trader in Britain and a trader in Arunachal Pradesh can connect and trade in (GBP/INR) contracts.
- Currencies are always traded in pairs, like USD/INR (US Dollars: Indian Rupee).
- In a currency pair, the currency on the left is base currency and the currency on the right is quote currency.
 - *For example:* if USD/INR is 73.75 it means that you can buy 1 US Dollar against 73.75 Indian rupees.
- **Pip** - A point in price is the smallest movement (change) in the valuations of the currency pair.
 - *For example,* if the USD/INR rate is 73.7502 today and it was 73.7501 yesterday, then the pip is 0.0001 (or 1 pip)
- **In India** – It is typically done through currency derivatives i.e. forex spot, forwards and futures contracts and the most traded currencies are the US Dollar, Euro, Japanese Yen, and British Pound.

What is Yen carry trade?

- **Stimulants** – Japan's central bank, the Bank of Japan, kept rates at zero percent between 2011 and 2016, and below zero since 2016, to stimulate economic activity.
- **Yen carry trade** – The low-cost borrowing of Yen incentivized global investors to use yen to fund investments in countries like Brazil, Mexico, India, and the US, seeking better returns.
- Despite global interest rate hikes following the Russia-Ukraine war, Japan's low rates continued to drive these yen carry trades, fuelling international investments.
- **Created wealth** – For the Yen carry trade to be profitable, its value must remain stagnant or depreciate against the dollar.
- Historically, there was a prolong period of weakness in Yen, allowing investors to reap substantial returns through this trade.

FOREX, short for Foreign Exchange, is a marketplace where national currencies are bought and sold.

As per reports, the Japanese Yen carry trade market is estimated to be over 20 trillion USD.

Borrow Yen	Convert currency	Invest in high-yielding assets	Profit from the difference
Investors borrow Yen at a low interest rate in Japan.	They convert the Yen into a currency that offers high-yielding options. The most popular one has been USD.	The converted funds are invested in higher-yielding assets (e.g., bonds, stocks, real estate), usually in another country.	Investors generate high returns in USD assets and capture the difference between the high returns and the cost of borrowing in Yen.

- **Recent policy changes** – The Bank of Japan raised its interest rate from 0.10% to 0.25%, for the first time in 15 years that has triggered volatility in global markets.
- **Unwinding of the Yen Carry Trade** – Investors sell off assets purchased with borrowed yen to repatriate funds and take advantage of the higher returns in yen.
- **Appreciated Yen** – This policy shift has led to a rapid 12% appreciation of the Japanese Yen against the USD, from the peak 160 Yen to 142 Yen.

How unwinding of Yen carry trade impacts global markets?

- The strengthening of Japanese Yen has adversely impacted the Yen carry trade borrowers.
- It contributed to a significant drop in global stock markets.

- It could contribute to *global market jitters* amidst other factors like potential US recession and geopolitical tensions.
- It leads to *shift in global investment patterns* due to changes in interest rates and currency values.
- **Impact on India** – While Sensex remained resilient, the Nifty 50 crashed 2.68% recently.
- India's trade balance with Japan can be affected by Yen fluctuations.
- A weaker Yen may benefit Indian exports to Japan, while making Japanese imports more expensive for Indian buyers.
- It can impact the cost of travel and trade between India and Japan.
 - **For example**, a weaker Yen might make Japan a more attractive destination for Indian tourists, while also affecting trade costs.

What lies ahead?

- Investors should prioritize high-quality stocks with a proven track record of delivering consistent returns.
- Maintain a strong focus on large-cap stocks, as they tend to offer more stability and resilience, especially during periods of market volatility.

9.4 Google Antitrust case

Why in News?

Google has lost the antitrust case filed against it by the U.S. Department of Justice that focused on the company's search engine dominance and expensive partnerships to push its product.

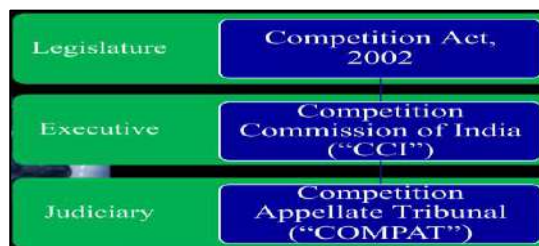
What is antitrust?

- **Antitrust** – The word “trust” in antitrust refers to a *group of businesses that team up or form a monopoly to dictate pricing* in a particular market.
- **Impacts**
 - It *eliminates rivals* by forcing them out of market
 - It restrict or force the users to *limited choices*.
 - It makes the company to *set higher prices* without considering the competitiveness
- **Antitrust laws** – They are regulations that *prevent multiple firms from forming a cartel to limit competition through practices such as price fixing*.
- It also aims to *encourage competition* by limiting the market power of any particular firm.
- **Importance of antitrust laws** – Competition among sellers gives consumers lower prices, higher-quality products and services, more choices, and greater innovation.

How India regulates antitrust?

- **Pre-liberalization era** – For 40 years, India had a competition law, through a legislation called the *Monopolies and Restrictive Trade Practices Act 1969 (MRTP Act)*.
- It was based on *principles of a “command and control” economy*, which did not allow concentration of economic power in a few hands.
- **Post-liberalisation** - in 1991, it became imperative to have a *law more responsive to the economic realities of the nation and consistent with international practices*.
- Consequently, India passed the *Competition Act 2002 (Competition Act)*, to regulate business practices in India so as to prevent practices having an appreciable adverse effect on competition (AAEC) in India.
- **Competition Act of 2002** – It seeks to regulate three types of conduct

- Anti-competitive agreements
- Abuse of a dominant position
- Combinations (i.e., mergers, acquisitions and amalgamations)



- It **prohibits any agreement** which causes, or is likely to cause, appreciable adverse effect on competition in markets in India

- **Anti-Competitive Horizontal Agreements** - Between enterprises, persons, associations, etc. engaged in identical or similar trade of goods or provision of services
- **Cartelisation** – It is one of the horizontal agreements that shall be presumed to have appreciable adverse effect on competition under Section 3 of the Act.
- **Anti-Competitive Vertical Agreements** – It is amongst enterprises or persons at different stages or levels of the production chain in different markets.

Regulation of Indian Technology Companies	
●	Ministry of Corporate Affairs
●	Competition Commission of India , under Competition Act, 2002.
●	Information Technology (Intermediary Guidelines and Digital Media Ethics Code) Rules, 2021 .
●	Digital Personal Data Protection act, 2023
●	Digital Competition bill (drafting stage)
●	Draft E-Commerce Policy

- **Competition Commission of India** – It is the enforcement authority, which is solely responsible for the enforcement and administration of the Competition Act.

What is Google's antitrust case?

- **The Antitrust case** - In 2020, the US justice department filed an antitrust lawsuit against Google for illegal monopoly in the online search market and advertising business.
 - Google search engine accounts for 90% of search queries through computers and mobile phones.
- **US antitrust laws** - Sherman Antitrust Act of 1890 and Clayton Antitrust Act of 1914 prohibit unfair anti-competitive practices and monopolies.
- Anti-competitive behavior – It had contract with browser developers, mobile device manufacturers, and wireless carriers to make it a default search engine.
- It acted as the entry barrier to other browser developers and was charging supra-competitive prices for general search text ads.
- **Merit vs Unfair Practices of google**
 - Merit – It defended its practices, arguing that its 'dominance' was due to the quality of its search engine.
 - Unfair Practices – It used its monopoly power in general search services market and general search text ads market.
- **Test of antitrust** - Amount of monetary loss that has been sustained by consumers due to the monopolistic behaviour of companies.
- **The Court verdict** - U.S. District court held that Google has monopoly in General search services and General search text ads thereby violating the Sherman act.
- **Impact of the verdict** – It will have global level ramifications in examining the trade practices of digital companies and in redefining anti-trust laws in the technology era against new business models.

General search text ads are the advertisements that are displayed at the top and along with the search results.

What is the position of Google in India?

- **India vs Google** – Many suits were filled before Competition Commission of India (CCI) against google such as
 - Anti-competitive practices in its Play Store policies
 - Abusing its dominant position in multiple markets in the Android mobile device ecosystem.
 - Mandatory use of google billing system

- Privacy Sandbox initiative to remove third-party cookies from websites accessed via the Google Chrome browser.
- Self-referencing, a process of giving preference to its own services over other similar offerings.
- **Impacts** – Google derives 97% of its revenue from advertising which adversely affect Indian businesses.
- It creates artificial inflation in ad cost through ad-ranking system and keyword bidding, google has increased the cost of advertisement.
- **Significance of US Verdict** – It enables India to investigate antitrust proceedings in Indian market.

Ad-ranking system is a system where the advertisers to set a bid for the amount of money they want to spend on a particular advertisement.

What lies ahead?

- Conduct similar investigation against tech companies for anti-competitive practices in Indian Markets.
- Create preemptive compliance in the regulatory framework for large tech companies.
- Include recent developments and findings in the upcoming anti competition act.
- Include provision to guard startups against big firms abusing their dominant market position.

9.5 Green Competition

Why in News?

India is advancing its green steel technology by forming a consortium of research labs, IITs, steelmakers, and equipment manufacturers.

What is Green Competition?

- **Green competition** – A specific form of competition that is focused on the ecological side of the companies' strategies.
- It refers to a green promotion strategy of the companies' goods and services, which is focused on achieving precise entrepreneurial objectives, based on the organizations' promotional mix.
- **Need** - Competition cannot remain insulated from sustainability.
- Combating climate change requires adapting and adopting newer technology that reduces resource consumption and increases innovation through sustainability policies.
- **Strategies** - Competition policy should integrate sustainability economics while considering market failures and collective action problems.
- Through actions like issuing guidelines, the benefits of sustainability will outweigh the potential negative effects on competition.
- Including sustainability considerations in assessments of cooperation among competitors can be a strong measure of benefitting sustainability in markets.
- **Importance** – It helps to promote environmentally friendly strategies and implement sustainable development goals, which will help to
 - To solve the Global and local environmental problems
 - To reduce anthropogenic pressure on the environment
 - To save resources
 - To form competitive development of the country and business sector as a whole



What are the differences between competition law and sustainability?

Aspect	Competition Law	Sustainability
--------	-----------------	----------------

Primary Objective	Promote consumer welfare and ensure fair competition	Achieve long-term environmental, social, and economic balance
Focus	Market efficiency, preventing monopolies and collusion	Reducing environmental impact, conserving resources
Key Considerations	Prices, market share, consumer choice	Carbon footprint, resource usage, ecological impact
Regulatory Tools	Anti-trust laws, merger controls, anti-collusion measures	Environmental regulations, carbon pricing, sustainability reporting
Assessment Criteria	Economic efficiency, market power, consumer harm	Environmental benefits, sustainability metrics
Challenges	Balancing market dynamics, avoiding over-regulation	Measuring sustainability impact, integrating into business practices
Potential Conflicts	May restrict collaborations that could lead to innovation or efficiency gains	May require industry-wide cooperation, which can conflict with anti-collusion laws
International Examples	EU Competition Law, US Anti-trust Laws	Paris Agreement, UN Sustainable Development Goals
Implementation	Legal enforcement by competition authorities	Voluntary initiatives, government policies, and regulations
Sector Impact	Direct impact on market structures and business practices	Broad impact across all sectors, focusing on long-term sustainability

What are the global practices of green competition?

- **Japan** – *Anti Monopoly Act* approach towards the *realization of a ‘green society’* to help private businesses navigate themselves in horizontal collaborations.
- **European Commission** – The revised guidelines on horizontal agreements aims to *address climate change*, reduce pollution, limit the use of natural resources, and promote resilient infrastructure and *innovation*.
- **Singapore** – They provides information so businesses can safely *collaborate in pursuing environmental sustainability* objectives without harming competition.
- **Netherlands** – A *cartel prohibition does not apply* if the competitive process is not significantly impeded or if sustainable production offers consumers benefits.
- **Australia** – Authorized Tyre Stewardship Scheme to promote recycling and use of recycled products.

What is the status of India in pursuing green competition?

- **SEBI** – In 2023, the Securities and Exchange Board of India introduced a *sustainability reporting framework* called Business Responsibility and Sustainability Reporting (BRSR).
- **BRSR** - A reporting framework under which the top 1000 listed companies (by market capitalisation) are mandated to disclose their Environmental, Social and governance (ESG) performance.
 - It require the businesses to
 - Indicate the sustainable issues pertaining to environment and social matters
 - Mention the percentage of inputs sourced sustainably
 - Inform the presence of any specific committee to oversee sustainability practices
- **Revised BRSR** - It requires companies
 - To account for their value chain’s environmental impact
 - To enhance transparency
 - To combat [greenwashing](#)
 - To ensure that sustainability benefits permeate through the value chain

- **TRAI** - In 2017, it has released its recommendations on 'Approach towards Sustainable Telecommunication'.

Role of CCI toward Green Competition in India

- The Competition Commission of India (CCI) can explore the possibility of including sustainability policies in its evaluations.
- It can participate in formulating economic policies that address competition and sustainability.
- It can release guidance notes on sustainability agreements & exemption methods under the Competition Act, 2002.
- It can enforce competition policies that improve innovation while considering environmental concerns.

What are the challenges for green competition?

- **Complex trade-offs** - Balancing environmental and commercial interests can be difficult.
- **Conflict** - Sustainability, a public interest objective, often conflicts with competition law's primary goals of consumer welfare.
- **Disincentive to cooperation** - Competition law can discourage beneficial collaborations for sustainability.
- **Inconsistent goals** - Multiple objectives in competition law can lead to inconsistent application and reduced regulatory independence.

What lies ahead?

- Support agreements encouraging innovation and sustainable consumer preferences.
- Align competition law with constitutional values and sustainability goals.
- Learn from international examples to balance economic growth and environmental sustainability.
- Emphasis on sustainability policies and enterprise collaboration for greener innovations.

9.6 Challenges of Regional Rural Bank (RRB)

Why in News?

Regional Rural Banks losing ground to private banks amid tech challenges.

What are regional rural banks?

- **Inception** – It was *established in 1975*, the *first RRB was Prathama Bank*, in Moradabad, Uttar Pradesh.
- **Objective** – It aims to provide *banking and credit facilities for agriculture and rural sectors*, combining the features of cooperatives with the professionalism of commercial banks.
- **Ownership** – RRBs are sponsored by
 - **Central Government** – 50% of stakes
 - **State Government** – 15% of stakes
 - **Commercial Bank** – 35% of stakes
- All public sector banks, except Punjab & Sind Bank, sponsor one or more RRBs.
- *J&K Bank is the only private sector bank* that sponsors an RRB.
- **Services offered** – They provide various banking services in *rural and semi-urban areas* like both regular financial functions and also some other additional functions.
- **Banking norms** - The *interest rate on the loan are very low* compared to commercial banks, making it easier for rural people to access credit.
- They have *higher priority sector lending responsibility* to lend a *minimum of 60%* of all its capital to agriculture sector and other priority sectors such as

Regular Functions	Additional Functions
<ul style="list-style-type: none"> • Savings accounts • Current accounts • Loans and Advances • Insurance products 	<ul style="list-style-type: none"> • Assists in proliferating government schemes • Helps in disbursement of wages under rural job guarantee schemes • Helps in pension distribution

- Small or medium sized manufacturing or service businesses or housing in rural area.

Status of RRB's in India

- **Number** - 43 RRBs sponsored by 12 Scheduled Commercial Banks.
- **Branches** – 21,995 branches across 28 states & 8 Union Territories.
 - 92% of branches are in rural or semi-urban areas.
- **Coverage** – 305.3 million deposit accounts & 29 million loan accounts.
- **Loss-Making RRBs** – Six RRBs reported losses in FY 2022-23.
- **Profitable RRBs** – Seven RRBs turned profitable during FY 2022-23.

Why there is a large digital deficit in RRBs?

- As farmers become more digitalised, they look for internet banking.
- RRBs are serving the third generation of farmers, and the new generation demands digital banking and other advanced services.

Digital deficit

- Also known as *digital divide*, it is the *disparities in access, adaptation and application* of information and communication technologies (ICTs).
- **Access divide**- This refers to the physical availability of technology and internet connectivity, heavily influenced by socio-economic factors and geographic location.
- **Use divide**- This highlights the differences in digital skills among individuals, which can prevent effective use of available technologies.
- **Quality of use divide** - Lack of knowledge to utilize technology effectively for maximum benefit.

Digital deficit in RRBs

- Less Mobile Banking licence – Only 31 RRBs have acquired mobile banking licence.
- Fewer Internet Banking license – only 17 RRBs have internet Banking facilities.
- Low UPI adoption – Only 26 RRBs have been on boarded to BHIM UPI.

- **Lack of basic infrastructure** – Some branches even have a single room doubling as a washroom and the *cash rooms are poorly maintained*, with faded walls and an unpleasant odour.
- **Subpar operation** – There are *issues of mismanagement* and a *lack of professionalism* have impeded progress.
 - In western Uttar Pradesh, *many RRB branches lack security guards* despite holding cash reserves of around Rs 10 lakh.
 - Staffed by just a manager and a cashier, these branches often operate in subpar conditions.
- **Outdated tools** – RRB is *struggling to provide ATM cards and cheque books immediately* to the new customers whereas in private banks, customers receive all the basic tools within hours.
- **Financial issues** - A significant *burden of non-performing assets (NPAs)* has persisted, leading banks to focus their efforts on reducing these problematic loans.
- **Limited Connectivity**- Poor internet connectivity in rural areas can hinder the deployment and effectiveness of digital banking solutions.
- **Traditional Focus**- RRBs have traditionally focused on providing basic banking services and may not have prioritized digital banking as a core function.
- **Competition from their sponsor** – The increasing presence of private sector banks has made the situation more challenging.
- RRB's Sponsor banks itself have emerged as their primary competition.

Non-Performing Assets (NPAs)
are the assets which ceases to generate income for the bank.

What are the steps taken to improve the status of RRB's?

- **Recapitalization** – Government have infused Rs 10.890 crore into RRBs during FY22 and FY23.
- **Technological Upgrades** – Efforts are underway to enhance RRBs' digital capabilities, supported by the Finance Minister's emphasis on technological improvements.

A 2022 National Bank for Agriculture and Rural Development (NABARD) report highlighted that RRBs need to enhance their loan recovery processes through technology, policy improvements, and best Practices.

- In 2023, Government emphasized the need for RRBs to upgrade their digital capabilities and increase penetration under the Pradhan Mantri Mudra Yojana.

What lies ahead?

- **Modernize IT Systems-** Upgrade to advanced core banking systems to enhance efficiency and provide digital banking services.
- Equip branches with tools like ATMs, cash deposit machines, and cheque imaging systems to streamline customer transactions.
- Develop user-friendly digital interfaces for online and mobile banking to enhance the customer experience.
- **Improve connectivity-** Invest in better internet infrastructure and connectivity, especially in remote and rural areas.
- **Upgrade data management systems** – For better handling of customer information and financial data.
- **Policy Updates-** Align policies with modern banking practices to facilitate smoother digital transformation.
- **Capacity development-** Provide comprehensive training programs for staff on new digital tools and technologies.
- **Enhance physical security-** Measures like security guards and surveillance systems to protect cash and digital assets.

