Table of Content

GEOGRAPHY, ENVIRONMENT & DISASTER MANAGEMENT

INTERNATIONAL RELATIONS & INTERNAL SECURITY

POLITY & GOVERNANCE

ECONOMY AND AGRICULTURE

SOCIETY, SOCIAL JUSTICE & SCHEMES

SCIENCE & TECHNOLOGY

HISTORY, ART & CULTURE

GEOGRAPHY, ENVIRONMENT & DISASTER MANAGEMENT

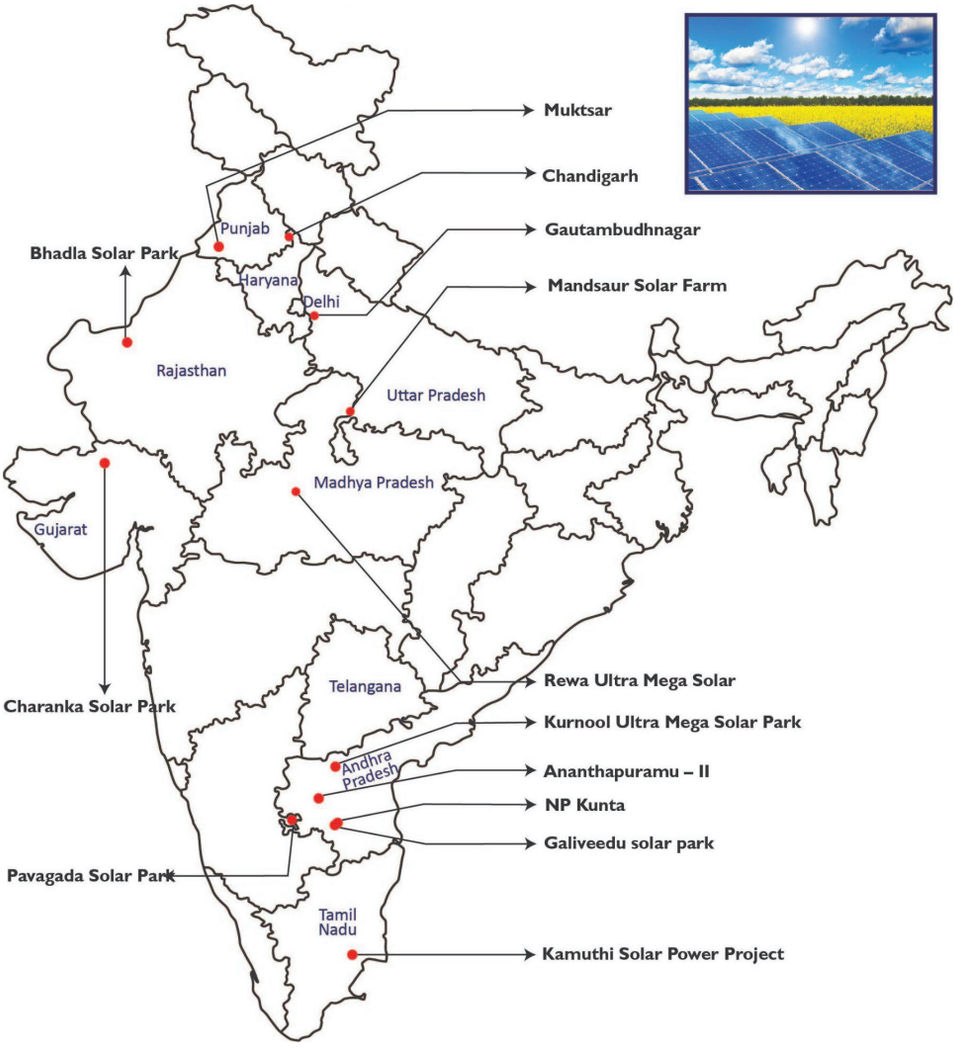
TOPICS FOR MAINS

India's Solar Vision: Driving Clean Energy Transformation

Syllabus Mapping: GS-1, Geography, Environment, Clean Energy

Context

The World Solar Reports 2024 by the International Solar Alliance (ISA) was released. ISA released three reports i.e. the World Solar Market Report, World Solar Investment Report and Word Solar Technologies Report.