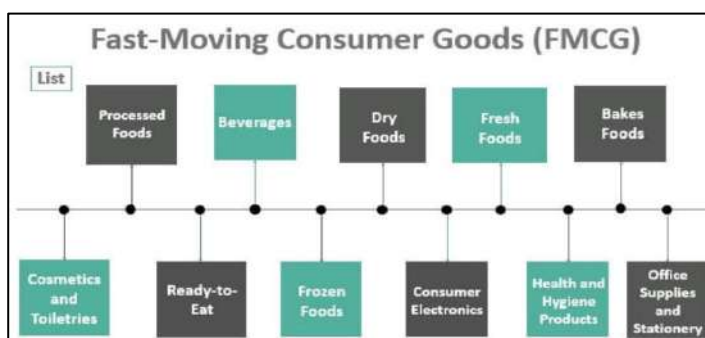
9.7 Fast-moving Consumer Goods (FMCG)

Why in news?

Recently, in a surprising turn, FMCG stocks saw an uptick even as the broader market faced a downturn.

What are the characteristics of FMCGs?

- **FMCG** – They are Fast-moving consumer goods which refers to products sold quickly at a low costs and are typically non-durable.
 - It includes items such as packaged food, beverages, toiletries, over-the-counter drugs, and other consumables.
- **High demand-** FMCG products are in constant demand due to their essential nature in daily life.
- **Low profit margins-** While individual profit margins are low, the high volume of sales makes up for it.
- **Short shelf life-** Many FMCG items are perishable or have a short shelf life, necessitating quick turnover.
- **High turnover rate-** FMCG products are sold and replaced frequently.



Status of FMCG Sector in India

- It is the fourth-largest sector in the Indian economy, valued at \$200 billion
- **Employment** – It provides employment to around 3 million people and accounts for approximately 5% of total factory employment in India.
- **Recent trends** – Its sales growth (2022-23), grew 7-9% by revenues with 65% sale in urban areas.
- Packaged food market growth is expected to grow twofold to US\$ 70 billion in the next few years

- **Measures taken** – India have allowed 100% foreign equity in single-brand retail and 51% in multi-brand retail sectors
- Union government aims to offer USD 1.42 billion investment through Production-Linked Incentive (PLI) scheme.

How FMCGs are marketed?

- **E-Commerce-** It enables the consumers to purchase FMCG products online, enjoying the convenience of home delivery and often better pricing.
- They have expanded the reach of FMCG products, making them more accessible to a broader audience.
 - **For example:** Amazon, Flipkart, and others
- **Q-Commerce-** Quick-commerce refers to ultra-fast delivery services, typically within 10-30 minutes.
- It focuses on small, high-demand FMCG products like groceries, snacks, and daily essentials.
 - **For example:** Zepto, Swiggy Instamart, Blinkit among others
- **Dark stores-** These are small warehouses located strategically within cities to facilitate faster delivery for Q-commerce and e-commerce platforms.
- They are not open to walk-in customers but serve as hubs for quick order fulfillment.
- **Phygital retail-** A blend of physical and digital retail experiences, where consumers can shop seamlessly across both channels.
 - **For example,** a customer might try a product in a store but order it online for home delivery.

What are its significances?

- **Economic contribution-** The sector is valued at USD 200 billion, reflecting its importance in the economic landscape.
- **Job creation-** They employ millions directly and indirectly, from manufacturing to distribution, contributing significantly to employment across urban and rural areas.
- **Daily essentials-** They are essential for daily living, including food, beverages, personal care, and household products.
- **Widespread distribution-** They have developed extensive distribution networks, reaching even the most remote parts of India.
- **Adopts to consumer trends-** They are key player in adapting to changing consumer behaviors and preferences, such as the shift towards healthier, eco-friendly, and premium products.
- **Resilience-** It is relatively resilient to economic downturns as demand for essential goods remains stable, providing a buffer to the economy during difficult times.
- **Rural economy-** They play a crucial role in the rural economy by providing goods, creating jobs, and stimulating demand, contributing to rural development.

What are their challenges?

- **Topline growth-** The growth of revenue (topline) for FMCG companies is stagnant.
- **Price pressure-** Consumers are challenging premium pricing, and companies are facing pressure on profit margins.
- **Business model adaptation-** Large FMCG companies are adapting their models to trends, while smaller companies are confused or waiting for market conditions to improve.
- **Shift in consumer preferences** - Consumers are increasingly favoring small, niche brands that are perceived as more holistic, green, and healthier.
- Thus, small brands are challenging established FMCG giants.
- **New market entrants-** They are asset-light, leveraging outsourced manufacturing and packaging, and relying on digital distribution channels, reducing costs and increasing flexibility.
- **Logistics challenges-** Disruptions in logistics due to pandemics, geopolitical issues, or natural disasters significantly impact the availability of products and the overall business.

- **Environmental concerns-** There is growing pressure on FMCG companies to adopt sustainable practices, reduce plastic usage, and minimize their carbon footprint.

What lies ahead?

- Offer products across the economic spectrum, catering to all classes from poor to super-rich.
- Offer more health-conscious products, organic goods, and clean-label offerings as consumers started shifting focus on healthier lifestyle.
- Adopt a portfolio approach, offering products that cater to various segments, from value-for-money to premium and ultra-premium.
- Shift towards localized production and sourcing, especially for essential goods.
- Use technologies such as AI and IoT to optimize supply chain efficiency, predict demand, and manage inventory more effectively.
- Demonstrate ethical practices, including fair labor practices, responsible sourcing, and contributions to social causes, to maintain consumer trust and brand loyalty.
- Adopt circular economy models, focusing on reducing waste, recycling, and reusing materials in their production processes.

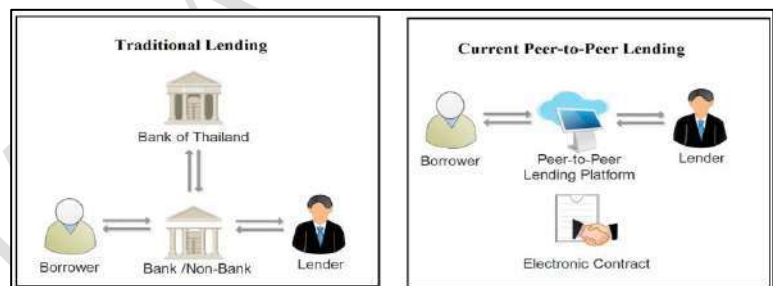
9.8 NBFC-P2P Lending Platform

Why in news?

The Reserve Bank of India (RBI) has launched a crackdown on some P2P lending platforms for regulatory breaches, including Ponzi-like schemes, illegal deposit-taking, and aggressive recovery methods.

What is NBFC-P2P lending platforms?

- **NBFC-P2P-** It is the Non-Banking Financial Company Peer-to-Peer lending platforms are financial intermediaries.
- **Role** – It enables direct borrowing and lending between individuals, bypassing traditional financial institutions.
- It offers accessible credit to underserved groups and attractive investment options for lenders.
- **Tech-Driven credit solutions-** They use technology to assess the creditworthiness of borrowers, match them with suitable lenders, and facilitate loan transactions.



What are the concerns highlighted by RBI?

Regulation in India

- It is regulated by the Reserve Bank of India (RBI).
- **Mandate registration-** Only NBFCs can register as P2P lenders with permission and must obtain a certificate of registration.
- **Capital limit-** The RBI sets a minimum capital requirement of Rs. 2 crores to set up a P2P platform.
- **Breaching of regulations** – They significantly have high balances in escrow accounts.
- There has been high non-performing asset (NPA) levels.
- **Delayed disbursement** - Funds transferred by lenders not being immediately disbursed to borrowers, kept in escrow accounts for long periods while assured returns were provided.
- **Non-compliance-** There is a violation in net owned fund and disclosure requirements.

- Operating models allowing premature recall of funds by lenders, which were replaced by new lenders without transparency.
- **Profit Margins and High Interest- No cap on interest charged** to borrowers, leading to exorbitantly high rates.
- Platforms profiting from the spread between the returns paid to lenders and the interest charged to borrowers.
- **Capital diversion-** Risk of capital diversion from banks and similar financial institutions due to the appeal of high assured interest rates and immediate liquidity options.

An escrow account is a bank account that holds money or assets until certain conditions are met by the parties involved in a transaction.

What are the new guidelines by RBI?

- **Deposit controls** – They are prohibited from accepting public deposits, lending directly, or arranging guarantees for lenders.
- **Loan Disbursement Rules-** Loans should not be disbursed unless lenders and borrowers are matched according to a board-approved policy.
- Transactions between lenders are now prohibited.
- **Monitoring transactions** - All fund transfers between lenders and borrowers must be conducted through escrow accounts.
- Funds in escrow accounts must not remain there for more than one day beyond the date of receipt (**T+1 rule**).

WHAT TO EXPECT FROM RBI REGULATIONS

In its consultation paper released in April 2016, some of the RBI suggested regulatory framework for P2P lenders were:

- P2P platforms should be set up as a company
- Minimum capital of Rs2 crore may be required
- Funds should move directly from lender's bank account to borrower's bank account to remove threat of money laundering
- Leverage ratio may be prescribed
- Need a business continuity plan
- P2P firms will be responsible for maintaining confidentiality of customer data
- Prohibit P2P firms from guaranteeing extraordinary or assured returns
- They will have to set up proper grievance redressal mechanisms
- Make adequate disclosures to RBI
- Their loan recovery practices may be aligned with existing NBFCs

- **Prohibition on early withdrawals-** They can no longer offer early withdrawals or liquidity options that allowed lenders to exit before the maturity of loans.
- **Disclosure of losses-** The RBI mandates full disclosure of any losses incurred by lenders on principal or interest which aims to enhance transparency and risk awareness.
- **No investment product promotion-** They must not promote peer-to-peer lending as an investment product offering features like assured minimum returns or liquidity options.

Impact of New RBI Guidelines

Lenders	Platforms	Fintechs
<ul style="list-style-type: none"> Those who invested with the expectation of liquidity or early exits will face cash flow disruptions. Previously, liquidity was managed by transferring loans between lenders. 	<ul style="list-style-type: none"> Some P2P platforms, have adjusted by ending partnerships that relied on such liquidity mechanisms. They now only offer maturity-based products. 	<ul style="list-style-type: none"> Fintech players offering liquidity and pre-maturity withdrawals will need to cease such services.

- **Prohibition on Cross-Selling-** NBFC-P2P platforms are prohibited from cross-selling insurance products that act as credit enhancement or credit guarantees.

What lies ahead?

- A robust regulatory framework is essential to ensure the stability and credibility of the P2P lending market.
- Refining guidelines to safeguard both borrowers and lenders.
- Educating potential borrowers and lenders about the P2P lending model, its benefits, and its risks is crucial.
- Building and maintaining trust is crucial for the success of P2P lending platforms.
- Adopting best practices and leverage new age technologies to overcome challenges and achieve sustainable growth.

9.9 Commerce Regulation in India

Why in News?

In a recent event, Union Minister of Commerce and Industry accuses e-commerce players of predatory pricing.

What is E-commerce platform?

- **E-commerce** – It refers to the buying and selling of goods and services in online, facilitated by digital platforms.
 - For example, Amazon, Flipkart, and emerging startups.

- **Importance** – It contributes to job creation, digital payments growth, and increased market access for small businesses.
- **Market size**– As of 2023, it is valued at around \$75 billion, projected to reach \$188 billion by 2025.
- **Recent trends** – There is a rise of hyperlocal delivery, focus on Tier-II and III cities, integration of AI and ML for personalized shopping experiences.

Types of Ecommerce



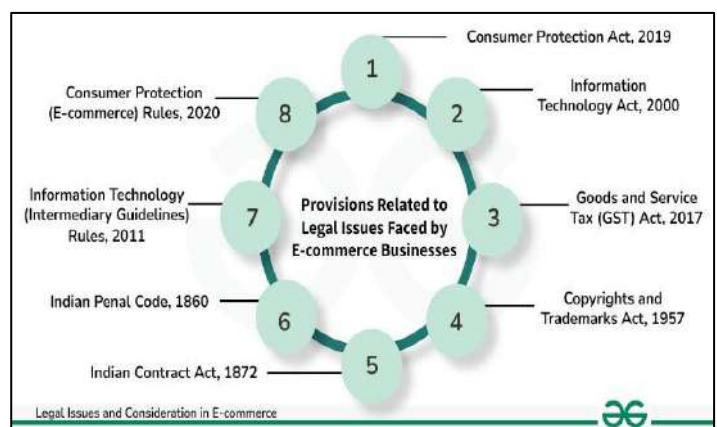
Status of E-Commerce

- **Global trend**- There are 2.71 Bn online shoppers globally as of 2024, 33% of the world's population.
- 20.1% of retail purchases will take place online in 2024, projected to reach 22.6% by 2027.
- There are over 26.6 Mn e-commerce sites globally as of 2024, with the US accounting for nearly 50%.
- Online consumers will spend the most on electronics (\$922.5 Bn) and fashion (\$760 Bn) in 2024.
- **India's trend**- India's e-commerce market is expected to reach \$325 Bn by 2030, growing at an annual rate of 18% through 2025.
- In FY2023, e-commerce GMV reached \$60 Bn, up 22% from the previous year.
- The number of online shoppers in India is projected to reach 350 Mn by 2025.



How e-commerce platforms are regulated in India?

- **Legislation** - Competition Act, 2002 was passed to address anti-competitive practices in the e-commerce sector, such as predatory pricing, exclusive agreements, and market dominance abuse.
- **Institution** – The Competition Commission of India (CCI) monitors and investigates these activities.
- **Rules** - Consumer Protection (E-commerce) Rules, 2020 include provisions like mandatory display of seller details, grievance redressal mechanisms, and restrictions on flash sales.
 - It is to protect consumer interests, ensure transparency, and regulate unfair trade practices on e-commerce platforms.
- **Information Technology (Intermediary Guidelines and Digital Media Ethics Code) Rules, 2021** mandates due diligence by e-commerce intermediaries.



- It includes the appointment of grievance officers, content removal within 36 hours of court orders, and user verifications.
- It aims to curb misinformation and protect consumer rights.
- **Policies** – Foreign Direct Investment (FDI) Policy allows
 - **B2B** – 100% FDI
 - **B2C** – It is allowed *only in marketplace models* (up to 100%) and *not in inventory-based models*
- It restricts platforms from influencing the sale price directly or indirectly.

Draft National E-commerce Policy (2019) proposes data localization, regulation of cross-border data flows, addressing anti-competitive practices, and promoting Make in India products. It emphasizes the protection of consumer data and fostering domestic innovation.

How do E-commerce giants violate Indian norms?

- **Predatory pricing**- Selling goods below cost to eliminate competition, often criticized for harming small businesses and violating India's Competition Act, 2002.
- **Operating under inventory model** – They act as Business-to-Consumer (B2C) by selling their products directly to consumers.
- **FDI violations**- E-commerce giants are accused of bypassing FDI rules by indirectly controlling inventory, thus operating as inventory-based models.
 - FDI is *not allowed in the inventory-based model* (where the platform owns the goods sold).
- **Discrimination** – There is accusations of favoritism towards certain sellers.
 - E-commerce platforms are focused on high-margin products, which hurt millions of small retailers.
- **Data privacy theft** - There is opaqueness about how this data is used, shared, or even exploited without consumers' explicit consent, leading to potential violations of privacy laws.
- **Tax avoidance**- They often involves in routing profits through low-tax jurisdictions or using transfer pricing mechanisms.
- **Consumer rights violations**- They often impose unfair contract terms on consumers, such as non-refundable policies or mandatory arbitration clauses, which limit consumer rights.

Predatory pricing involves selling goods or services at very low prices, often below cost, to eliminate competition and establish a monopoly.

What are the impacts of E-commerce?

Positive Impacts

- **Job creation**- E-commerce platforms have created millions of jobs, especially in logistics, warehousing, and IT sectors.
- **Convenience**- Easy access to a wide variety of products, often at lower prices and with doorstep delivery.
- **Tech advancement**- E-commerce has driven innovations in digital payments, AI, and logistics.
- **Expansion of market reach**- Sellers can reach a global audience, expanding their market base.
- **FDI inflows**- Attracts significant foreign direct investment, boosting the economy.
- **Supply chain enhancement**- Investments in logistics and warehousing improve overall infrastructure.
- **Access to markets**- Enables rural businesses to access national and international markets.

Negative impacts

- **Market concentration**- small retailers struggle to compete, leading to market monopolization by a few giants.
- **Consumer rights violations**- Unfair terms, misleading pricing, and privacy issues can disadvantage consumers.
- **Data privacy concerns**- Extensive data collection raises issues of privacy and potential misuse of consumer data.

- **Anti-competition-** Unfair pricing strategies can drive out competition and harm small businesses.
- **FDI violations-** Circumvention of FDI rules can lead to regulatory challenges and impact domestic businesses.
- **Urban congestion-** Increased demand for delivery services can contribute to urban traffic and pollution.
- **Digital divide-** Limited digital literacy and internet access in rural areas can exclude certain populations.
 - Cloud kitchens and online food delivery apps impact restaurants
 - Online medicine sales impacts five lakh pharmacies
 - Emergence of large mobile phone stores by players like Apple and large retailers hitting smaller neighbourhood phone shops.

What lies ahead?

- Formulate stronger legislations focusing on strengthening consumer rights like clearer refund policies, transparent pricing, and better data privacy protections.
- Intensify monitoring of e-commerce giants' compliance with existing laws, particularly concerning FDI, pricing, and data protection.
- Adopting blockchain technology to enhance transparency in supply chains, ensuring product authenticity and ethical sourcing.
- Encouraging e-com platforms to collaborate with governments to boost infrastructure, digital payments, and rural connectivity.
- Encouraging e-com to adopt more sustainable practices, such as eco-friendly packaging, green delivery options and circular economy.
- Promote programs like 'Vocal for Local' in India to promote domestic products and reducing reliance on global e-commerce giants.

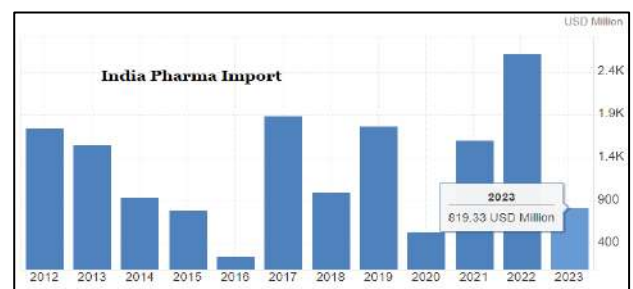
9.10 Pharmaceuticals Import into India

Why in news?

Recently, Union Budget 2024-25 has proposed removing the 10-12% customs duty on three cancer medicines marketed by AstraZeneca.

What are the impacts of pharmaceutical imports?

- **Imports of Pharmaceutical Products in India** - It averaged 850.28 USD Million from 1996 until 2023, reaching an all-time high of 2616.87 USD Million in 2022.
- Reliance on imports could have a chilling effect on the pharmaceutical industry, weakening its ability to remain relevant.
- **Strengthens monopoly** – Most of the imported medicines have monopoly in Indian market.
- Encouraging pharma imports will further strengthen the strong hold of their monopoly.
- **Increases cost** – Imported pharma products have higher costs than domestically produced products.
- This further increases the out-of-pocket health expenditures of Indians which already accounts for nearly 47.1% of the total health expenditure in 2021.
- **Disincentives domestic producers** – Promoting imports reinforces entry barriers faced by the domestic industry such as the product patent regime and the regulatory guidelines.
- New medicines are generally under patent protected thus preventing Indian companies from producing affordable generics/biosimilars.
 - Regulatory guidelines impose costly and time-consuming requirements for obtaining marketing approval of biosimilars.
- **Lose self-sufficiency** - Import facilitation makes the country dependent on imports.



Status of Indian Pharma Industry

- India **ranks third** in production of drugs & pharmaceuticals by volume, exporting to around 200 countries/territories.
- The Indian pharmaceutical industry supplies **62%** of the global demand for vaccines.
- India is the leading supplier of DPT (diphtheria, pertussis and tetanus), BCG (Bacillus Calmette-Guérin, used primarily against tuberculosis), and measles vaccines.
- At least **70% of WHO's vaccines** (as per the essential immunisation schedule) are sourced from India.