Key Findings from World Solar Market Report 2024

- From 1.22 GW in 2000, the world's solar capacity has surged to 1,419 GW in 2023, charting a CAGR of about 36%.
- Today, solar capacity represents three-quarters of all renewable capacity additions worldwide.
- The report indicates that average auction prices for utility-scale solar photovoltaic (PV) projects have decreased significantly, with costs averaging $40/MWh in 2024.
  - India secured a notable auction price of **$34/MWh**, topping the global charts for solar PV capacity granted through auctions.

- Investment in solar PV technology is expected to surpass **$500 billion** in 2024, exceeding investments in all other generation technologies combined.
- **Employment Growth:** Solar PV sector jobs increased to **7.1 million** in 2023 (up from **4.9 million** in 2022).
- **Global Solar Market Overview**
- **Dominant Countries in Solar PV Capacity (2023):**
  - **China:** 43% (609 GW) of global capacity.
  - **United States:** 10% (137.73 GW).
  - **Japan, Germany, and India:** Each hold a **5-6% share**.
  - **Emerging Markets:** Brazil, Australia, Italy, and Spain contribute around **2% each**.
- **Manufacturing Growth:**
  - In 2023, Global solar PV manufacturing capacity nearly doubled for wafers, cells, and modules.
  - **China's Share in Component Manufacturing:**
    - **Wafers:** 97%
    - **Cells:** 89%
    - **Modules:** 83%

India's Solar Energy Landscape

- **Potential:** National Institute of Solar Energy (NISE) has assessed the country's solar potential of about 748 GW assuming 3% of the wasteland area to be covered by Solar PV modules.
  - **State-wise Solar Potential:** Rajasthan > J&K (combined UT of J&K & Ladakh) > Maharashtra > Madhya Pradesh.
- **Target:** India has outlined an ambitious goal in its nationally determined contributions, aiming to achieve 175 GW of renewable energy capacity by 2022, expanding further to 500 GW by 2030→represents the largest renewable energy expansion plan globally.
- **Current Status:**
  - As of December 2024, India's total renewable energy installed capacity has reached 209.44 GW.
  - The total capacity added during 2024 amounted to 28.64 GW.
  - India's cumulative installed solar energy capacity has reached 94.17 GW (November, 2024).
  - In 2024, solar power spearheaded this growth with the addition of 24.54 GW, reflecting a 33.47% rise in its cumulative installed capacity from 73.32 GW in 2023 to 97.86 GW in 2024.

Note: China continues to lead global solar power production, generating 584 BU in 2024.

Initiatives to Promote Solar Energy in India

Initiative	Details
National Solar Mission	Aims to make India a global leader in solar energy by swiftly promoting solar technology through supportive policies.
PM Kusum	Covers grid-connected renewable energy power plants (0.5 – 2 MW), solar water pumps, and grid-connected agricultural pumps.
PLI Scheme under National Programme on High-Efficiency Solar PV Modules	Aims to build an ecosystem for manufacturing of high efficiency solar PV modules in India.
Grid Connected Rooftop Solar Scheme	Aims to promote the grid-connected SPV rooftop and small SPV power generating plants among the residential, community, institutional, industrial and commercial establishments
PM Surya Ghar: Muft Bijli Yojana	Aims to increase the share of solar rooftop capacity and empower residential households to generate their own electricity. Provides for a subsidy of 60% of the solar unit cost for systems up to 2kW capacity and 40 percent of additional system cost for systems between 2 to 3kW capacity.
Suryamitra Scheme	Aims to create skilled manpower in the field of solar energy, particularly in view of the huge demand for trained persons to install, operate and maintain Solar Photovoltaic Systems.

Initiative	Details
Atal Jyoti Yojana	Aims to provide Solar Street Lighting Systems for public use at different locations for improvement in quality of life, safety, and security.
National Wind Solar Hybrid Policy	Aims to promote extensive grid-connected wind-solar PV hybrid systems to efficiently use transmission infrastructure and land.

Global Initiatives to Promote Solar Energy

International Solar Alliance

- ISA was conceived as a joint effort by India and France to mobilize efforts against climate change through the deployment of solar energy solutions.
- It is an action-oriented, member-driven, and collaborative platform.
- Headquarters are in India (Interim Secretariat in Gurugram, Haryana).
- It is guided by its 'Toward 1000' Strategy, which aims:
  - USD 1,000 billion of investment in solar energy solutions by 2030
  - Delivering energy access to 1,000 million people using clean energy solutions
  - Installation of 1,000 GW of Solar Energy Capacity
  - Help mitigate global solar emissions to the tune of 1,000 million tonnes of carbon dioxide every year
- **Member Nations:** At present, 110 countries are signatories to the ISA Framework Agreement, of which 90 countries have submitted the necessary instruments of ratification to become full members of the ISA (All member states of UN are now eligible to join ISA after amendment in Framework Agreement in 2020).

Green Grids Initiative-One Sun One World One Grid

- The idea of the One Sun One World One Grid Initiative was put forth by India at the first assembly of the International Solar Alliance in 2018.
- Aims at connecting energy supply across borders. It aims to connect different regional grids through a common grid which will be used to transfer renewable energy power and, thus, realize the potential of renewable energy sources, especially solar energy.
- The vision behind this initiative is the mantra that **The Sun never sets.**

Challenges associated with Solar Energy Development

- **High Initial Costs:** Upfront capital costs of installing solar power systems can be relatively high, including the cost of solar panels, inverters, batteries (if applicable), and other associated equipment.
- **Land Acquisition and Space Constraints:** India's high population density and competing land-use demands can pose challenges in acquiring suitable land for large-scale solar installations. Identifying suitable land areas and securing land rights can be time-consuming and may encounter resistance from local communities or conflicting land-use priorities.
- **Grid Integration and Infrastructure Challenges:** Issues such as grid stability, variability of solar generation, and lack of adequate transmission and distribution infrastructure can impact the efficient integration and distribution of solar power.
- **Dependence on Imports:** India heavily relies on imported solar panels and other equipment, mainly from China, for its solar energy projects.
  - This dependence on imports raises concerns about the availability, quality, and pricing of solar components, as well as the vulnerability to global market fluctuations and supply chain disruptions.
- **Grid Parity and Tariff Structures:** Achieving grid parity, where the cost of solar power generation is competitive with conventional sources, is crucial for the long-term sustainability and scalability of solar energy.
  - Ensuring appropriate tariff structures and mechanisms that incentivize solar power while balancing the interests of consumers and utilities is a challenge.
- **Limited Storage Infrastructure:** The deployment of energy storage infrastructure is still relatively limited in India, posing a challenge to maximizing the benefits of solar power.
- **Poor Compliance of Renewable Purchase Obligations (RPOs):** RPOs were introduced as a mechanism to obligate the State Discoms to mandatorily purchase a minimum quantity of renewable energy. However, the poor compliance of these norms means that states do not always honour their commitments towards renewable energy in general and solar in particular.

Way Forward

- **Increasing Investment in Renewable Energy Infrastructure::** India must boost its investment in renewable energy infrastructure, focusing on upgrading transmission and distribution networks.
- **Fostering Private Sector Engagement:**The government should implement favourable policies and incentives to encourage greater private sector participation.
- **Advancing Energy Storage Technologies:** The Indian government should prioritize the development of advanced energy storage technologies to improve solar energy accessibility and dependability.
- **Building a Skilled Solar Workforce:** The government should invest in training and educational initiatives to create a pool of qualified workers capable of deploying and maintaining solar energy systems.
- **Stronger RPO Compliance:** The government needs to explore stronger mechanisms to ensure RPO compliance by states and consider imposing significant penalties against defaulting entities.
- **Boosting Solar Manufacturing:** There is a need for focused, collaborative and goals driven R&D to help India attain technology leadership in PV.
- **Incentivizing solar power development** on wastelands, rooftops and other marginal lands.

National Mission on Natural Farming: A Path to Sustainable Agriculture

Syllabus Mapping: GS-3, Environment, Sustainability

Context

The Centre has issued guidelines for its recently launched National Mission on Natural Farming (NMNF) as a centrally sponsored scheme under the Ministry of Agriculture and Farmers' Welfare.