What are the measures to protect Domestic Indian Pharma?

- **Compulsory Licenses** – Under the Indian Patent Act 1970, if a patented medicine is “not available to the public at a reasonably affordable price,” compulsory licences (CL) can be granted to any company willing to make the product in India.
- **Government use licences** - India's Patents Act also permits the granting of government-use licences to enable domestic production of generic versions of patented medicines.
- **Price Control** - National Pharmaceutical Pricing Authority (NPPA) fixes the ceiling price of scheduled medicines specified under the Drugs (Prices Control) Order, 2013 (DPCO).

Drugs (Prices Control) Order, 2013 (DPCO) is issued under Essential Commodities Act, 1955 by Department of Pharmaceuticals (DoP), Ministry of Chemicals and Fertilizers.

National Pharmaceutical Pricing Authority (NPPA)

- **Formation** - NPPA was constituted in 1997 as an attached office of the Department of Pharmaceuticals (DoP), Ministry of Chemicals & Fertilizers.
- **Objectives** - To ensure availability and accessibility of medicines at affordable prices and to enforce and control prices and availability of the medicines in the India.
- **Functions** – It is to implement and enforce the provisions of the DPCO in accordance with the powers delegated to it.
- It monitor the availability of drugs, identify shortages, if any, and to take remedial steps.
- It collect/ maintain data on production, exports and imports, market share of individual companies, profitability of companies etc, for bulk drugs and formulations;
- It render advice to the Central Government on changes/ revisions in the drug policy.
- **National List of Essential Medicines** - The NPPA regularly publishes lists of medicines and their maximum selling prices.

What lies ahead?

- Establish a competitive environment for critical medicines by promoting local production.
- Invoke public interest provisions under the patents act to promote local production.
- Amend the regulatory guidelines for marketing approval of bio-therapeutics to reduce the burden on domestic companies.
- Make use of compulsory license provision to control drug prices and promote domestic industries.
- Eliminate duplicative requirements in biosimilar guidelines saves time and resources to facilitate patient access.
- Align import policies to support the growth of the domestic pharmaceutical industry.

10. AGRICULTURE

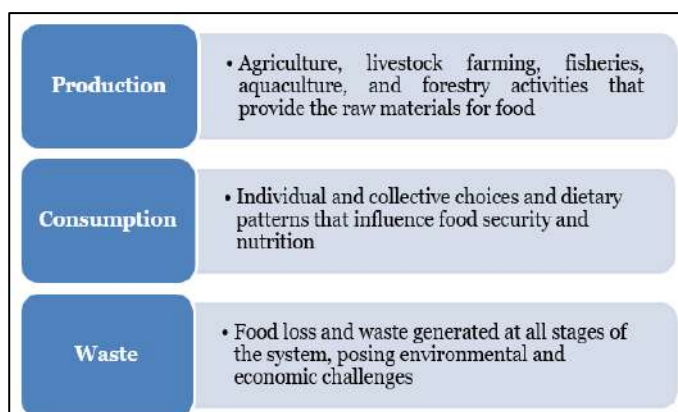
10.1 Gender Equality in Agri-Food System

Why in news?

A recent report by Global Alliance for Improved Nutrition (GAIN), calls for nutrition investments in the agri-food sector to reduce gender inequalities, increase productivity and enhance business resilience.

What is agrifood systems?

- **Definition** – Food and Agriculture Organization (FAO) defines agri-food systems as all the interconnected activities and actors involved in getting food from field to fork.
- **Coverage** – It encompasses everything from agricultural *production* and processing to distribution, consumption, and waste management.
- It also highlights the critical role of economic, social, and environmental factors in shaping how food reaches our plates.
- **Challenges** – A range of pressures like rapid population growth, urbanization, growing wealth & consequent changes in consumption patterns, are challenging our food systems' ability to provide nutritious food.
- They are affected by, extreme weather events as associated with climate change, land degradation and biodiversity loss.



Investment in Nutritional Food value Chain

- Global Alliance for Improved Nutrition (GAIN), a Switzerland-based foundation, launched the report titled The Case for Investment in Nutritious Foods Value Chains: An Opportunity for Gender Impact.
- **Importance of Nutrition Investments**
 - It can contribute to global food security and nutrition.
 - It can improve supplier productivity and business resilience.
 - It can create a more productive and loyal workforce by attracting and retaining women thereby empowering women.
 - It can help in climate mitigation and adaptation.
- **Recommendation** - It highlights six nutritious food value chains in three geographies from a gender perspective
 - In Sub-Saharan Africa - Cashew nuts and poultry
 - In Latin America - Aquaculture and quinoa
 - In South Asia - Tomatoes and dairy

What are the benefits of having gender equality in agrifood systems?

- **Employment opportunities** – According to FAO, globally, women comprise 38% of all agri-food workers.
- They play a vital role in our agrifood systems as
 - Farmers
 - Retailers
 - Wage workers
 - Entrepreneurs
- **Food Security** - About 60–80% of the food produced in India can be attributed to the efforts of rural women.
- **Health benefit** – Women's participation in food sector improves household diets and in particular improves child nutrition.
- **Rural Development** – Empowering and mainstreaming rural women workforce in agriculture can bring paradigm shift towards economic growth.
 - Agriculture employs about 80% of rural women
- **Women FPO** - Women Led Farmer Producer Organization benefits both society and economy.

Africa is the world's largest producer of raw cashew nuts. South Asia has a high tomato production, with India being the world's second largest producer.

- **GDP growth** – Plugging the gender gap in farm productivity and the wage gap in agri-food-system would increase global gross domestic product (GDP) by 1% or nearly \$1 trillion.

To know more about Women Led FPO, Click [here](#)

What are the challenges in reducing gender gap?

- Despite the high rate of participation, women in agri-food sectors continue to face a plethora of barriers.
- **Lack of access to resources** – Women find it difficult to access land, inputs, finance, extension services and technology.
- **Discriminatory social norms** – Inadequate encouragement from the domestic environment impede the elevation of women to the higher ladder in the sector.
- **Marginalization** – Most of the women labours in agrifood system are irregular, informal and vulnerable, as well as labour-intensive
 - 71% of the part-time jobs in agricultural processing around the world are held by women.
- **Gender segregation** - Women tend to be concentrated in the low-paid sectors and also have higher burdens of unpaid care work.
- Share of women in the agri-food sector is much higher in the less developed countries.
 - In sub-Saharan Africa, this share is 66% and in the South Asia region of which India, it is recorded at 71%.
- **Unequal pay for equal job** - On average, female employees in agriculture earn 18% less than men.
- **Safety concerns atmosphere** - Risky working conditions and gender-based violence impedes their participation.
- **Uneven disaster Impact** - Women are impacted more by disasters, such as climate risks and crises

In Gender Inequality Index (GII) 2022, India stands at rank 108 out of 193 nations and Global Gender Gap Index 2024 places India at 129.

What is the Way ahead?

- Address the structural inequalities and discrimination in the system.
- Provide women with equal access to resources, services, technologies, and training to close the gender gap in productivity.
- Increase funding to nutritious foods value chains, in particular small and medium enterprises (SMEs).
- Gender-lens investments could help address the lack of representation of women in leadership positions and support women entrepreneurship and ownership.
- The '2X criteria' provides a clear and standardized framework for investing in companies with a gender lens.

The 2X Criteria is the global industry standard for assessing and structuring investments that provide women with leadership opportunities, quality employment, finance, enterprise support, and products and services that enhance their economic participation & access.

10.2 Clean Plant Programme

Why in news?

The Union Cabinet recently has approved the Clean Plant Programme (CPP) under Mission for Integrated Development of Horticulture.

What is Clean Plant Program?

- **Clean Plant Program (CPP)** – It is a program to address critical issues in horticulture by providing access to high-quality, virus free planting material.
- **Launch** – It was first announced in Union Finance interim Budget speech in February 2023.
- **Aim** – It aims to increase the yield and productivity of horticulture crops in India and to enhance the quality of fruit crops across the nation.
- **Nodal Ministry** - Union Ministry of Agriculture and Farmers Welfare.

Horticulture consist of fruits, vegetables, and flowers, spices mushroom, medicinal and aromatic plants. India is the 2nd largest producer of fruits and vegetables in the world after China.

- **Finances** - Budget allocation under Mission for Integrated Development of Horticulture (MIDH) and loan from the Asian Development Bank (ADB).
- **Integration with MIDH** - The CPP complements with the ongoing Mission for Integrated Development of Horticulture (MIDH).
- **Implementation** – It will be implemented by the *National Horticulture Board* in collaboration with the Indian Council of Agricultural Research (ICAR).
- **Core components**
 - Development of nine Clean Plant Centers (CPCs)
 - Enhancement of infrastructure
 - Creation of regulatory and certification process

Clean Plant Centers
<ul style="list-style-type: none"> • Provide disease diagnostics and therapeutics • Create mother plants to be sent to nurseries • Quarantine all domestic and imported planting materials intended for commercial propagation and distribution
Enhancement of infrastructure
<ul style="list-style-type: none"> • Development of large-scale nurseries to facilitate the efficient multiplication of clean planting material • The mother plants obtained from the CPCs will be multiplied in nurseries and distributed to farmers
Creation of regulatory and certification process
<ul style="list-style-type: none"> • It is to ensure thorough accountability and traceability in the production and sale of planting material, that will be implemented under the Seeds Act of 1966.

Clean Plant Centers		
<ul style="list-style-type: none"> • The CPCs will be established in collaboration with the Indian Council of Agricultural Research (ICAR) for specific horticulture crops. • Each CPC will be linked to a different ICAR institute. 		
CPC Location	Crop	Linked ICAR Institute
Pune, Maharashtra	Grapes	National Research Center for Grapes, Pune,
Bikaner, Rajasthan	Citrus fruits	Central Institute of Arid Horticulture, Bikaner.
Nagpur, Maharashtra	Citrus fruits	Central Citrus Research Institute, Nagpur.
Solapur, Maharashtra	Pomegranate	National Research Center on Pomegranate – Solapur.
Bengaluru, Karnataka	Mango, Guava, Dragon Fruit and Avocado	Indian Institute of Horticultural Research, Bengaluru.
Srinagar, Jammu and Kashmir	Temperate Fruits - Apple, Almond, Walnuts, etc.	Central Institute of Temperate Horticulture (CITH), Srinagar
Mukteshwar, Uttarkhand	Temperate Fruits - Apple, Almond, Walnuts, etc.	Regional Station of CITH, Mukteshwar.
East India	Tropical and Subtropical Plants	East India Horticulture center in West Bengal and Jharkhand.
Lucknow	Mango, Guava, Litchi	Central Institute for Subtropical Horticulture, Lucknow.

What are the benefits of CPP?

Benefits of CPP	
Farmers	<ul style="list-style-type: none"> • Increased Crop Yields - By providing virus-free, superior planting material, it aims to boost crop yields. • Enhanced Income Opportunities - Higher quality produce will lead to better market prices and income for farmers

Nurseries	<ul style="list-style-type: none"> • Propagation – Streamlined certification processes and infrastructure support will help nurseries in efficiently producing clean planting material. • Sustainability – Improved facilities will foster growth and sustainability in the nursery sector
Consumers	<ul style="list-style-type: none"> • Superior Produce – It ensures that consumers receive virus-free fruits but also enhanced in taste, appearance, and nutritional value. • Affordable Cost – It will significantly reduce the cost of fruits by increasing the production.
Exports	<ul style="list-style-type: none"> • Global Market Strengthening – With higher-quality, disease-free fruits, India will enhance its position as a leading global exporter. • Thereby expanding market opportunities and increasing its share in the international fruit trade.
Inclusion	<ul style="list-style-type: none"> • Farmers – It aims to provide affordable access to clean plant material for all farmers, regardless of their landholding size or socioeconomic status. • Women Farmers - The programme will also actively engage women farmers, ensuring their participation in planning, resource access, training, and decision-making processes. • Regional growth – CPP will address the diverse agro-climatic conditions across India by developing region-specific clean plant varieties and technologies.
Alignment with Broader Initiatives	<ul style="list-style-type: none"> • It aligns with broader initiatives such as Mission LiFE (Lifestyle for Environment) and the One Health approach.

What are its significances?

- **Reduce Fruit Import** - India is a major importer and exporter of fresh fruits.
- In the financial year 2023-24, India exported fresh fruits worth \$1.15 billion, while it imported fruits worth \$2.73 billion.
- **Reduce import of plant materials** - With the rising consumption of foreign and exotics fruits such as avocado and blueberry, demand has specifically increased for their planting materials.
- **Address import bottlenecks** - At present, imported plants having to be kept in quarantine for two years.
- The CPCs will cut this period down to six months.
- Thus CPP can bolster India's position in the global fruit market.

Quick Facts

Mission for Integrated Development of Horticulture (MIDH)

- It is a Centrally Sponsored Scheme.
- **Launched in** - 2014-15.
- **Aim** – For holistic growth of the horticulture sector covering fruits, vegetables, root & tuber crops, mushrooms, spices, flowers, aromatic plants, coconut, cashew, cocoa and bamboo.
- **Key Features**
 - **Plantation Infrastructure Development** - Establishing nurseries and tissue culture units to produce quality seed and planting material.
 - **Area Expansion** - Creating new orchards and gardens for various crops, with or without integration (e.g., drip irrigation).
 - **Rejuvenation** - Revitalizing old, unproductive orchards.
 - **Protected Cultivation** - Setting up poly-houses, greenhouses, shade net houses, and walk-in tunnels, along with micro irrigation facilities.

- **Promotion of Organic Farming** - Encouraging organic practices, certification, and establishing vermi compost units.
- **Creation of Water Resources** – Developing community tanks, on-farm ponds, and water harvesting systems.
- **Pollination Support through Beekeeping** - Producing bee colonies, honey bee hives, and related equipment.
- **Horticulture Mechanization** - Providing power tillers, tractors, and plant protection equipment.
- **Human Resource Development** - Conducting awareness programs, farmer training, exposure visits, and study tours.
- **Post-Harvest Management (PHM) Infrastructure** - Setting up cold storage, pack houses, ripening chambers, reefer vehicles, processing units, and food processing facilities in North Eastern States.
- **Marketing Infrastructure** - Developing static and mobile vending carts, retail outlets, rural markets, wholesale markets, and direct market platforms.

10.3 Oil Palm Cultivation in North East India

Why in news?

The push for large-scale monoculture plantations of oil palm is taking a toll on the environment and on people's economic and social security

What is Oil Palm?

- Oil palm is world's most important oil crop, supplying approximately 40% of global demand for vegetable oil.
- **Nativity** – A native species of West Africa and now widely cultivated, especially in Southeast Asia.
- **Types** – It produces two distinct oils- Palm oil and Palm kernel oil.
- **Palm oil** – It is derived from fleshy mesocarp of the fruit, which contains about 45-55% of oil.
- **Palm kernel oil** – It is obtained from the kernel of stony seed, is a potential source of lauric oil.
- **Major Producers** – Indonesia and Malaysia.
- Malaysia is the world's second-largest producer of palm oil after Indonesia
- **Palm oil usage** - It has a variety of uses ranging from edible oil, cosmetics, and pharmaceuticals to bio-fuel and bio-lubricant.
- **Health benefits** – Palm oil is in rich natural nutrients, including tocotrienols, which support cardiovascular health and offer antioxidant properties.

Tocotrienols is an excellent source of fatty acids, free of trans fats, and contains lower levels of omega-6. Its antioxidant properties also aid in conditions such as Alzheimer's and Dementia.

What are the measures taken by India to improve its cultivation?

- **Need for local cultivation** - Major palm oil-producing countries such as Malaysia and Indonesia are planning to cut the production to meet the environmental needs.
- **National Mission on Edible Oils-Oil Palm** – It was launched in 2021, a Centrally Sponsored Scheme with a special focus on the North east region and the Andaman and Nicobar Islands.
- **Aim** – It is aimed to increase the area of oil palm cultivation in India to one million hectares by 2025-26.
- **Target** - To increase the production of crude palm oil from 27,000 tonnes in 2019-20 to 1.12 million tonnes by 2025-26.
- **Coverage** – More than 50% of the proposed increase in the area of cultivation, 328,000 ha, is planned in the northeastern states, as identified in an assessment by the Indian Institute of Oil Palm Research in 2020.
- **Implementation** - Mizoram was the first state to start planting oil palm in the northeast.

Status of Oil Palm in India

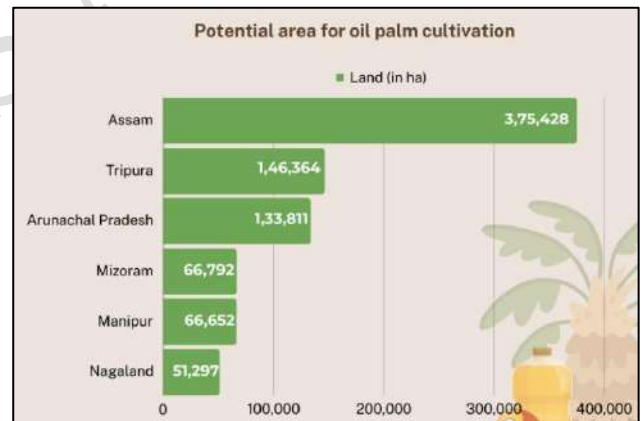
- India is the *world's largest importer* of edible oils most times.
- Palm oil dominates India's edible oil imports, representing more than 50% of all edible oil imports.
- In 2021, palm oil import was *valued at approximately \$US 8.63 billion*.

What are the challenges in cultivation in Northeast India?

- **Capital Intensive** – Initial setup requires large scale investment.
- **Insufficient Land** – It require large tract of monotonous lands.
- **High input need** – It require large amount of water and nutrients.
- **Irrigation need** - It requires evenly distributed rainfall of *150mm/ month* or 2500-4000mm/annum.
 - Rainfall distribution in India is not even and adequate.
- **Long gestation period** - It takes at least *four to five years* before it starts producing fruit, followed by a productive period of 20 to 25 years.
- **Logistical challenge** - Rugged terrain and remote location of the plantations, coupled with the relatively poor road network.
- **Inadequate oil mills** - Absence of oil mills close to many of the plantations.
- **Perishable nature** – Oil Palms have to be *processed within 24 to 48 hours post-harvesting*.
- **Procurement issues** – Delay in procurement and reduction in procurement prize based on quality discourages farmers.
- **Natural Disaster** – Conversion of forest areas into plantation makes them vulnerable to landslide.
- **Delay in subsidies** - Delays, reduction or even complete stoppage of payment of the committed government subsidies.

What are its impacts in Northeast India?

- **Social disruption** – Land in Northeast region are mostly community owned for subsistence farming where introduction of oil palm plantation *causes shift in land tenure and ownership*.
 - The capture of common lands for planting oil palm by the elite of the society is a large-scale problem, especially in Arunachal Pradesh.
- It furthers the *marginalisation of the poorer sections* of society and could potentially *lead to social turmoil and conflict*.
- **Environmental impact** – *Deterioration of soil health* and the quality and availability of *groundwater*.
- **Ecosystem change** – Conversion of large scale forest to plantation has significantly *affected the local flora and fauna*.
- **Economic impact** - Rapidly increasing labour costs in the region and women losing out on employment opportunities.
- **Biowaste** - Each tonne of crude palm oil produced generates approximately 4 tonnes of dry palm biomass and 3.5 tonnes of palm oil mill effluent.