National Mission on Natural Farming (NMNF) Scheme

The **Ministry of Agriculture and Farmers' Welfare** has launched NMNF as a **centrally sponsored scheme** to promote natural farming in mission mode.

- NMNF aims at promoting NF practices for providing safe & nutritious food for all.

Salient Features of NMNF Scheme

- The scheme has a total outlay of Rs.2481 crore (Government of India share – Rs.1584 crore; State share – Rs.897 crore) till the 15th Finance Commission (2025-26).
- In the next two years, natural farming will be implemented in **15,000 clusters in Gram Panchayats** willing to adopt Natural farming and **reach one crore farmers in an area of 7.5 lakh hectare area.**
- Preference will be given to areas having prevalence of practising NF farmers, SRLM / PACS / FPOs, etc.
- Need-based **10,000 Bio-input Resource Centres (BRCs)** will be set-up to provide easy availability and accessibility to ready-to-use NF inputs for farmers.
- **2000 Natural Farming Demonstration Farms** to be established at Kisan Vikas Kendras, Agricultural Universities and farmers' fields. Willing farmers will be trained in natural farming at these demonstration farms.
- **Easy and simple certification system** for natural farming products.
- **Dedicated common branding** for natural farming farming products.
- 18.75 lakh trained willing farmers will prepare inputs like Jeevamrit, Beejamrit, etc. by using their livestock or procure from BRCs.
- 30,000 **Krishi Sakhis** will be deployed for awareness generation, mobilisation and handholding of willing farmers in the clusters.
- **Real time geo-tagged & reference monitoring** of implementation of the scheme through online porta.
- Students will be trained in Natural Farming through the **Rural Agricultural Work Experience (RAWE) program** and dedicated courses on natural farming will be introduced at undergraduate and post-graduate level.

Identified Priority Areas for implementing NMNF

- Namami Gange regions within a 5 kilometre corridor along the Ganga river
- Districts on the banks of major river bodies as decided by the state
- Districts with high fertilizer input sale in states
- Districts with low fertiliser input sale in states
- Districts with strong State Rural Livelihood Missions, Primary Agricultural Credit Societies, Farmer Producer Organizations or other Community-Based Organizations

Natural Farming

It is a unique chemical-free farming method that is considered to be an agroecology-based diversified farming system, which integrates crops, trees and livestock, allowing functional biodiversity.

Characteristics of Natural Farming

- Avoids the use of synthetic fertilizers, pesticides, or herbicides.
- Promotes cultivation of 15-20 diverse crops with a living root, present year-round.
- Requires minimal human intervention in farming practices.
- Encourages the use of native or traditional seeds.
- Incorporates animals into the farming system, utilizing their dung and urine as resources.
- Promotes the use of various organic residues for soil enrichment.
- Relies on good agronomic practices instead of chemical pesticides or herbicides.
- Utilizes bio-stimulants and other natural resources available locally to support farming.
- Focuses on creating an environment for soil microorganisms to thrive, ensuring independent soil fertility.
- Relies on air, water, and sunlight for 98-98.5% of plant nutrients, with the remaining nutrients derived naturally from soil.

Pillars of Natural Farming

Pillars	Description
Beejamrit	Microbial coating of seeds with a mixture of cow urine and cow dung.
Jeevamrit	Soil microbial enhancement using cow dung, cow urine, and jaggery.
Mulching	Covering the soil with crops or crop residues to retain moisture and reduce erosion.
Waaphasa	Building soil humus to increase aeration and improve soil health

Note: In addition, ZBNF includes three methods of insect and pest management: Agniastra, Brahmastra and Neemastra (all different preparations using cow urine, cow dung, tobacco, fruits, green chilli, garlic, and neem).

Benefits of Natural Farming

- **Improve Yield:** Farmers practising Natural Farming reported comparable or, in some cases, higher yields per harvest compared to conventional farming.
- **Ensures Better Health:** Natural Farming avoids synthetic chemicals, eliminating health risks and producing nutrient-dense food with superior health benefits.
- **Environment Conservation**: Natural Farming ensures better soil biology, improved agrobiodiversity, and judicious water use with much smaller carbon and nitrogen footprints.
- **Increased Farmers' Income:** Natural Farming aims to make farming viable and aspirational by increasing the net incomes of farmers on account of cost reduction, reduced risks, similar yields, and income from intercropping.
  - E.g., A study by Andhra University, surveying over 3,500 natural and conventional farms, found that the average net returns from natural farming were 50% greater than those from conventional farming.
- **Employment Generation**: Natural Farming generates employment on account of natural farming input enterprises, value addition, marketing in local areas, etc.
- **Reduced Water Consumption:** By working with diverse crops that help each other and cover the soil to prevent unnecessary water loss through evaporation, Natural Farming optimizes the amount of **'crop per drop.'**
- **Minimized Cost of Production**: Natural Farming aims to drastically cut production costs by encouraging farmers to prepare essential biological inputs using on-farm, natural and home-grown resources.
  - E.g., A panel survey of 260 farm households which were surveyed in 2018-19 and 2019-20, found that natural farming reduced the dependence on credit,
- **Rejuvenates Soil Health:** The most immediate impact of Natural Farming is on the biology of soil—on microbes and other living organisms, such as earthworms.

- **Livestock Sustainability:** The integration of livestock in the farming system plays an essential role in Natural Farming and helps restore the ecosystem.

COMPARISON AMONG 3 FARMING PRACTICES

• Specific Inputs used		⊕ Merits ⊖ Demerits
Organic Farming		
• Farm Yard Manure (FYM) • Organic Farming • Vermicomposting • Bio fertilisers • Panchagavya • HYV/ Hybrid seeds • Biological pest and diseases management	  	⊕ Chemical free ⊕ Eco friendly ⊕ Assured market for contract farmers ⊕ Premium price ⊖ Huge quantity of FYM ⊖ Yield reduction during ⊖ conversion period ⊖ Stringent procedure ⊖ Expensive for consumers
Natural Farming		
• Indigenous cow centric • Jeevamritha & FYM • Ghanajeevamritha • Beejamritho • Mulching • Inter/mixed/poly crops • Local cultivars seeds • Home made materials • (Kasayams) for pests & diseases control- Agneyastra, Neemastra etc.	 	⊕ Regular & better farm income from intercrop ⊕ Lower production cost ⊕ Less use of FYM/Inputs ⊕ Improved family health- non-use of pesticides & food diversity ⊕ Improved soil health ⊕ Chemical free produce ⊖ Need of indigenous cow dung & urine ⊖ Possibility of lower yield ⊖ Cumbersome practices ⊖ More farm engagement ⊖ No established market/ certification
Chemical Farming		
• Synthetic fertilizers • Farm Yard Manure • Chemical pesticides, herbicides • HYV/Hybrid seeds • Heavy Irrigation • Intensive tillage • Farm mechanizatior • Mono-cropping systems	 	⊕ NHigh yield potential ⊕ Convenience in farming ⊕ Less price for customers ⊕ Easy input availability ⊕ Market well-established ⊖ Rising cost of production ⊖ Health hazard for farmers & consumers both ⊖ Unsustainable system ⊖ Loss of biodiversity ⊖ Pests resurgence

Natural Farming products may attract premium price & be placed between conventional & Organic

Challenges in Adoption of Natural Farming

- **Convincing the Scientific Community:** Without evidence from research institutions, it will be challenging to gain broad consensus, leaving stakeholders and farmers sceptical about the effectiveness of natural farming.
- **Adoption by Large-Scale Farms:** Natural farming demands significant labour for monitoring fields and preparing inputs, making it less practical for large farms compared to smallholder operations.
- **Suitability for High-Input Monocropping Areas:** Regions practising monocropping, like the Indo-Gangetic Plains, may struggle with natural farming due to nutrient-specific demands and potential yield reductions.
- **Reduced Mechanization Opportunities:** The intercropping or mixed cropping required in natural farming limits the use of large-scale farm machinery, affecting efficiency and scalability.
- **Continuous Yield Improvement:** The lack of improved seeds in natural farming may result in yield stagnation, discouraging farmers from sustained adoption.
- **Economic Impact on the Crop Protection Industry:** India's crop protection industry, valued at ₹18,000 crores, faces potential disruption as the promotion of natural farming could jeopardize its business ecosystem.