Sikkim and Meghalaya have decided to stay away from planting oil palm.

What lies ahead?

- Take into account local environmental factors before converting the forest to plantation.
- Include the experiences from similar tea and coffee plantations impacts in the region.
- Safeguarding social welfare through fair labour practices.

11. ENVIRONMENT

11.1 Woody Encroachments in Grasslands

Why in News?

A study in 'Global Change Biology' found that increased tree cover in savannahs and grasslands has led to a more than 20% decline in native grassland bird populations, particularly in the African Savannah.

What are grasslands?

- **Grassland**- Grasslands are **large open areas** where grass is the dominant plant species.
- They cover nearly **40% of the earth's total landmass**, and are home to many endemic and at-risk species of plants and animals.
- **Occurrences** – They occur in both **tropical and temperate** regions.
- **Tropical Grasslands (Savannahs)** – They are found in regions **near the equator**, primarily in Africa, South America, and Australia.
- It has warm temperatures year-round with distinct wet and dry seasons and dominated by grasses with scattered trees and shrubs.
- Home to megafauna like elephants, lions, giraffes, and rhinoceroses.
 - Notable examples include the Serengeti in Africa.

Grassland	Location
Prairie	North America (USA, Canada)
Pampas	South America (Argentina, Uruguay, Brazil)
Downs	Australia
Savanna	Central Africa
Campos	Brazil
Pustaz	Hungary and its surrounding regions
Veldt	Southern Africa (South Africa, Lesotho, Zimbabwe, Botswana)
Steppe	European Russia, Siberia and Asian Russia
Manchurian	Mongolia, China
Canterbury	New Zealand
Llanos	Colombia and Venezuela

- **Temperate Grasslands** – They are found in **mid-latitude regions** such as North America, South America and Eurasia.
- It is characterized by hot summers and cold winters with moderate rainfall and are dominated by a **variety of grasses with few trees**.
- It hosts species like bison, antelope, and various rodents and birds.
 - Examples: North American prairies and Eurasian steppes
- **In India** – Grasslands occur across different climatic regimes like

IMPORTANCE OF GRASSLANDS

- ▶ Favourite habitats of lions who prefer to live with entire pride
- ▶ Grass provides food & shelter for large number of herbivores
- ▶ Lions and other wild animals easily find prey and hunting too is easy

▶ They can quench their thirst in water points in grasslands

▶ Can help reduce number of lions straying near human habitation

▶ Grasslands are imp biosphere



- **High-altitude Shola grasslands** - Western Ghats
- **Arid Grasslands** – Western parts and interior India
- **Floodplain Grasslands** – Himalayas belt

- **Role** – They play a crucial role in supporting biodiversity and providing ecosystem services.
- It includes **megaherbivores** like elephants, rhinoceroses, and buffaloes in Africa and Asia and grassland birds like the **bustards and floricans**.

What are the threats to grasslands?

- **Conversion to agriculture**- Grasslands are often converted into agricultural land to meet the growing demand for food production.
- **Erosion**- Without the deep root systems of grasses to hold the soil in place, grasslands are susceptible to erosion.
- **Large-Scale development**- Urbanization and infrastructure projects encroach on grassland areas, leading to habitat fragmentation and loss.
- **Overgrazing**- Overgrazing reduces biodiversity, compacts the soil, and makes the land more vulnerable to erosion.

- **Woody encroachment**- An often-overlooked threat is the increase of tree and shrub cover, known as woody encroachment.

What is woody encroachment?

- **Meaning** – It entails the conversion of open habitats to habitats with greater tree cover and/or shrub density.
- **Causes** – When there is disruptions in disturbance regimes, trees have the calm they need to establish themselves and start woody encroachment.
- Fire suppression, fragmentation, and variations in rainfall further contribute especially in South America, Australia, and Africa.
- Colonial classification of open ecosystem as ‘wastelands’ to promote timber cultivation.
- Tree plantation drives leads to encroachments.
 - **In Banni grasslands** – Gujarat government planted invasive species Prosopis Juliflora in Banni grassland from 1961 to combat desertification & provide firewood to communities that transformed swaths of the grasslands into a Prosopis woodland.
 - **In the Shola grasslands** – Eucalyptus plantations have run encroached
 - **In wet terai grasslands of the Himalaya** – The Malabar silk-cotton tree has been running riot here.
- Increased atmospheric CO₂ due to climate change favors tree growth over grasses because the C₃ photosynthetic pathway used by trees is favored under high CO₂ conditions.
- Once trees become dominant in a system, they may further suppress grasses through shading and fire suppression.
- **Threat** – It is widespread across most ecosystems.
- In India, woody encroachments are observed and rampant even inside protected areas such as national parks and sanctuaries.
 - The cover of grassland habitats had shrunk by 34% while tree cover in these places had increased by 8.7%.
- **Impacts** – The end result is the **homogenisation of an ecosystem**, meaning a diverse, multi-layered ecosystem turns into a uniform layer of woody plants.
- It disrupts the natural balance and biodiversity of these ecosystems.
- Succession of woody species changes the soil conditions, which changes the grass species and faunal association.
- It invite increased predation especially of the specialist birds’ nests.
- There is dramatic decline of grassland birds in these regions which is mainly studied in Southern African Countries of South Africa, Eswatinii and Lesotho
 - Of the 191 species they analysed from 2007 to 2016, declining population trends prevailed in 121.
 - Of these, the decline of 34 species correlated with woody encroachment.
- For similar reasons, it also brought down the population of grassland specialist rodents in the Banni grasslands of Kutch which incurred a **survivability penalty**
 - The grass allowed them to hide from predators, but as trees cropped up, they spent more time keeping vigil and less time feeding

Open ecosystems are characterised by a grassy understory and a scattering of native tree species. They are generally maintained by certain natural and human activities like grazing and fire, which are called disturbance regimes because they work in tandem to limit the growth of tree species.

What lies ahead?

- Develop comprehensive evidence of woody encroachment's impact on ecosystem and monitor open ecosystems in long term because they provide valuable fine-scale information.
- Acknowledge the historical presence and ecological importance of grasslands is vital.
- Dismantle colonial terminologies like "wastelands" that misclassify grassland ecosystems.
- Implement informed policies and practices to protect these ecosystems for future generations.
- Promote agroecological methods and rotational grazing systems.

- Follow successful restoration projects, like those in Maharashtra, demonstrate the potential for grassland conservation.

11.2 Social Costs of Vulture Decline

Why in news?

Recent study reveals that there is a strong link between Vulture decline in India and its impact on human health crisis.

What is the status and role of vultures in India?

- **Distribution** – It is *now extinct in South East Asia* with current populations existing **mostly in central and peninsular India**, south of the Gangetic plains.
- It is also found in southwest Pakistan, Bangladesh and Nepal.
- **Types** – There are **nine species** of vultures, *five belong to the genus Gyps* and the rest *four are monotypic*.
 - [Oriental White-backed Vulture](#) - G.bengalensis
 - The Long-billed Vulture - G.indicus
 - Slender-billed Vulture - G.tenuirostris
 - The Himalayan Vulture – G.himalayensis
 - The Eurasian Griffon – G.fulvus
 - Egyptian Vulture - Neophron percnopterus
 - Red-headed Vulture - Sarcogyps calvus
 - Cinereous Vulture - Aegypius monachus
 - Bearded Vulture (Lammergeier) - Gypaetus barbatus
- **Role in Ecosystem** – They feed on carrion, the remains of dead animals, and act as the ‘rubbish collectors’ of the natural world.
- It help eliminating potentially harmful bacteria from the environment, potentially limiting the spread of diseases such as anthrax and rabies.
- **Role in culture** – The [Dakhma](#) or ‘[Towers of Silence](#)’ is a unique and environmentally conscientious method of laying the dead to rest practised by the Parsi community.
- The *vultures* performs the pivotal role of stripping away the flesh from the bones through their scavenging process.

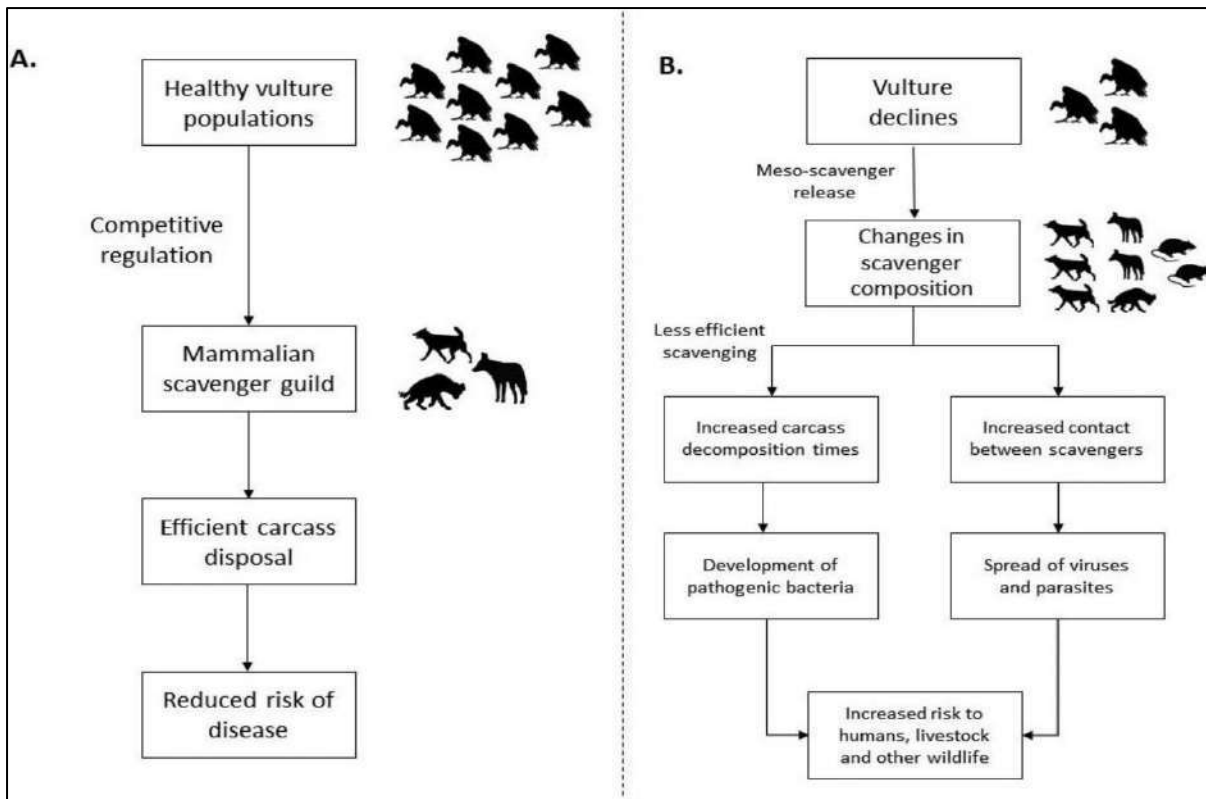
Why vulture population is declining in India?

- **Decline** – In the mid-1990s, India’s vulture population reached near extinction
 - White-rumped Vulture, Indian Vulture, and Red-headed Vulture declined by 98%, 95%, and 91% respectively.
- India’s remaining vulture populations are largely confined to protected areas and feed primarily on wildlife.
- **Veterinary drugs** – It is primarily due to the widespread use of diclofenac in livestock.
- Vultures consuming the carcasses of treated livestock suffered fatal kidney failure.
- Alternatives to diclofenac such as aceclofenac, ketoprofen, and nimesulide also affected vultures.
- **Usage of NSAIDs** - Nonsteroidal anti-inflammatory drugs are the most prescribed medications for treating conditions such as arthritis.
- Diclofenac and aceclofenac, continue to be produced for human use.
- **Loss of Habitat** – It is due to *urbanization, quarrying and mining*.
- **Dwindling availability of food** - Carcasses increasingly being *buried and burned* and also due to *competition from feral dogs* continue to pose risks.
- **Poisoning** - Deliberate *poisoning of carcasses*, intended to kill dogs and other carnivores, also kills vultures.

Diclofenac, a non-steroidal anti-inflammatory drug (NSAID) used to treat sick cattle.

What are social and economic impacts of decline in vulture population?

- Dramatic decline over vulture population over the past two decades has had unforeseen consequences for both wildlife and human health.



- **Sanitation crisis** - Rotting carcasses left unattended, potentially contaminates and pollutes soil, air and water sources.
- It allows for increased feeding and breeding of stray dogs.
- **Proliferation of harmful microbes** – The absence of vultures allowed bacteria and pathogens to proliferate.
- **Disease in humans** – Growth of harmful microbes led to a surge in human diseases and deaths.
 - Diseases such as *rabies got exacerbated* by the rise in stray dog populations.
- Treatment *increases the health expenditure* of individuals and the government.
- **Deaths in humans** - *4% increase in death rates* in areas where vultures once thrived and now absent.
 - It caused approximately *100,000 additional human deaths* annually between 2000 and 2005.
- **Economic Loss** - The economic impact of these additional deaths is estimated at *over \$69 billion per year in mortality damages*.
- **Impact on tanning industry** - India's tanning industry once relied on quick removal of carrion by vultures.
- In their absence, shifting to burying or burning cattle *reduced the supply of cattle skin* for leather manufacturing.
- **Cultural Impact** – It *affects the tradition of Dhakma of the Parsi* whereby the burial rituals require vultures to consume the body.

Conservation measures by India
<ul style="list-style-type: none"> • Asia's first <i>vulture re-introduction program</i> in 2016 by Jatayu Conservation Breeding Centre, Pinjore. • <i>Vulture Action Plan 2020-25</i> by Union Ministry of Environment, Forest and Climate change. • SAVE (<i>Saving Asia's Vultures from Extinction</i>) program by Consortium of regional and international organizations. • Diclofenac is banned in veterinary medicine since 2008 while Aceclofenac and ketoprofen were banned for animal use in 2023.

What lies ahead?

- Creating awareness among people about the importance of vulture.

- Adopting One Health approach for holistic coverage of human, animal and environmental health.
- Preventing misuse of veterinary & NSAIDs by ensuring their sale only on prescription.
- Scientific manner of disposal of livestock carcasses animals that died during treatment.
- Finding nontoxic alternatives for animal steroids.
- In- Situ conservation of vulture for the captive breeding.
- Continued action is necessary to ensure the survival and recovery of these vital scavengers.

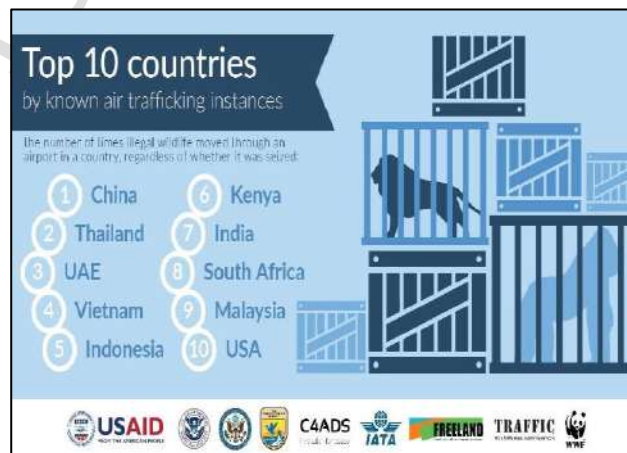
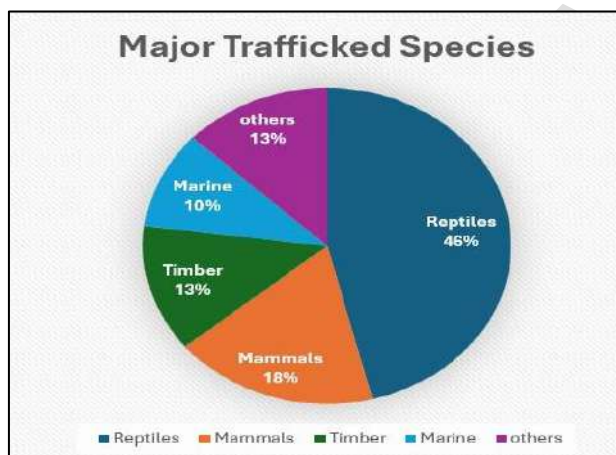
11.3 Illegal Wildlife Trade

Why in news?

Indian authorities have arrested six individuals in Jharkhand for allegedly being involved in illegal online trading of wildlife parts, including a substance called Hatha Jodi.

What is illegal wildlife trade?

- **Illegal wildlife trade-** It refers to the illegal buying, selling, or exchange of wild animals, plants, and their derivatives.
- It includes the trafficking of endangered species protected by law and the trade of wildlife products without proper permits or in violation of national and international regulations.
- **Types of illegal wildlife trade**
 - **Live animals and plants-** Trafficking of live specimens for pets, zoos, or private collections.
 - **Animal parts-** Trade in products like ivory, rhino horn, pangolin scales, and tiger skins.
 - **Plants and plant products-** Illegal trade in timber, medicinal plants, and rare flora.
- **Magnitude of illegal wildlife trade-** Between \$7 and \$23 billion per year globally.

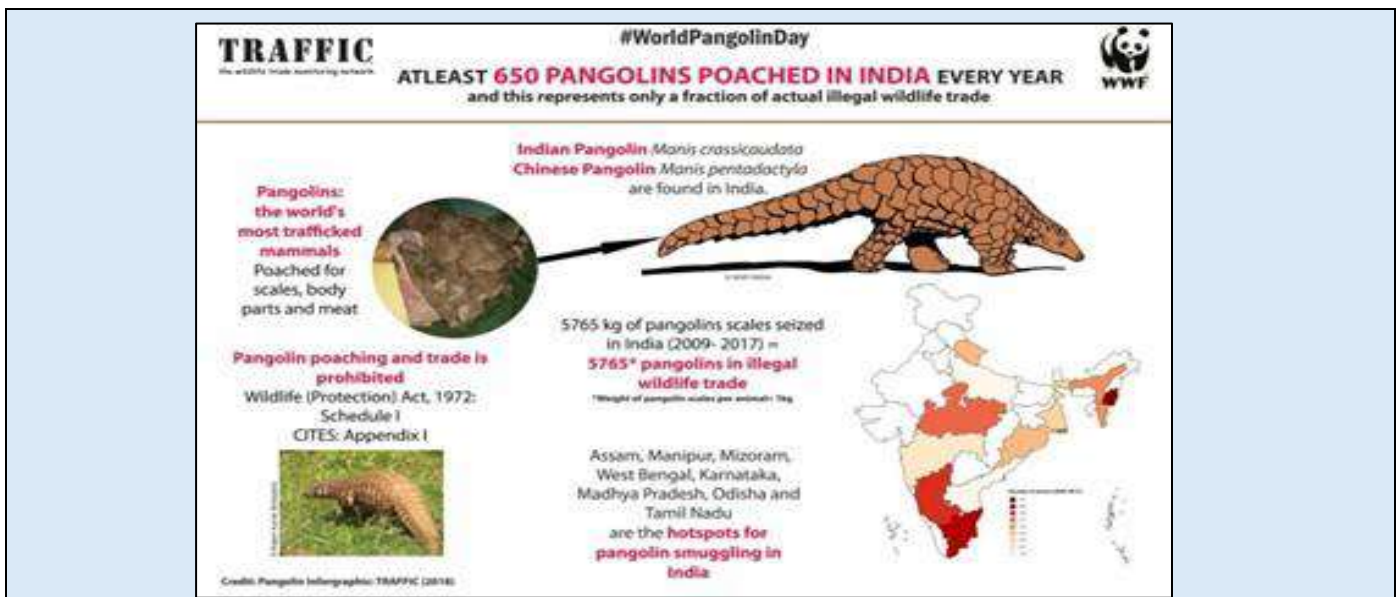


Hatha Jodi

- Hatha Jodi is the hemipenis of the monitor lizard (*Varanus spp.*),
- It is illicitly obtained and falsely marketed as a sacred charm or root with mystical properties.
- Monitor lizards are protected under Schedule I of the **Wildlife (Protection) Act of 1972**.