Way Forward

- **Enhance Research and Development:** It is important to conduct systematic studies at ICAR institutes and agricultural universities to address critical questions on Natural Farming, such as the effectiveness of different inputs, application methods, and their impact across diverse agroclimatic conditions.
- **Comprehensive Impact Studies:** The socio-economic and environmental effects of Natural Farming, including carbon footprint reduction, soil health improvement, cost savings on chemical fertilizers, should be evaluated.
- **Develop Certification Mechanisms**: Proper certification systems like Participatory Guarantee Systems (PGS) to ensure premium pricing for chemical-free Natural Farming produce, creating a distinct market segment, should be established.
- **Promote Farmer Producer Organizations (FPOs):** Support FPOs that exclusively advocate Natural Farming with financial incentives for monitoring, value addition, and marketing of Natural Farming produce.
- **Focus on Region-Specific Adoption:** It is important to promote Natural Farming in regions where intercropping is prevalent or feasible and smallholder farmers can manage farms with family labour. For high-input monocropping areas, the adaptability and profitability to ensure successful implementation should be assessed.

Earth's Desertification Crisis: Insights from COP16 UNCCD

Syllabus Mapping: GS-3, Environment, Desertification

Context

The sixteenth session of the Conference of the Parties (COP16) of the United Nations Convention to Combat Desertification (UNCCD) took place in Riyadh, Saudi Arabia, from 2 to 13 December 2024.

Key takeaways of COP 16 of UNCCD

- **Riyadh Global Drought Resilience Partnership:** The conference mobilized over $12 billion to support vulnerable countries in combating desertification, land degradation, and drought (DLDD). **Vision for Adapted Crops and Soils (VACS)**: A commitment of $70 million was made to advance VACS, aiming to prevent topsoil loss and promote effective land restoration, potentially yielding significant global benefits by protecting soil and water resources.
- **Business4Land (B4L) Initiative:** For encouraging industries to adopt sustainable practices and align corporate strategies with land restoration goals. The initiative aims to increase financial commitments for land restoration and promote a synergistic approach across climate, nature, and land goals.
- **Indigenous Peoples and Local Communities**: Agreements were reached to create a **Caucus for Indigenous Peoples** and a **Caucus for Local Communities,** ensuring their active participation in UNCCD processes and decision-making
- **Rio Trio Initiative:** It bridges efforts among UNCCD, United Nations Framework Convention on Climate Change (UNFCCC) and Convention on Biological Diversity (CBD).

- **Land Degradation Neutrality: Strategic Intelligence Map:** Launched by the World Economic Forum (WEF) and UNCCD. It is a tool designed to guide businesses in evaluating risks and opportunities related to ecosystems.

Desertification and its Extent

- United Nations Convention to Combat Desertification (UNCCD) defines **desertification** as land degradation in arid, semi-arid, and dry subhumid areas (collectively called dry lands), resulting from various factors, including human activities and climatic variations.
- **Land degradation** refers to the deterioration or loss of the productive capacity of the land for present and future,

Case Studies on Desertification

Global: Desertification in Sahel Region, Africa

Location: The Sahel is a semi-arid region in Northern Africa that extends from the Atlantic Ocean in the west to the Red Sea in the east. It forms a transitional zone between the arid Sahara Desert to the north and the belt of humid savannas to the south.

Causes of Desertification: The region has undergone extreme levels of desertification due to various factors such as severe droughts, deforestation, soil erosion, overgrazing and climate change.

Great Green Wall Initiative: Started in 2007, the Great Green Wall is an Africa-led initiative to combat the effects of climate change and desertification and build resilient landscapes and livelihoods. It aims to grow an 8,000km-long line of trees and plants across the entire Sahel region.

India: Desertification in Banni grasslands, Gujarat

Location: Banni Grasslands, Kutch, Gujarat, India, known as Asia's finest natural grassland, spans 2,617 sq km.