Pangolin Trafficking



What are the causes of illegal wildlife trade?

- **Demand for Luxury goods** - Items like ivory, rhino horns, and tiger skins are seen as status symbols in some cultures.
- **Use in Traditional medicine**- Certain wildlife parts are believed to have medicinal properties, driving demand in traditional medicine markets.
- **Exotic pets**- The demand for rare and exotic pets leads to the capture and trade of wild animals.
- **Use as food** - Pangolins are trafficked mostly due to demand for meat and scales.
- **High profit margins**- The illegal wildlife trade is a lucrative business with high profits, especially for rare species.
- **Inadequate legal frameworks**- Some countries lack strong laws or penalties to deter illegal wildlife trade.
- **Border control challenges**- Poorly managed borders make it easier for smugglers to transport illegal wildlife products.
- **Superstitions and Demand** - Belief among people that some animal parts like Hatha Jodi have magical powers in solving financial and health issues.
- **Lack of awareness** – Most of the perpetrators do not understand the gravity and impact of the crime.

What are the emerging challenges in controlling illegal wildlife trade?

- **Social Media** – Social Media is increasingly being used to propagate false information about wildlife products.
- This fuels the thriving illegal market for endangered animals.
- **Encrypted communication** - Privacy protection features such as encrypted chat and private social media groups further add challenges to tracing the illegal wildlife trade.
- **New trade channels** – Unregulated cyberspace channels and E-Commerce platforms being used for selling wildlife products pose new challenges to identifying and preventing wildlife crimes.
- **Air Ports** – Airports in India are major conduits for trafficking wildlife contraband.
- **New methods of evading checks** – New methods are used for evading the enforcement agencies in hiding articles through checked luggage and personal baggage.
- Wrong declaration of protected species.

What are the impacts of illegal wildlife trade?

- **Species decline**- Illegal trade often targets endangered species, pushing them closer to extinction.
- **Ecosystem disruption**- Removal of key species can disrupt ecosystem function and harm other wildlife.
- **Tourism impact**- Loss of wildlife can reduce ecotourism revenue, which many local economies depend on.
- **Economic costs**- Management and enforcement against illegal trade can be costly for governments.

- **Organized crime-** Wildlife trafficking is often linked to other forms of organized crime , corruption and terrorism.
- **Local communities-** Indigenous and local communities may lose traditional livelihoods tied to wildlife.
- **Disease transmission-** Illegal wildlife trade can spread zoonotic diseases (diseases transmitted from animals to humans).

What are the regulations in India?

- **Wildlife Protection Act, 1972-** It provides for the establishment of wildlife sanctuaries and national parks and imposes penalties for illegal trade.
 - Hunting or trading parts of Schedule I species under WPA act can result in imprisonment for 3 to 7 years and a minimum fine of Rs 25,000.

To know more about WPA act , Click [Here](#).

- **CITES (Convention on International Trade in Endangered Species of Wild Fauna and Flora)-** India is a signatory to CITES, which regulates international trade in endangered species.
- **Wildlife Crime Control Bureau (WCCB)-** Responsible for tackling wildlife crime across the country.
- **Forest departments-** Local Forest departments play a key role in monitoring and enforcement at the ground level.
- **Project Tiger and Project Elephant-** Government programs focused on conserving tiger and elephant populations.
- **Protected Areas Network-** A system of national parks and wildlife sanctuaries to safeguard habitats and wildlife.
- **Awareness campaigns-** Various NGOs and government bodies conduct campaigns to educate the public about the impacts of illegal wildlife trade and the importance of conservation.
- **Cross-Border efforts-** Collaboration with neighboring countries and international organizations to combat wildlife trafficking.
 - **TRAFFIC -** Wildlife Trade Monitoring Network to monitor the international trade in wild plants and animals.

What lies ahead?

- **Updating laws-** Ensure that wildlife protection laws are comprehensive and adapt to emerging threats and new trafficking methods.
- **Harmonizing regulations-** Align national laws with international agreements like CITES to create a unified approach to wildlife protection.
- **Training and capacity building-** Provide training for law enforcement and customs officials on wildlife trafficking detection and investigation.
- **Cross-Border collaboration-** Foster collaboration between countries and international organizations to tackle the global nature of wildlife trafficking.
- **Information sharing-** Create networks for sharing intelligence and best practices among nations.
- **Public awareness campaigns-** Implement global and local awareness campaigns to educate the public about the impacts of wildlife trafficking and the importance of conservation.
- **Advanced monitoring-** Use technology such as drones, satellite imagery, and genetic tools to monitor wildlife populations and detect illegal activities.
- **Data management-** Develop robust data systems for tracking wildlife trade and enforcement actions to enhance analysis and response.
- **Scientific research-** Support research on wildlife populations, trafficking methods, and conservation strategies to inform policy and action.

11.4 Environment and Climate Rights in India

Why in news?

In its recent judgment in *M.K. Ranjitsinh and Ors. vs Union of India & Ors.*, the Supreme Court of India has made a significant impact on the developing field of climate change law in the country.

What encompasses environment and climate rights?

- **Environment & Climate rights** - It encompasses the ***legal and ethical responsibilities*** related to climate change and environmental protection.
- **Objective** – It aims to ensure that individuals and communities have the ***right to a healthy environment*** and that the government and corporations are held accountable for environmental degradation and climate impacts.
- **Facets of climate rights**
 - Right to life
 - Right to livelihood
 - Right to access clean water and sanitation
 - Right to health and well being
 - Right of migrated and displaced people
 - Right of indigenous people right

What are measures taken by India in providing environment and climate rights?

- **Constitutional provisions** – Environment and climate rights are enshrined in the fundamental rights and directive principles of state policies (DPSP) and in fundamental duties.
- **Fundamental rights** – **Article 21** guarantees the fundamental right to life, which has been expanded to include the right to a clean and pollution-free environment.
- **DPSP - Article 48A** directs the State to protect and improve the environment and safeguard the forests and wildlife.
- **Fundamental duties - Article 51 A (g)** imposes a fundamental duty on citizens to protect and improve the natural environment, including forests, lakes, rivers, and wildlife.
- **Legal measures** – In pursuant to the Constitutional mandate, government have framed many statutory acts in this regard.
- **The Environment Protection Act, 1986** – It provides the framework for the protection and improvement of the environment and the prevention of hazards to human beings, other living creatures, plants, and property.
- **Air (Prevention and Control of Pollution) Act, 1981** – It regulates air pollution and sets standards for air quality.
- **Water (Prevention and Control of Pollution) Act, 1974** – It regulates water pollution and aims to maintain or restore the wholesomeness of water.
- **Forest Conservation Act, 1980** – It provides for the conservation of forests and regulates deforestation.
- **Policy initiatives** – Central government have adopted ***National Environment Policy 2006*** whose characteristics are as follows
 - The conservation of critical environmental resources
 - Intra- and inter-generational equity
 - The integration of environmental concerns in developmental policymaking
 - Efficient resource utilisation and good governance.
- **Judicial measures** – Through various judgements, Indian judiciary have introduced various principles that were integral to Indian environmental policy.
- The Supreme Court (SC) in the ***Oleum Gas Leak case*** evolved the ***“absolute liability” principle***, which makes an enterprise engaged in hazardous or inherently dangerous activity accountable and absolutely liable for compensation, despite all reasonable care.
- **Regulatory bodies** – Several bodies administer and enforce environmental laws in India

Constitutional Measures	Legal Measures
<ul style="list-style-type: none"> • Article 21 of Fundamental Rights • Article 48A of DPSP • Article 51A(g) of Fundamental Duty 	<ul style="list-style-type: none"> • Environment Protection Act 1986 • Water Act, 1971 • Air Act, 1981 • Forest Conservation Act, 1980

- Ministry of Environment, Forest and Climate Change (MoEFCC)
- Central Pollution Control Board (CPCB)
- State Pollution Control Boards (SPCBs) of each state
- There are also special regulators for biodiversity, clean development mechanism, coastal zone management and forest preservation.
- **Quasi-judicial bodies** – A special tribunal, **the National Green Tribunal (NGT)**, was established in 2010 to speedily dispose of cases relating to environment protection, conservation, and granting relief in environmental matters.
- It has taken a rather strict approach towards ensuring compliance with environmental law.

What are the Landmark Judgments in India regarding environment rights?

Judicial Cases	Climate Rights
Rural litigation and Entitlement Kendra vs. Uttar Pradesh (1985)	Right to decent environment
MC Mehta v. Union of India (1987)	Absolute liability for hazardous activities,
Subhash Kumar v. State of Bihar (1991)	Right to pollution-free water and air under Article 21.
Vellore Citizens' Welfare Forum v. Union of India (1996)	'Precautionary Principle' and 'Polluter Pays Principle'
T. N. Godavarman Thirumulpad v. Union of India (1996)	Forest conservation and judicial oversight
M.C. Mehta v. Kamal Nath (1997)	Public trust doctrine
S. Jagannath v. Union of India (1997)	Environment Impact assessments (EIA)
Narmada Bachao Andolan v. Union of India (2000)	Displacement people's rights
Indian Council for Enviro-Legal Action v. Union of India (1996)	Enforced the 'Polluter Pays Principle'
M.K. Ranjitsinh and Ors. vs Union of India & Ors. (2021)	Right to be free from the adverse effects of climate change

Discuss about various peoples movement in India for environment protection?

- **Chipko movement (1970s)** - Villagers hugged trees to prevent deforestation in Uttarakhand, sparking global environmental activism.
- **Narmada Bachao Andolan (1985)** - Protested against large dams on the Narmada River, highlighting issues of displacement and environmental impact.
- **Jal Satyagraha** - Farmers in Madhya Pradesh protested the Narmada Dam's effects on displacement, pushing for better rehabilitation.
- **Save the Western Ghats movement** - Campaigned to protect the Western Ghats from industrial threats, advocating for stricter environmental measures.
- **Climate Strike and Fridays for Future** - Indian youth joined global climate strikes to demand stronger climate action and policy changes.
- **Adivasi movements** – Indigenous communities defend their lands and forests from exploitation, emphasizing traditional knowledge and rights.
- **Ganga Bachao Andolan** - Focuses on cleaning and conserving the Ganges River, involving local communities.

- **Green Thumb Movement** - Promotes urban gardening and tree planting, encouraging local action for climate resilience and sustainability.

11.5 Waste Shipments and Waste Trafficking

Why in News?

India, Turkey, Indonesia raise concerns over EU's regulation on waste shipments at the WTO Committee on goods.

What is a waste shipment?

- **Waste** – It is any unwanted or unuseful material.
- These are objects that have been discarded since these materials aren't functioning anymore.
- Economic growth and globalisation have led to a worldwide increase of waste transport across borders, by road, rail and boat.
- **Waste shipment** - Waste exports and imports are called waste shipments.
- Waste shipments must follow rules called waste shipment controls.
- **Waste shipment controls** - Rules for importing and exporting waste apply in
 - The country where the shipment starts
 - The country where the shipment ends
 - Any country the waste passes through on its intended journey (known as 'transit countries')
- **Significance** – Exporting countries can sell their trash for money.
- Importing countries profit more from this waste material through recycling and up cycling.
- It also enhances international ties.
- Many wealthy countries transfer their recyclable waste to other countries because it is less expensive, helps them meet their recycling targets, and reduces local landfill.
- It contributes to the preservation of the Earth's natural equilibrium.

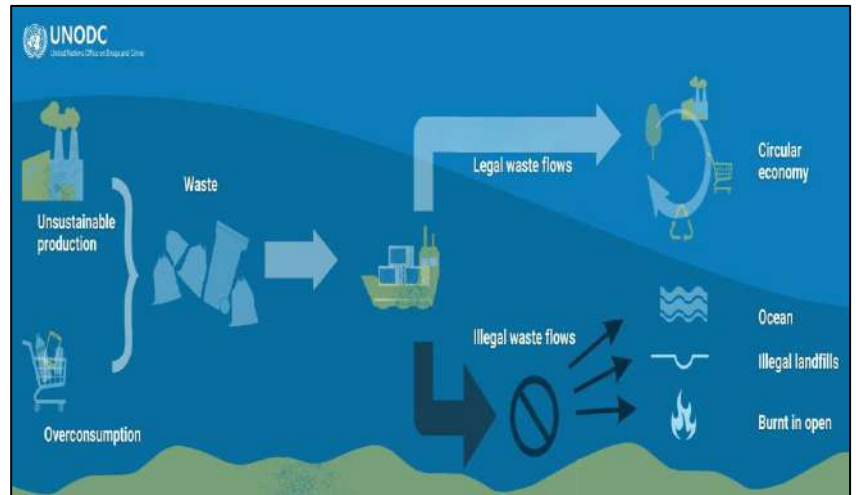
What are the new EU regulation on waste shipments?

- **Waste exports from the EU to non-EU countries** – It have increased by 72% since 2004, amounting to 35 million tons per year in 2023, per the EU.
- **Importing countries** - Turkey was the largest recipient importing a volume of 12.4 million tonnes.
- India was the second-largest destination for waste exported from the EU in 2022, receiving 3.5 million tonnes of waste from the bloc, per EU data.
- **New regulations** – Exports of EU waste to non-OECD countries will only be allowed if these countries inform the European Commission that
 - They are willing to import waste
 - They demonstrate that they have the ability to manage it in a sustainable manner
- These new requirements will apply from May 21 2027.
- **Objective** – To ensure that countries importing EU waste are able to show that their regulations lead to a similar level of environmental protection.
- It has provisions would ensure that the conditions under which the waste imported by other countries were broadly equivalent to those in the bloc.

What is waste trafficking?

- **Waste trafficking** – It is the illegal trade of waste which is widely considered a high-profit, low-risk crime worth billions of dollars per year.

- **Trafficked waste** – It includes plastic, e-waste, metal, and paper, with mixed materials, textiles, vehicle parts, industrial and medical waste.
- **Flow of wastes** – Illegal waste typically flows from higher-income countries in Europe, North America and Asia to middle and lower-income countries in Southeast Asia, South Asia, and Africa.
- **Vulnerable regions** - The ASEAN region has been a prominent destination for illegal waste shipments in the past years.



- Malaysia, Indonesia, Viet Nam and Thailand in particular have faced challenges due to increased waste imports.
- **Impact on importing nations** – Upon arrival at destination, take-back or repatriation procedures are a major challenge as shipments often cannot be traced to their countries of origin.
- Abandoned or unclaimed containers at ports exacerbate the issue, further complicating enforcement and investigation efforts.
- **Environmental and health hazard** - Most waste ends up in illegal landfills, the ocean, or burnt in the open which can affect human health and damage ecosystems.
- **Hinders economic development** – It deters development, intensifying economic disparities, or hurting people's livelihoods.
- **Undermine transition to circular economy** – Waste trafficking can prevent waste from being re-used or re-purposed leaving the demand for raw materials unchanged.

India faces environmental and safety concerns as around 8.8 lakh million tonnes of waste tyres, mainly from developed countries, are dumped, burnt, or retreated for resale in the aftermarket.

What are the challenges in controlling waste trafficking?

- It is hard to detect, investigate, and prosecute.
- **A cyber-enabled crime** – E-commerce platforms and social media can help facilitate illegal waste trade transactions.
- **Lower penalties** – Penalties are not as high as those for the trafficking of other illicit goods like drugs, thus making it an attractive business for criminals.
- They are usually unproportioned to the damage caused.
- **Different definitions of waste** – Different countries have different interpretations of legal definitions of waste, leading to varying levels of enforcement.
- **Inconsistent waste regulations** - They are complicated and inconsistent across borders.
- Criminal actors exploit these loopholes to conduct their illicit activities.
- **Corruptions** – Common tactics include false declarations, a lack of or incorrect notifications to circumvent regulations and avoid controls, along with missing or inadequate licenses or documents.

What are measures taken to control waste trafficking?

- **Global initiatives** – The UN Office on Drugs and Crime (UNODC) developed a Legislative Guide on Waste Trafficking.
- It is to support States in enacting or strengthening domestic legislation to prevent and combat waste trafficking.
- **UNODC Unwaste project** – It is funded by the European Union (EU) and implemented in cooperation with the UN Environment Programme (UNEP).
- It aims to fight waste trafficking between the EU and Southeast Asia by supporting the transition towards a circular economy.

- **Mapping waste trafficking** – A first-ever mapping of waste trafficking trends from Europe to Southeast Asia has been published *by the UNODC and the UNEP*.
- **Basel convention** – It controls the *transboundary Movements of hazardous wastes and their disposal*, which was adopted in 1989.
- It *aims to reduce hazardous waste generation* and the promotion of environmentally sound management of hazardous wastes, wherever the place of disposal.

The circular economy promotes the share, repair, reuse, recycling, and reduction of materials.

What lies ahead?

- Pursue good environmental governance and robust environmental rule of law.
- Promote Projects such as Unwaste in tackling issues through a multi-sector, multi-disciplinary approach.
- There should be transparency on how a country could be listed as an eligible one for exports.
- Hindrances should be minimised for countries that want to obtain waste for reuse as raw materials and excessive administrative and certification requirements should be avoided.

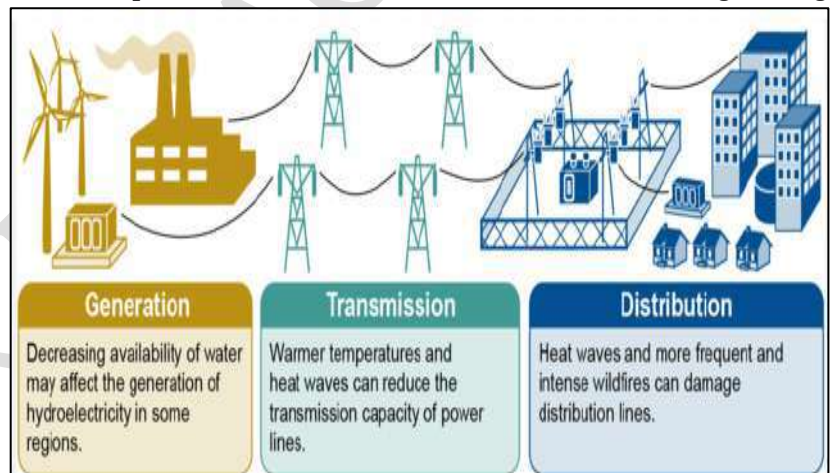
11.6 Climate Change and Electricity

Why in news?

The Power Ministry needs to reassess the National Electricity Plan (NEP) due to increased electricity demand and consumption from rising heat waves and humidity in recent years.

What are the impacts of climate change on electricity?

- **Higher demand & consumption** - Warmer temperatures lead to increased use of air conditioning, raising overall electricity demand, especially during peak summer periods.
- **Increased transmission Losses** - Elevated temperatures increase resistance in power lines, leading to higher transmission losses.
- **Cooling water shortages** - Reduced water availability can lead to operational restrictions or shutdowns.
- Thermoelectric and nuclear power plants require significant amounts of water for cooling.
- **Damages infrastructure** - Hurricanes, storms, and floods can damage power lines, substations, and generation facilities, leading to outages and costly repairs.
- **Risk of blackouts** - Extreme weather increases the risk of blackouts and requires investments in grid resilience.
- **Reduces efficiency** - Higher temperatures reduce the efficiency of power plants.



What is National Electricity Plan (NEP)?

- **Launch** – The first NEP was *formulated in 2005*.
- **Preparation** - *Electricity Act, 2003* mandates that the central government shall prepare the NEP in consultation with the state governments and the Central Electricity Authority.
- **Aim** – To meet the energy needs of high economic growth & electricity consumption of about 1.3 billion people.
- The capacity additions forecasts considered the impact of factors like
 - Energy efficiency
 - Penetration of electric vehicles
 - Production of green hydrogen on peak and energy demands.
- **Policy revision** – The Ministry of Power revisits the NEP every five years to forecast the country's power generation, transmission and demand trajectory for the coming decade.
- In May 2023, the Central Electricity Authority notified the NEP (Vol-I Generation) for the period 2022-32.

Status of Electricity in India (2005-2021)

- **Generating capacity** – Between 2005 and 2021, generation capacity (inclusive of renewable capacity) has gone up by about 251 GW.
- **Renewable energy** – The renewable generating capacity has gone up to 94 GW (from wind, solar, small hydro and biomass) from almost nothing.
- **Per capita consumption** – It has almost doubled from 630 units to approximately 1,200 units today.
- **Rural electrification** – It is almost complete with near 100% electricity access to households (not necessarily 24 hours supply).

Why NEP needs to be revised?

- The constantly-evolving weather patterns have skewed the government's electricity demand projections.
- **In 2024** – There has been an exceptional rise of weather-related energy consumption.
- April-June was marked by sweltering temperatures coupled with intense heat waves across North India leading to a higher requirement for pushing up electricity demand.
- **Increased power consumption** - During April 2024 power consumption rose 11% year on year.
 - The growth in May was steeper at 15% and in June, the usage rose roughly 9%.
- **Mismatch in the demand projections** – For instance, the Ministry projected a peak demand (day) of 235 GW during May, but it hit an all-time high of 250 GW on May 30.
- The projection for June was 240 GW, but the demand went up to over 245 GW.
- **Sector wise changes** - Farm sector is experiencing changes in consumption patterns because the country is trying to meet agriculture demand during the day, which means that demand will shift from night to day.

What lies ahead?

- **Evaluate requirements** – On how our demand is evolving and what sectors are likely to contribute significantly.
- **Assess overall capacity requirement** – This can address varying levels of demand on monthly, weekly, daily and hourly bases, including seasonal variations.
- This is crucial for ensuring grid stability and reliable power supply.
- **Analyse the mix of power plants** – Both scheduled and intermittent plants have to be analysed.
- **Increase the capacity** – The peak demand could surpass 400 GW by 2032 and thus we need to have 900 GW of total installed capacity by 2031-32 and that
- **Save energy** – Individuals and companies can take many actions to save energy.
 - For example, look for ENERGY STAR certified products, such as appliances and electronics.
- **Expand access to clean technologies** – Promote wind and solar power, so that all communities benefit.
- This transition will help reduce the emissions contributing to climate change.
- **Modernize infrastructure** - Utilities and government agencies can update energy infrastructure, such as leak-prone pipelines and aging power lines.
- These actions increase resiliency, improve safety, and protect public health.
- **Ensure energy equity** - Policymakers, industry leaders, and communities can take steps to improve energy affordability and ensure all people have a voice in energy planning.
- **Make infrastructure local** - Utilities, urban planners, and government agencies can use microgrids.
- These systems and other decentralized energy infrastructure help make electricity supplies more resilient to extreme weather.

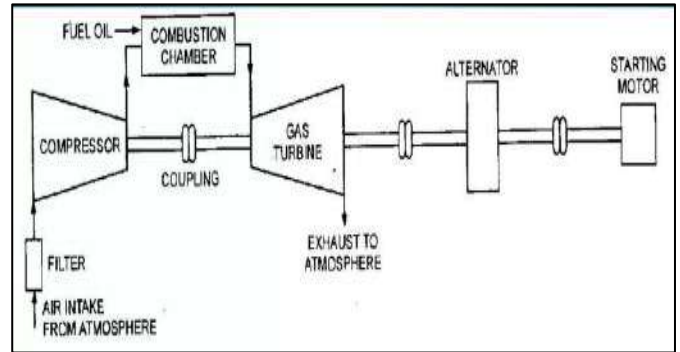
11.7 Gas Based Power Plants

Why in news?

Heat waves push gas-based power plants capacity to a five-year high in May 2024.

What is Gas Based Power Plants?

- **Gas-based power plant** – They generate electricity by burning gas as their fuel and thus it is also known as a gas-fired power plant.
- **Sources** - Natural gas or methane gas primarily while sometimes other gases like propane or butane.
- **Power generation** – These plants generate almost 25% of world electricity.
- **Working principle**– They use gas turbines or gas engines to convert the energy from burning gas into mechanical energy, which is then used to generate electricity through an alternator or generator.
- **Components** – Air, gas fuel, compressor, combustion chamber, gas turbine, alternator and starting motor.
- **Working** – It takes in air from the atmosphere through air filter which is compressed to very high pressure.
- Fuel and compressed air is fed to combustion chamber and burned inside.
- Compressed air expands inside gas turbine chamber and the turbine rotates the generator coupled to it.
- Alternator connected to gas turbine produces electricity.



Advantages of Gas Based Power Plants

- **Less emissions**- It contributes to cleaner air and reduced environmental impact.
- **Higher efficiency**- It can achieve high efficiency rates, making them cost-effective for electricity generation.
- **Reliability**- Gas supply networks are generally more reliable than other fossil fuels, ensuring consistent power generation.
- **Less space requirement**- They typically require less physical space compared to coal plants, making them easier to site.

Disadvantages of Gas Based Power Plants

- **Dependence on fuel**- Gas availability and price fluctuations can affect operational costs and stability.
- **Infrastructure costs**- Initial setup costs can be high, especially for combined cycle plants that require additional equipment.
- **Environmental Impact**- While cleaner than some alternatives, they still produce greenhouse gases & contribute to global warming.
- **Higher water use**- Some gas plants require significant water for cooling purposes, impacting local water resources.
- **Noise Pollution**- Gas turbines can produce significant noise during operation, affecting nearby communities.

How gas based power plants differ from coal based plants?

	Gas-Based Plants	Coal-Based Plants
Fuel Source	Gas	Coal
Fuel Supply	Generally, more stable supply	Susceptible to supply chain disruptions
Efficiency	Higher efficiency in converting fuel to electricity	Lower efficiency compared to gas-based plants
Emissions	Lower emissions (CO ₂ , SO _x , NO _x)	Higher emissions, especially CO ₂

Environmental Impact	Generally considered cleaner	Higher environmental impact due to emissions and mining
Flexibility	More flexible for rapid startup and shutdown	Less flexible, longer startup and shutdown times
Power Output	Typically, lower power output per unit compared to coal	Higher power output per unit

What is the status of gas based plants in India?

- **Needs** – India faces a surge in electricity demand, especially during the upcoming summer season.
- It can be an ideal transition fuel for the shift from coal-based generation to renewable energy in the Indian power sector.
- It helps India in achieving the target of increasing the share of non-fossil fuel, especially renewables, in power generation to 50% by 2030.
- **Rules** – These plants are mandated by the Government under the Electricity Act to operate as directed in exceptional circumstances.
- **Monitoring authority** - The Central Electricity Authority under Ministry of Power.
- It monitors 62 gas based power stations, with a total capacity of 23,845 MW using gas as primary fuel.
- **Generation** - Gas-based power generation spiked significantly, up 83% year-on-year and 39% month-on-month, totalling 2.8 billion units (BU) in June 2024.
- **Concerns** - A significant portion of the **Gas-Based Generating Stations (GBSs)** is currently unutilized, primarily due to commercial considerations.

The International Energy Agency forecasts India's gas demand to grow by 7% in 2024, while the Gas Exporting Countries Forum predicts a 6% increase.

Year	PLF (%)	Power generation (MU)	Gas consumed / supplied (MSCMD)
2024	28.7	5,053.41	36.35
2023	15.9	2,818.90	21.20
2022	13.9	2,457.18	18.44
2021	20.4	3,446.45	24.86
2020	28.9	5,152.02	35.36
2019	25.0	4,439.81	31.68

What are challenges in implementing it in India?

- **Higher dependence on imports** - Dependence on imported liquefied natural gas (LNG) makes the cost of power generation vulnerable to global price fluctuations and supply chain disruptions.
- **Limited infrastructure**- India's current pipeline infrastructure is limited and needs expansion.
- **Environmental Concerns**- While cleaner than coal, gas-based plants still emit greenhouse gases.
- Meeting stringent emission norms adds to costs and operational complexities.
- **Policy & regulatory challenges**- Inconsistent policies, including pricing mechanisms, subsidies, and regulatory approvals, can deter investments and project viability.
- **Lack of technology and expertise**- Advanced technology is needed for efficient gas **turbine operations and integrating renewable** energy sources.
- There is also lag in significant expertise and investment.

What are the steps taken by India?

- India aims to attach all Indian states with the trunk natural gas pipeline network by 2027.
- **Policy reforms** – Regulations like New Domestic Gas Pricing Guidelines (2014) and the Hydrocarbon Exploration and Licensing Policy (HELP) aims to offer pricing incentives for home fuel producers at the same time as balancing the pursuits of purchasers.
- **Infrastructure development** – Pradhan Mantri Urja Ganga (PMUG), launched in 2016 aims to increase the natural fuel pipeline infrastructure.
- **Funding** – Created Natural Gas Infrastructure Development Fund (NGIDF) to offer financial aid for the improvement of natural gas infrastructure in India.
- **Distribution network** – Measures taken to expand City Gas Distribution (CGD) network throughout India to increase access to piped natural gas (PNG) for families, industries, and business institutions.

- **Developing gas terminals** – Promoting of LNG imports terminals to diversify gas supply resources and decorate energy security.
 - Natural gas is imported across **3 main hubs** located at Dahej and Hazira in Gujarat, and Kakinada in Andhra Pradesh.
- **Indian gas exchange (IGX)** – It is India’s first gas exchange, a digital platform allowing to buy and sell natural gas in the market.
- **Gas Index of India (GIXI)** – It is the first ever, nationwide price index to reflect benchmark natural gas price for India which is launched by IGX.

What lies ahead?

- Encourage the exploration and development of domestic gas reserves to reduce reliance on imported gas and mitigate price volatility.
- Develop infrastructure for transporting gas efficiently across the country to ensure a steady and reliable supply to power plants.
- Provide long-term policy certainty and incentives for investment in gas-based power generation, including tax breaks, subsidies, and assured purchase agreements

11.8 Plastic Recycling

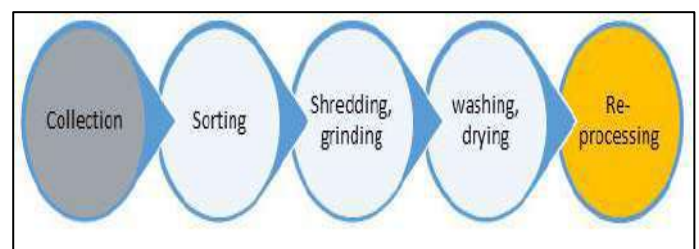
Why in news?

Evidence shows that current recycling practices are insufficient and often counterproductive.

What is plastic recycling?

- **Plastic** – They are a wide range of synthetic or semi-synthetic materials that use polymers as a main ingredient.
- It can be molded, extruded or pressed into solid objects of various shapes.
- **Plastic recycling** - It is the process of recovering scrap plastic and reprocessing it into useful products.
- **Need** – Most of that plastic ends up burned, buried in landfills or dumped in the environment.
- Most plastics are made from petroleum products and are non-renewable making it difficult to decompose.
- Thus, recycling can extend the life of these materials and decrease the need for new production.
- **Mechanical recycling** – It is the process of recovering plastic waste by mechanical processes such as sorting, washing, drying, grinding, regranulating and compounding.
- **Chemical recycling** – A process where plastic is broken down into its component parts and used to make new materials.
- It complements mechanical recycling processes by enabling the further extraction of value from polymers that have exhausted their economic potential for mechanical processing.
 - **For example:** Gasification, pyrolysis, hydrothermal treatment
- **Biological recycling** – A process of plastic waste transformation that implicate the action of microorganisms or molecules produced by those in useable resources such as compost or biogas.
- **Composting** – A process in which organic substance is degraded and stabilised in the presence of oxygen through different microorganisms, obtained as a final product compost.
- **Anaerobic degradation** - A process in which the plastic substance is completely degraded in the absence of oxygen.
- **Enzymatic recycling** - A process in which plastic materials are partially degraded by the action of different enzymes produced principally by fungus and bacteria.

To date, over 10 billion metric tons of plastic have been produced worldwide, with plastic production increasing by more than 18,300% in the past 65 years.



- **For Example**, the *bacteria Ideonella sakaiensis* secretes a notable PETase enzyme that can break down PET plastic.
- **By-products** - Heat, carbon dioxide, water vapor, and humus, like composting.
- **Recyclable plastics** – *PET, or polyethylene terephthalate* can be recycled into new bottles and containers, or it can be turned into other products like carpeting or clothing.
- *High-density polyethylene (HDPE)* is another common type of recyclable plastic.

Category	India	Worldwide
Total Plastic Waste	Approximately 7.4 million tonnes per year (2024)	Approximately 220 million tonnes per year.
Plastic Waste Recycled	Only 8% of its plastic waste	Only around 9% of all the plastic waste generated globally
Plastic Waste Mismanaged	68.62% of generated plastics waste is being mismanaged	Oman tops the list of countries in terms of mismanaged plastic waste.
Single-Use Plastic Ban	Banned selected 19 single-use plastic items with effect from 2022.	Bangladesh became the first country to ban thin plastic bags in 2002.
Per Capita Plastic Waste	15 kilograms per person in 2021.	Global average is around 28 kg.

What are the benefits of plastic recycling?

- **Reduces pollution** - Recycling plastic helps reduce pollution caused by the disposal of plastic waste in landfills and oceans.
- **Reduces waste management costs** - Reducing the volume of waste sent to landfills lowers waste management costs for municipalities.
- **Conserves energy** – It also reduces the need for virgin materials to be used in producing new products, which can conserve resources and save energy.
- **Mitigates climate change** - It reduces the amount of waste plastic sent to landfill, where it can take hundreds or even thousands of years to decompose.
- **Promotes circular economy** - Recycling plastics promotes the concept of a circular economy where materials are reused and recycled, contributing to sustainable development.
- **Create employment opportunities** - Recycling plastic can create jobs in the recycling industry and help to boost the economy.

What are the challenges in plastic recycling?

- **Lack of R&D** - To restore some of the useful properties of recycled plastics, manufacturers often need to mix in virgin plastic and / or toxic additives.
- **Lack of standards** - There is a lack of uniform standards and regulations for plastic recycling, leading to inconsistencies in practices and outcomes.
- **Inefficient waste segregation** – Mixed waste streams often result in contamination, reducing the quality and value of recycled plastic.
- **Lower demand for recycled plastics** – It is due to concerns about quality and performance compared to virgin plastics.
- **Contains toxic materials** - Recycled plastics frequently contain a toxic cocktail of chemicals, making them unsuitable for many applications, particularly food and beverage packaging.

It is estimated that only 9% of all the plastic ever produced has been recycled, with the remaining 91% ending up in landfill or being incinerated.

What is plastic waste trade?

Plastic Waste Trade	
	Details

Beginning	It began in 1988.
Definition	<p>It is the international trade of waste between countries for further treatment, disposal, or recycling.</p> <p>Top Plastic Waste Trading Regions</p> <p>Primary Exporting Regions/Countries</p> <p>Primary Importing Countries</p> <ul style="list-style-type: none"> United States Canada United Kingdom European Union Germany The Netherlands Australia Japan Malaysia Indonesia Turkey Vietnam Hong Kong India Thailand Mexico
Global Export Statistics	More than 250 million tonnes have been legally exported across the world.
Impact on Global South	Shifts the burden of plastic waste to the Global South, often becoming dumping grounds.
Environmental Consequences	Plastic waste is frequently burned in the open, releasing toxic pollutants and disproportionately affecting vulnerable communities.
Import in India	India imported around 121,000 metric tons of plastic in 2019, leading to a ban on plastic imports due to environmentalist objections.
Impacts	Import of plastic waste leads to severe environmental and health impacts, including polluted air and water, increased disease rates, and degraded living conditions.
Environmental Injustice	Communities near recovery facilities and recycling plants, typically underserved, face increased health risks including polluted air, soil, and drinking water, frequent fires, and exposure to hazardous materials.

What lies ahead?

- Prioritize reducing plastic production and supporting sustainable, reuse-based solutions.
- Restrict single-use plastics, incentivise reusable alternatives and promote equitable waste management practices.
- Encourage plastic-free habits at individual level in daily life.
- Emphasize on indigenous knowledge to use alternatives for plastics.

11.9 Tree Planting for Restoring Ecosystem

Why in news?

According to the World Bank, the world has lost about 10 million square kilometres of forests since the 20th century due to uncontrolled and unsustainable practices, severely degrading forest landscapes.

What is Forest degradation?

- **Forest** – It is a large geographical area dominated by trees, animals of various species, aquatic biomes and microorganisms.
- **Forest degradation** – It refers to the reduction in a forest's capacity to provide goods and services due to human activities or natural disasters.
- **Causes** – It primarily caused by environmental and anthropogenic changes, has the potential to wipe out the whole forest cover and biodiversity.
 - Forest degradation, for example, can occur when acid rain or wildfires devastate a forest region.
- **Illegal Logging**- Uncontrolled logging for timber, firewood, and charcoal significantly degrades forests.
- **Agricultural Expansion**- Clearing forests for cash crops and cattle rearing leads to substantial deforestation.
- **Mining and Infrastructure**- Mining and infrastructure projects cause tree loss and forest degradation.
- **Climate Change**- Rising temperatures, shifting rainfall, and extreme weather contribute to forest decline.

Status of Forest degradation

- **India**-According to the Food and Agriculture Organization (FAO), India lost 668,000 hectares of forest per year between 2015 and 2020, which was the second highest rate of deforestation in the world, after Brazil.
- **Globally**- Since 1990, 420 million hectares of forest have been lost to other land uses.
- Deforestation declined from 16 million hectares per year in the 1990s to an expected 10 million hectares per year between 2015 and 2020.

What is Ecosystem restoration?

- Ecosystem restoration – It involves assisting the recovery of an ecosystem that has been degraded, damaged, or destroyed.
- **Objective**- It aims to restore natural habitats and also to ensure that ecosystems can sustain their functions and services over time, benefiting both nature and human well-being.
- **Methods of restoration**
 - **Reforestation**- Planting native trees in areas where forests have been cut down or degraded.
 - **Afforestation**- Planting trees in areas where there were no previous forests, creating new forested areas.
 - **Wetland Restoration**- Restoring natural hydrology, removing invasive species, and reintroducing native vegetation to revive wetland ecosystems.
 - **Soil Restoration**- Using techniques like contour plowing, terracing, and the application of organic matter to restore soil health and prevent erosion.
- **Significance**- Ecosystem restoration is key to achieving multiple SDGs, such as climate action, life below water, life on land, and poverty alleviation.

Decade on Ecosystem Restoration

- **Decade on Ecosystem Restoration** - year 2021 to 2030
- **Declared by**- United Nations (UN)
- **Target**- It target for the restoration of 350 million hectares of degraded land to generate \$9 trillion in ecosystem services and sequester an additional 13 gigatons-26 gigatons of greenhouse gases from the atmosphere.