Causes of Desertification: Desertification in Banni is driven by erratic rainfall, the introduction of the non-native Prosopis juliflora plant, overgrazing, and agricultural encroachment.

Conservation Efforts: NGOs like Sahjeevan are working to restore degraded land by addressing soil erosion, reintroducing native plants, and promoting sustainable grazing practices to combat further desertification.

Extent of Land Degradation and Desertification

Report	Key Takeaways
Global Threat of Drying Lands (UNCCD)	• 4.3 million square kilometres of previously humid landscapes had transitioned into dry lands. • Currently, 2.3 billion people inhabit dry lands — a figure that has doubled over the past three decades→this number could rise to five billion by 2100. • China, India and Pakistan together account for about 50 per cent of the global dryland population. • Aridity, not drought, was considered the world's largest single driver of the degradation of agricultural systems.
2018 World Atlas of Desertification (Joint Research Centre of the European Commission)	• Over 75% of the Earth's land area is already degraded. • Over 90% could become degraded by 2050. • Globally, a total area half of the size of the European Union (4.18 million km²) is degraded annually. • Africa and Asia are the most affected regions from desertification.
Desertification and Land Degradation Atlas of India, 2021	• During 2018-19, 97.85 million hectares (mha), i.e., 29.32% of India's total geographical area (TGA) of 328.72 mha underwent land degradation. • During the same period, 83.69 mha underwent desertification. • In all states and UTs except, Uttar Pradesh, Rajasthan and Telangana, land degradation and desertification had increased.

Causes of Desertification

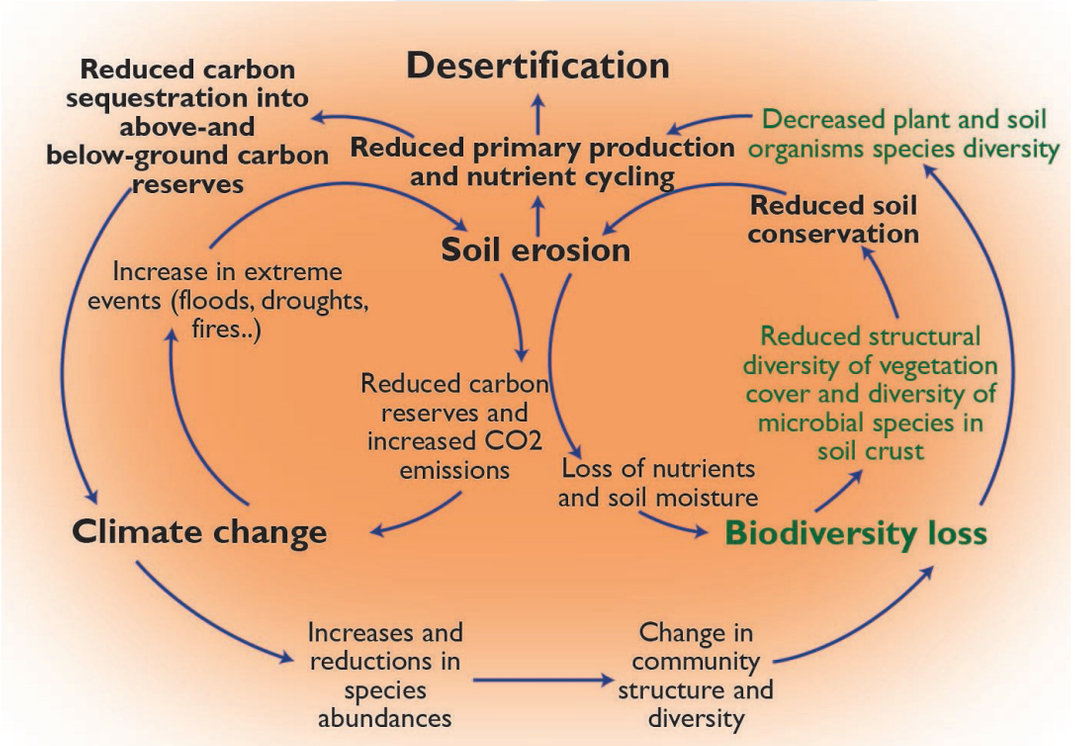
Natural Causes

- **Aridity and Drought:** It often results in reduced plant cover, which exposes the soil particles to wind and water erosion and results in land degradation and desertification.
  - Droughts are short-term anomalies characterized by periods of low rainfall, often linked to high temperatures, low precipitation and reduced air humidity. In contrast, aridity reflects a persistent, long-term lack of available moisture needed to sustain most terrestrial life.
- **Water Erosion:** Extensive erosion by water leads to badland topography-the initial stage of desertification.
  - In 2018-19, Loss of soil cover, mainly due to rainfall and surface run-off (11.01%), was one of the prime reasons for desertification in India