Measures by India for Improving Green Cover

- India aims to restore 21 million hectares of forest by 2030 through the Bonn Challenge.
- India's national forest policy targets 33% tree coverage.
- **National Afforestation Programme (NAP)**- Launched in 2000, aims to increase the forest cover in the country through afforestation and reforestation activities.
- **Green India Mission**- A part of the National Action Plan on Climate Change, focusing on increasing forest cover, enhancing biodiversity, and improving ecosystem services.
- **Tree Plantation Drives** – Van Mahotsav (Tree Plantation Day) celebrated in the first week of July.

- **Haritha Haram Program**- It is launched by Telangana to increase the green cover of the state through extensive tree planting activities.

What is Tree planting?

- It refers to the process of transplanting tree seedlings, usually for forestry, land reclamation, or landscaping purposes.
- **Aim**- It aims at restoring forests, increasing green cover, and combating climate change.
- **Purify air** – Trees absorb pollutants and produce oxygen, improving air quality.
- **Mitigate global warming** – Trees sequester carbon dioxide, helping mitigate climate change.
- **Regulate local weather** – They also influence local weather patterns and reduce the urban heat island effect.
- **Preserve water** – Trees improve water infiltration into the soil, reducing runoff and preventing soil erosion.
- They also help maintain groundwater levels.
- **Support biodiversity** – They provide habitat and food for various species, supporting wildlife and maintaining ecological balance.
- **Boost economic activities** - Tree planting and forestry activities can create job opportunities in rural and urban areas.
- **Challenges** - Planting trees in inappropriate areas like grasslands and animal habitats can harm ecosystems, increase wildfire risk, and worsen global warming.

In 2023, U.S. President highlighted that India is the only G20 nation meeting its Paris Agreement commitments, achieving a carbon sink of 1.97 billion tonnes of CO₂ equivalent.

What lies ahead?

- Use nature-based solutions, like forest landscape restoration, can help reverse deforestation and degradation, restoring ecological, social, climatic, and economic benefits.
- Reorient innovations and strategies, supported by public awareness, social media, and community incentives, can transform forest ecosystems.
- Follow effective post-planting care and monitoring are crucial

11.10 Status of Deforestation

Why in news?

According to the recent State of the World's Forests 2024, global efforts curb deforestation but threats to forests from wildfires and pests remain.

What is deforestation?

- **Deforestation** – It is the large-scale removal of forests or trees from land which is then converted to non-forest use.
- It can involve the clearing of land for agriculture, logging for timber, or urban development.
- **Causes** - Conversion of forests into agricultural land to meet the food and commodity demand.
- Commercial logging for timber & wood products and clearing of forests for mining operations.
- Infrastructure developments like Urbanization, road construction, and building of dams.
- Both natural and man-made fires can lead to significant forest loss.
- **Impacts** - It results in the permanent destruction of forests and woodlands, impacting the environment and biodiversity.
- Destruction of flora and fauna habitats leading to the extinction of species.
- Loss of habitat and resources for indigenous people.
- It reduces carbon dioxide absorption leading to increased greenhouse gases in the atmosphere.
- It disrupts the water cycle and affects the rainfall patterns and water supply.

- Loss of trees leads to soil erosion and degradation and higher likelihood of floods and landslides due to lack of tree cover.

What is the current status in relation to deforestation?

The State of the World's Forests (SOFO) report of Food and Agriculture Organisation (FAO) provides highlights on the state of the world's forests and builds on the FAO Science and Innovation Strategy to explore the transformative power of evidence-based innovation in the forest sector.

- The report, The State of the World's Forests, provides a comprehensive analysis of forest conditions and trends.
- It estimated that between 1990 and 2020, approximately 420 million ha of forest were converted to land use.
- Decrease in Deforestation** – The preliminary data from the Global Forest Resource Assessment (2025) show an 8.4% decrease in deforestation in Indonesia for 2021-22 compared to 2020-21, the overall reduction was recorded to be 90%.
- Brazil, too, registered 50% decrease in deforestation in 2023 compared to 2022 in the Legal Amazon region.
- Decline in deforestation rates** – It is lower than previous decades, with several countries showing significant improvements.
- Reduced net rate of change in forest area** – It is the difference between forest expansion and deforestation.
- It is estimated to be lower in 2010-2020, which was significantly lower than in the two previous decades.

Global Forest Resources Assessment (FRA) is an initiative of FAO. It provides information for understanding the extent of forest resources, their condition, management and uses.

Decade	Deforestation Rate
1990-2002	15.8 million ha per year
2015-2020	10.2 million ha per year

Decade	Net Rate of Change in Forest Area
1990-2000	-7.8 million ha per year
2000-2010	-5.2 million ha per year
2010-2020	-4.7 million ha per year

- Increase in Forest area** – It noted 10 countries recording annual gains in forest area in 2020.
 - It include China, Australia, India, Chile, Viet Nam, Turkey, the United States of America, France, Italy and Romania.
- Decreased mangrove losses** – The rate of gross global mangrove loss decreased by 23% between the two recent decades (2000-2010 and 2010-2020).
- Asia was the major contributor to mangrove loss and gains owing to aquaculture, natural retraction, conversion to oil-palm plantations, rice cultivation and other agriculture uses.
- Decreased mangrove gains** – The rate of gain in mangrove area also decreased slightly.
- Extreme weather events due to climate change and sea-level rise threaten mangroves.
- Increased resilience of mangroves** - Although the net change in mangrove area globally was negative between 2000 and 2020, the extent of natural expansion surpassed the area lost to natural causes by 63% (294,500 ha compared with 186,200 ha).

How climate change accelerates deforestation?

- Impacts of Climate change** - It is making forests more vulnerable to abiotic and biotic stressors such as wildfire and pests.
- Increased wildfires** – The frequency and intensity of wildfires is increasing, including in areas not previously affected, particularly due to climate change and land-use change.
 - About 383 million ha (equivalent to less than half the land area of Australia) of land were affected by fire in 2023 alone.

- It noted that the increasing intensity and frequency of wildfires are having impacts at local, national and global levels.
- Satellite data revealed that total fires in 2023 emitted 6.687 megatons of carbon dioxide globally.
 - **For instance**, the boreal fire in 2021 contributed to about 10% of global carbon-dioxide emissions.
- **Threats from pests** – Climate change is making forests more vulnerable to invasive species.
- It causing changes in their geographic distribution, seasonal phenology and in aspects of population dynamics.
- Insect pests and disease pathogens can reduce tree growth and survival, wood quality and the provision of ecosystem services such as carbon sequestration.
 - Pine wood nematode made a significant damage to native pine forests in China, Japan and the Republic of Korea.

What lies ahead?

- Given rapidly changing environmental conditions and rising demands on forests, more innovation is needed in the forest sector.
- Use technological innovations like promoting open access to remote-sensing data to access high-quality forest data and improve forest management processes.
- Take efforts to better engage women, youth and Indigenous Peoples in developing locally led solutions.
- Follow new forest and land management approaches.
- Innovations in public and private-sector finance to enhance the value of standing forests, boost restoration efforts and increase access to loans for smallholders for sustainable production.

11.11 Taxonomy for Climate Finance

Why in news?

The 2024 Union Budget features a plan to create a climate finance taxonomy, aiming to boost capital for climate adaptation and mitigation.

What is climate finance?

- **Climate finance** – It refers to local, national or transnational financing, drawn from public, private and alternative sources of financing that seeks to support mitigation and adaptation actions that will address climate change.

Sources of Climate Finance

- **Public Finance**- Government funds and international financial institutions (e.g., World Bank, IMF).
- **Private Finance**- Investments from private entities, including banks, corporations, and venture capitalists.
- **Blended Finance**- Combines public and private resources to leverage additional investment for climate initiatives.

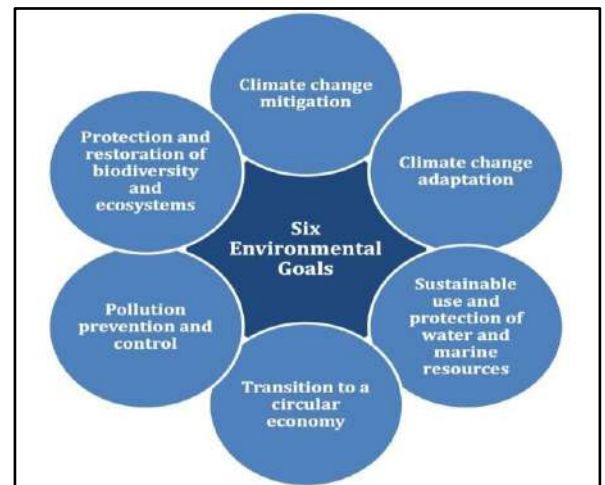
Types of Climate Finance

- **Mitigation Finance**- Funds to reduce or prevent greenhouse gas emissions, such as renewable energy projects, energy efficiency improvements, and sustainable agriculture practices.
- **Adaptation Finance**- Funds to projects that help communities & ecosystems adapt to the impacts of climate change.
- It is by building resilient infrastructure or developing drought-resistant crops.

What is climate finance taxonomy?

- **Need of climate taxonomy**– Diverse interpretations of what is considered "green" can fragment markets and confuse investors.
- A one-size-fits-all approach won't work in climate financing as local factors has to be considered.

- **For example**, different regions will have to adopt different pathways to reach the goal of limiting global warming to under 1.5 degrees C, as required under the Paris Agreement.
- **Climate finance taxonomy** – A system that classifies which parts of the economy may be marketed as sustainable investments.
 - Many countries like China, Malaysia, and Sri Lanka have already issued green taxonomies to facilitate climate-sensitive investments. The European Union has a prominent Green Taxonomy.
- **Aim** – To inform companies and investors on making impactful investments towards environmental conservation and combating the climate crisis.
- They are also known as **‘green’ taxonomies**.
- **Information provided** – It enlists about economic sectors & activities and corresponding criteria that determine if it aligns with larger climate goals.
- **Uses** – They are frequently used to set standards for classifying climate-related financial instruments (e.g., green bonds).
- They serve other use cases where the benchmarking feature is viewed as beneficial, including in the areas of climate risk management, net-zero transition planning, and climate disclosure.



Why climate taxonomy is important?

- **Establish clear standards** – It ensures consistent definitions and classifications of what constitutes climate finance.
- **Guides investments** – It can help investors and credit institutions based on how climate-aligned an entity or an activity is.
- It can also help prevent greenwashing by companies by setting common standards based on scientific assessments.
- **Enable climate finances** – It helps in directing funds towards climate mitigation and adaptation projects.
 - According to the UNFCCC's first 'Needs Determination Report', financing of around \$5.8-5.9 trillion is required to implement developing countries' climate action plans by 2030, and this does not fully include adaptation costs.
- **Spur innovation** – By encouraging the development of new financial products and services that align with climate objectives.
- **Align with global goals** - A localised climate finance taxonomy can also help align a country's climate goals with the Paris Agreement and other international climate commitments.
- **Facilitate international cooperation** – It makes easier for countries and organizations to work together on climate finance initiatives.
- **Upholds transparency** – It ensures that investments are transparently & efficiently directed towards genuine green projects.
- **Enables accountability** – It help investors compare investment opportunities and measure their environmental impact.
- **Promote social responsibility** – By encouraging investment in activities that support sustainable development like affordable housing, access to clean water, and sustainable agriculture.

Greenwashing is when an organization invests in marketing campaigns that position the company as environmentally friendly rather than actually minimizing its environmental impact.

How green taxonomy is relevant for India?

- **Need** – India needs a standardized framework
 - To attract domestic and international investment
 - To guide investments in sustainable projects

According to the International Finance Corporation (IFC), a member of the World Bank Group, India needs \$10.1 trillion to achieve net-zero by 2070

- To align funds with its national and global green transition commitments
- To boost economic growth while combating climate change
- **Factors to be considered** – Cultural nuances, geographic issues, market intelligence, scientific temper and ability to keep it simple.
- **Steps taken** – In 2021, India formed a task force on sustainable finance under the Ministry of Finance
 - To develop a sustainable finance framework, roadmap, activity taxonomy, and risk assessment framework.
- The Reserve Bank of India (RBI) joined the Central Banks and Supervisors Network for Greening the Financial System (NGFS).
- India has also become part of a climate-related financial risks task force under the Basel Committee on Banking Supervision (BCBS) and the International Platform on Sustainable Finance.

12. SCIENCE & TECHNOLOGY

12.1 Extremophile bacteria

Why in news?

The recent research studies shows that extremophile bacteria can survive not only in extreme environments but also in microwaves.

What are extremophile microbes?

- **Extremophiles** – Microbes that live in extreme natural conditions are called extremophiles.
- They have been found in
 - Hydrothermal and volcanic vents
 - Permafrost
 - Dark lakes buried kilometres under polar ice caps
 - Acid mines
 - Around nuclear waste storage sites.
 - Exteriors of spacecraft
- **Types** - There are different types of extremophiles adapted to live in different extreme conditions.

Extremophiles Types	Description	Examples
Thermophiles	These organisms live in extremely hot environments, such as hot springs or deep-sea hydrothermal vents.	Thermus aquaticus and Pyrococcus furiosus.
Psychrophiles	These microbes thrive in extremely cold environments, such as polar ice caps and deep oceans.	Psychrobacter cryohalolentis.
Acidophiles	Acid-loving microorganisms that grow in highly acidic environments with pH levels below 3.	Ferropasma acidarmanus and Acidithiobacillus ferrooxidans.
Alkaliphiles	These organisms prefer basic or alkaline environments with a pH above 9. They are often found in soda lakes.	Alkalimonas universalis and Bacillus alcalophilus.
Halophiles	Salt-loving microbes that thrive in high-salt environments, such as salt mines and salt flats.	Halobacterium salinarum and Halococcus salinarum.

Barophiles	These organisms live under extreme pressure, such as in the deep sea.	Halomonas salaria and Deepleogaster formosus.
Xerophiles	These microbes can survive in extremely dry conditions, such as deserts. They have adaptations to conserve water and manage desiccation.	Bacillus spores and Clostridium species.

- **Radiation Resistant Extremophiles** - Microbes that are resistant to radiation, desiccation, and high temperatures have been found in domestic microwaves and research facilities.

What are the adaptations of extremophiles microbes?

- Microbes adapt to extreme environments by incorporating unique *biological and biochemical processes*.
- **Proteins and Enzymes**- Their proteins and enzymes are often *more stable and functional under extreme conditions*, such as high temperatures or acidic pH.
- **Extremozymes** - These organisms use unique enzymes, called extremozymes, which allow them to survive and function in harsh conditions.
- For example, thermophiles have heat-stable enzymes that are useful in industrial processes (e.g., PCR).
- **Cell Membranes**- They have *unique membrane lipids that maintain fluidity and integrity* under extreme temperatures or pressures.
- **DNA Repair Mechanisms**- Extremophiles have *specialized mechanisms to repair DNA damage* caused by extreme conditions, such as high radiation or desiccation.

What are their significance in science and industry?

- Understanding extremophiles could lead to advances in synthetic biology, disease resistance, and bioremediation.
- They offer potential for new medications and industrial applications.
- **Enzyme development** - Extremophiles produce enzymes and proteins that remain stable and active under extreme conditions.
- These enzymes are used in industries like *detergents, biofuels, and pharmaceuticals*.
- **Example** - Heat-resistant enzymes like Taq DNA polymerase from *Thermus aquaticus* bacteria from a hot spring at Yellowstone National Park, is used in Polymerase Chain Reaction(PCR).
- **Bioremediation** - Radiation Extremophiles are useful in bioremediation of toxic waste.
- **Exoplanet search** - Helps in understanding life in extreme environments, both on Earth and potentially on other planets.
- **Medicine**- Extremophiles' unique proteins and metabolic pathways aid in creating new treatments and drugs, including antibiotics and other therapeutics.
- **Genetic Research**- Extremophiles' unique genetic adaptations offer insights into *gene regulation and stress responses, advancing genetic engineering*.
- Understanding them can help in creating synthetic biological systems that can augment the immune system.
- **Agriculture**- Extremophiles can be used to develop crops that are more resistant to extreme conditions, helping *improve food security in challenging environments*.

Quick Facts

Microbes
<ul style="list-style-type: none"> • They are microorganisms, tiny living organisms that are too small to be seen with the naked eye. • Microbes Type – Protozoa, bacteria, fungi and microscopic animal and plant viruses, viroids and also prions that are proteinacious infectious agents.

- Microorganisms may be single-celled like bacteria, some algae and protozoa, or multicellular, such as many algae and fungi.
- **Habitats** - They live in all types of environment, ranging from ice cold climate to hot springs; and deserts to marshy lands.
- They are also found inside the bodies of animals including humans.
- Some microorganisms grow on other organisms while others exist freely.
- **Global Initiatives** - Many global initiatives are currently trying to map, organise, and understand this diversity.
- **Earth Microbiome Project** - It was founded in 2010 to sequence 200,000 genetic samples and assemble 500,000 microbial genomes.
- **Earth Biogenome Project** - To sequence the genomes of all of the planet's eukaryotic organisms to create one of the largest and most comprehensive maps of organisms

Deinococcus radiodurans, an earth-born bacteria, could survive in outer space for more than three years, stuck to the outside of the International Space Station

12.2 Subclinical TB

Why in news?

In a recent meeting at Health Ministry, the challenges in detecting subclinical TB cases and ensuring effective treatment was highlighted.

What is Subclinical TB?

- **Subclinical TB**- It refers to TB cases where the patient is infected with tuberculosis but does not show the typical symptoms associated with the disease.
- **Causal agent** - It is caused by viable ***Mycobacterium tuberculosis bacteria***.
- **Traits** – It includes cases that are culture-positive but lack typical TB symptoms such as-
 - No persistent cough.
 - No cough at all.
 - No TB-suggestive symptoms (cough, chest pain, fever, night sweats, or weight loss).
- **Spread** - The national TB prevalence survey (2019-2021) found that 42.6% of detected TB cases were subclinical, which would have been missed without a chest X-ray.
 - Tamil Nadu's TB survey reported 39% subclinical TB cases.
- It constitutes a significant proportion of TB cases, with up to 82.7% showing no persistent cough.
- **Silent Infection Source** - It can lead to diagnostic delays and lead to continued transmission.
 - 29% of those without persistent cough & 23% without any cough are still smear-positive, indicating potential for transmission.

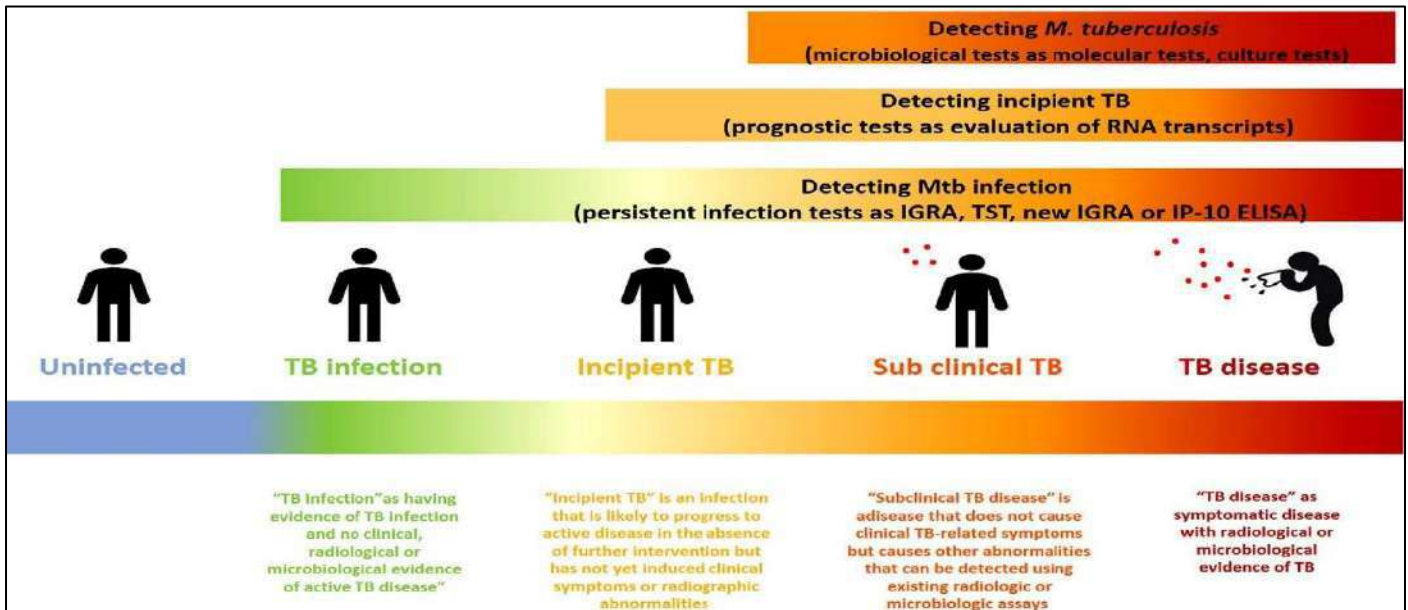
Tuberculosis (TB) remains a major public health challenge despite the UN's resolution to end TB by 2035. In 2022, there were 7.5 million new TB cases and 1.3 million deaths globally.

To know more about Tuberculosis, Click [here](#)

What are the major challenges of Subclinical TB?

- **Vulnerability** - High-burden states in India are likely to have a significant prevalence of subclinical TB.
 - High-burden countries showing a median of 50% subclinical TB cases.

- **Asymptomatic nature-** It is difficult to identify and diagnose through routine screenings.



- **Delayed diagnosis-** It leads to longer diagnostic delays, allowing the disease to progress and increasing the risk of transmission.
- **Detection gaps-** Traditional diagnostic methods, like sputum tests and symptom-based screening, may miss subclinical cases, especially in areas with limited healthcare resources.
- **Scaling challenges-** Implementing widespread chest X-ray screening requires mobile units and regular community screenings.
- **Underreporting-** For every TB case notified, there are potentially two undetected cases with culture-positive TB, leading to slow progress in reducing TB incidence.
- **Patient compliance-** Convincing asymptomatic individuals to begin and complete a six-month treatment regimen is challenging, with higher dropout rates despite potentially better outcomes.
- Incomplete treatment may lead to higher risks of drug resistance and treatment failure.

Subclinical TB: Hiding in plain sight

A TB prevalence survey was undertaken in Tamil Nadu from February 2021 to July 2022 in nearly 131,000 people aged over 15 years

Among the 244 TB cases detected, molecular test correctly detected 91.8% cases; smear microscopy detected only 50.4% cases	39% (94 people) of the TB cases detected had no TB symptoms, and would have been missed if chest X-ray was not used	All the 94 people with TB who were picked up based on chest X-ray abnormalities were bacteriologically positive
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Even as per the National TB Prevalence Survey Report (2019-2021), **42.6%** of the TB cases had no symptoms but were bacteriologically positive

Even if people do not have TB symptoms, bacillary loads can be high leading to transmission

In high-incidence settings, subclinical tuberculosis could contribute considerably to the TB burden and transmission

Respiratory droplets can be expelled during singing, talking, and tidal breathing, and not just coughing

What lies ahead?

- Implementing AI-based chest X-ray screening to detect TB more efficiently.
- Ensuring consistent drug supply and scaling up human resources.
- Implement active case-finding initiatives using mobile vans, computer-aided radiology, and rapid molecular tests.
- Update the definition of TB-suggestive symptoms to include a broader range of indicators (e.g., any cough, weight loss, night sweats) to improve early detection.

India's goal is to increase molecular testing from 30% to 100% within 12 months to improve TB diagnosis and reduce morbidity and mortality.

- Educate communities about the risks of subclinical TB and the importance of early detection and treatment.
- Utilize digital adherence tools to ensure patients with subclinical TB complete their treatment regimens.
- Conduct more research to develop and validate shorter, more effective treatment regimens specifically tailored for subclinical TB cases.

Vietnam has successfully reduced TB prevalence by 50% in some areas through symptom-agnostic screening (X-rays and molecular tests) of the entire population annually.

13. DISASTER MANAGEMENT

13.1 Landslides in Kerala

Why in news?

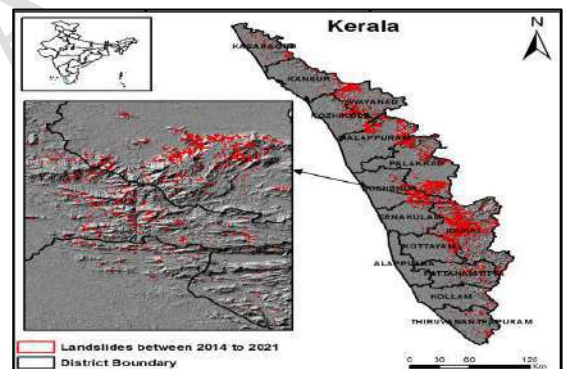
The death toll from the Wayanad landslides crossed 400 and around 152 people are still missing.

What is landslide?

- **Landslides** – They are hydro-geological hazards of mass wasting of rock falls, mudflows, shallow or deep-seated slope failures and debris flows happening over surface and sub-surface.
- **Impacts** – It leads loss of live and large scale destruction of infrastructures, properties and industries.
- It profoundly alters the landscape of the region causing loss of flora and fauna.
- It changes the course of river and divert in path.
- It forces people in the region to migrate.
- **India** - 15 % of the India's landmass is prone to landslides.
- It includes majorly of
 - Himalayas
 - The Northeastern hill ranges
 - The Western Ghats and the Nilgiris
 - The Eastern Ghats
 - The Vindhya
- **Measure taken** – Government had formed Gadgil expert committee in 2011 and Kasturirangan committee in 2012.
- [Landslide atlas](#) has been prepared by ISRO's National Remote Sensing Center and [National Landslide Risk Management Strategy](#) has been formed by National Disaster Management Authority.
- Monitoring by satellites like [IRS-1D](#), [Resourcesat](#), [Cartosat](#), [Sentinel](#), InSAR are used.
- River Basin specific [Flood Early Warning System](#) was developed to handle the landslide associated with floods.
- [Landslide Risk Mitigation Scheme](#) (LRMS) was started to provide financial support for landslide prone states.

Why Kerala is prone to landslide disaster?

- **Landslide in Western Ghats** – It is characterized by a lateritic cap and steep slopes in Western Ghats in the South Konkan coast besides Nilgiris.
 - Laterite cap – Thick laterite soil cover.
- **Vulnerability of Kerala** - About 8% of the area in the Western Ghats in the Kerala is labelled as a critical zone for mass movements.
- According to the landslide atlas in 2023, 10 out of the 30 most landslide-prone districts in India were located in Kerala, with Wayanad ranked 13th.
- **Status of Kerala's vulnerability** - Of the 3,782 landslides between 2015 and 2022, 2,239 (nearly 59.2%) were reported from Kerala.



- In 2022, the Ministry of Earth Sciences informed that Kerala witnessed the highest number of major landslides in the country over the past seven years.
- **Causes** – There are natural and man-made causes.

Topographic factors	Climatic factors	Anthroponic factors
<ul style="list-style-type: none"> • Hills and mountains • Steeper slopes • Thinning of soil 	<ul style="list-style-type: none"> • Extreme rains • Thicker cumulonimbus clouds • Climate change 	<ul style="list-style-type: none"> • Deforestation • Landscape changes • Quarrying • Negligence by governments

- **Geographic vulnerability** – Roughly 50% of Kerala consists of hills and mountainous regions with slopes greater than 20 degrees, making these areas prone to landslides during heavy rains.
- **Disruption in soil cover** - Western Ghats in Kerala are marked by thick soil cover but human interventions have affected them.
- During monsoon, the soil gets saturated due to percolating rainwater, making it unstable and when the water content reaches a threshold level, the soil mass becomes weak triggering debris flows.
- **Changing nature of clouds** – The thicker cumulonimbus clouds, which extend up to 14 km in height and could create sudden, short spells of heavy rain over smaller areas, are forming over Kerala during the Southwest monsoon.
- Earlier, low-hanging, thinner clouds were usually the norm.
- **Extreme rains** – It is intensifying across India and over the Western Ghats from Kerala to Maharashtra.
- **Cyclones in Arabian Sea** - The Arabian Sea is warming at a high rate and with it, the possibility of severe cyclonic storms is rising.
- All over Kerala, the monsoon pattern has been changing.
- **Climate change** – Spells of heavy rain, which lead to calamities like floods and landslides, are a result of climate change induced by global warming.
- **Anthropogenic causes** – There is widespread deforestation and denuding of hills due to landform changes.
- **Unsustainable developments** – Unscientific construction activities in vulnerable areas also lead to disasters.
- **Deforestation** – Reduction in forest cover makes the soil in the slopes loose and increase the fragility of the terrain.
- 59% of the total landslides in Kerala occurred in plantation areas.
- **Lack of updated data** - Engineering structures are being built based on the amount of rainfall and intensity of rainfall in older days.
- **Blockage of water channels** – Small drainage channels present on the surface of the hilly areas are blocked by erecting buildings and contour bunds block their natural flow.
- During the rains, the water that percolates get concentrated leading to increased pore pressure along the channel.
- **Indiscriminate quarrying** – Such activities in Ecologically Sensitive Areas (ESAs) make the landscape unstable.
- **Misgovernance** – Measures recommended by the expert committed were neglected.
 - In 2011, Western Ghats Ecology Expert Panel led by Madhav Gadgil had had recommended that the entire Western Ghats be notified as ESAs.
 - The Kasturirangan committee reduced the extent of ESAs to **37%** of the Western Ghats.

What lies ahead?

- There is a need to rethink new or added risk factors while constructing roads or culverts.
- All mountain drainage channels should be free helping easy runoff.
- Maintaining adequate buffer zones in constructing buildings on or near water channels.
- Ban on mining, quarrying and other red category industries new thermal power plants, hydropower projects and large-scale wind energy projects in ecologically sensitive zones.
- Increase the forest cover in the region with endemic species of trees.
- Reducing the population pressure on eco sensitive sensitive regions.

- Implementing the Gadgil and Kasturirangan expert committee recommendations.
- Sensitizing people, tourism and industries sector about the ecological vulnerability of the region.
- Development of landslide early warning systems.
- Capacity development of National and State Disaster Management Authorities to handle landslides.

14. RENEWABLE ENERGY

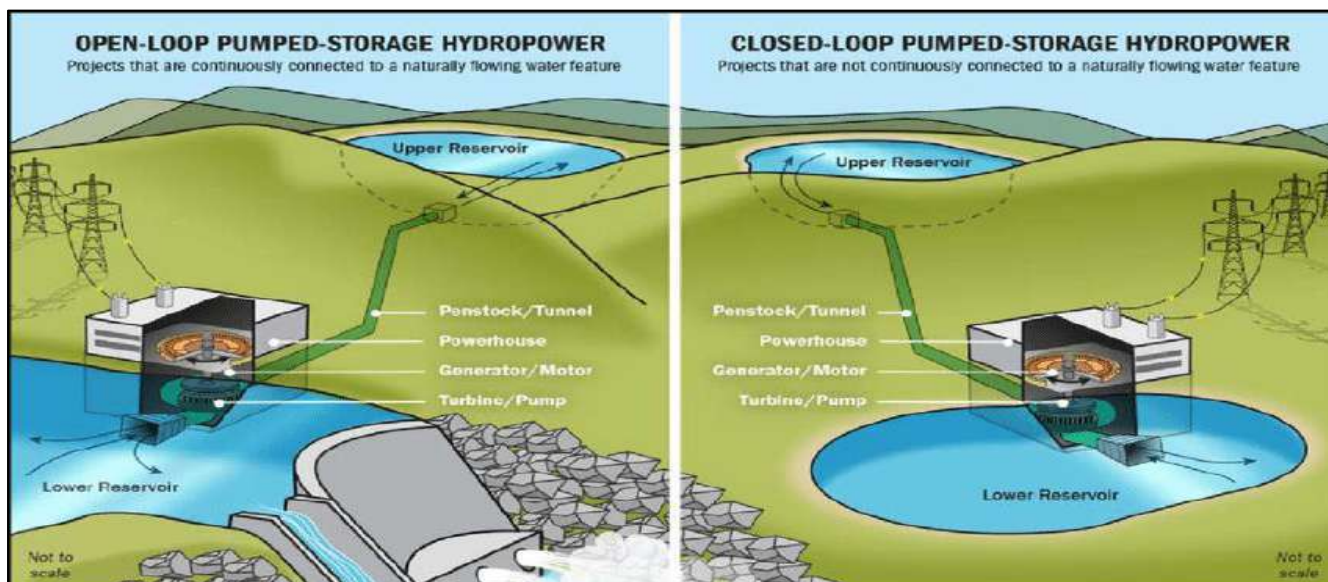
14.1 Pumped Storage Projects

Why in news?

Union Budget 2024-25 stated that a policy for promoting pumped storage projects will be brought out for electricity storage.

What are the Pumped Storage Projects?

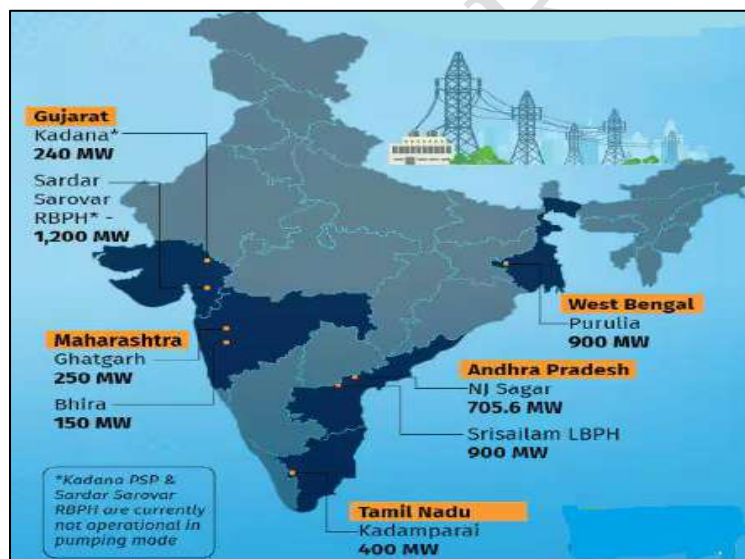
- It is also known as pumped storage hydropower.
- **Pumped storage hydropower (PSH)** – A type of energy storage that uses the pumping and release of water between two reservoirs at different elevations to store water and generate electricity.
- These are like super large batteries but natural and use water and thus called as **Water Battery**.
- **Working principle**
 - **When demand for electricity is low** - A PSH project can use low cost energy to pump water from the lower reservoir to the upper reservoir for storage.
 - **When demand for electricity is high** - A PSH project can release water from the upper reservoir through a powerhouse to generate electricity.
- Traditionally, PSH plants generated power during the day and pumped at night, with modest diurnal or seasonal variation.
- **Working** – Take for example, Kadamparai plant near Valparai in Coimbatore district, Tamilnadu.
- The plant has a higher reservoir that is at a height of around 380 m above a lower reservoir.
- It acts as a turbine generator set producing electric power when the water flows from the upper reservoir to the lower.
- The same unit can function as a pump consuming electric power when it pumps water from lower to higher reservoir.
- **Types** – It is of 2 types
 - On-river type
 - Off-river type
- **On-river Type** – It is an open loop system connected with already existing hydroelectric project supplied by a river and thus existing hydro projects could become pumped storage.
- **Off-river type** – It has two reservoirs at two different levels to which the water is pumped up or falls down to under gravity.
- They are not connected with any natural flow of rivers or streams.
- It has wider choice for sites, lower cost, shorter construction period (2-4 years) and minimal environmental impact.



What is the status of pumped storage projects in India?

- **Potential** - As per Central Electricity Authority, the current potential of ‘on-river pumped storage’ in India is **103 GW**.
- **Current capacity** - India has **4.7 GW** of pumped storage with **8 plants operating** currently.
- **Upcoming projects**
 - 600 MW Upper *Indravati* in *Odisha*
 - 2,000 MW *Sharavathy* in *Karnataka* .
 - *Koyna Left Bank Pumped Storage Project* in Maharashtra
 - *Kundah (Stage-I, II, III & IV) Project* in Tamil Nadu
 - *Tehri St-II Pumped Storage Project* in Uttarakhand

Projections - As per the National Electricity Plan (Generation), the installed capacity of energy storage systems including BESS is projected at 74 GW by 2031-32.



No	Plant	State
1	Nagarjuna Sagar	Telangana
2	Srisailem LBPH	
3	Kadamparai	Tamil Nadu
4	Bhira	Maharashtra
5	Ghatgar	
6	Purulia	West Bengal
7	Kadana	Gujarat
8	Sardar Sarovar Project	

What are its benefits?

- **Efficient energy generation** – *Energy recovery of 70–80%* or more can be achieved after conversion losses and evaporation losses from the exposed water surface.

- **Ensures energy security** – It meets both the Base Load & Peaking Power demands efficiently and are integrated with the main grid from other energy sources.
- **Durability** – They have a *service life of more than 40-50 years*, larger than any other existing energy storage technology available.
- **Cost effective** – It is currently the *most cost-effective means of storing* large amounts of electrical energy.
- Increased life span results in a *low cost of delivered energy* over the life of the projects.
- **Environment friendly** – They don't produce harmful by-products or pose problems of disposal as in case of battery storage.
- **Stabilizes renewable energy supply** – Renewable sources like wind and solar energy fluctuates on basis of day, seasons & weather and so PSPs can help in balancing this fluctuation.
- **Support green energy transition** – It can help India achieve its Nationally Determined Contribution (NDC) targets
 - 500 GW of non-fossil power by 2030
 - 50% of installed capacity from non-fossil fuel sources by 2030
 - Achieve net zero carbon emissions by 2070
- **Move towards Atmanirbhar Bharat** - It primarily use indigenous technologies and domestically produced materials.
- **Develops Indian economy** – As it is highly capital intensive and involves local *transport infrastructure* for the mobilization of men and materials, local *industries such as cement and steel* also get impetus and *drive job creation* in the economy.

China leads the world with 44 GW of pumped storage supporting 1,300 GW of wind and solar followed by Japan and USA.

What are the challenges in developing PSPs?

- **High capital costs** – It requires huge investment to construct or alter an existing power plants into a pumped storage.
- **Higher cost of pumping power** - One of the prerequisites to ensure the commercial viability of a PSP unit is availability of input power at affordable tariff.
- **Geographical limitation** - Necessity of appropriate geography, terrain is a limiting factor the project.
- **Clearances delays** - Environmental clearance and forest clearance process of PSPs is very cumbersome, since these projects are treated at par with the conventional hydro projects.
- **Environmental impacts** – Large capacity secondary storage requires further altering the already strained mountain, valley ecosystem.

What lies ahead?

- Discarded mines including coal mines could be used as hydro storage and thereby become natural enablers for development of PSPs.
- All existing hydro projects may be examined to assess the feasibility for creating storage.
- Competitive bidding would accelerate development of grid-scale storage projects and discovery of price based on the learning.
- Supporting PSPs through concessional climate finances.
- Making them eligible for sovereign green bonds.
- Creation of a revolving fund for project preparation through project specific SPV.
- State governments and central PSUs may take up a few projects through their Undertakings.