- **Wind Erosion:** Drifting sand and migrating sand dunes in severe wind erosion areas make soil more prone to desertification.
  - In 2018-19, wind erosion was responsible for 5.46 % of the desertification in India.

Anthropogenic Causes

- **Unsustainable Agricultural Practices:** Extensive and frequent cropping of agricultural areas, excessive use of fertilizers and pesticides, and shifting cultivation without allowing an adequate period of recovery contribute to desertification.
- **Overgrazing:** Overgrazing of livestock increases soil crusting, reduces infiltration, and exposes soil to increased erosion. Continued soil erosion in overgrazed areas lead to desertification.
- **Deforestation**: It disrupts the balance of nutrients in the soil and removes the roots that help bind the soil together. This exposes the soil to erosion and accelerates desertification.
  - In 2018-19, vegetation degradation was responsible for 9.15 per cent of desertification in India.
- **Poor Water Management:** Poor and inefficient irrigation practices, and over extraction of groundwater results in salt water intrusion and lowering of groundwater table, contributing to desertification.
- **Urbanization:** Rapid, unplanned urbanization reduces vegetation cover and green spaces, and increases the exposure of soil to erosion and accelerates land degradation and desertification.
- **Climate Change:** It will accelerate desertification through alteration of spatial and temporal patterns in temperature, rainfall, solar radiation and winds.



in green: major components of biodiversity involved in the linkages bolded: major services impacted by biodiversity losses

Global Efforts to Combat Desertification

- **United Nations Convention to Combat Desertification**
  - Adopted in 1994, it is the sole legally binding international agreement linking environment and development to sustainable land management.
  - **Aim:** To combat desertification and mitigate the effects of drought through national action programs.
  - **Members:** 197 parties, including India.
  - At CoP 15, UNCCD has set a new target to accelerate restoration of one billion hectares of degraded land by 2030.

- **Bonn Challenge:**
  - It was hosted and launched in 2011 by Germany and the International Union for Conservation of Nature (IUCN) in Bonn.
  - It is a global effort to bring 150 million hectares of degraded and deforested landscapes into restoration by 2020 and 350 million hectares by 2030.
  - The Bonn Challenge is based on the Forest Landscape Restoration (FLR) approach.
- **Sustainable Development Goals:** SDG 15.3 seeks to combat desertification, restore degraded land and soil, including land affected by desertification, drought and floods, and strive to achieve a land degradation-neutral world by 2030.
- **Integrated Drylands Development Programme (IDDP):** It is an initiative launched by the United Nations Development Programme (UNDP) to promote sustainable land use practices and combat desertification in dryland areas.
- **Land Degradation Neutrality (LDN)** The concept was introduced by UNCCD during the Rio+20 conference in 2012. It has been adopted as part of the 2030 Agenda for Sustainable Development in 2015. LDN aims to preserve the land resource base by ensuring no net loss of healthy and productive land.
  - Achieving LDN involves three actions:
    - Avoiding new degradation of land by maintaining existing healthy land
    - Reducing existing degradation by adopting sustainable land management practices
    - Increasing efforts to restore and return degraded lands to a natural or more productive state.
  - **Land Degradation Neutrality Fund** It is an impact investment fund blending resources from the public, private and philanthropic sectors to support achieving LDN through sustainable land management and land restoration projects implemented by the private sector.
    - It is co-managed by Mirova, an affiliate of Natixis Investment Managers, in partnership with the UNCCD.

India's Efforts to Combat Desertification

- **Commitment to UNCCD and SDG:** India intends to achieve land degradation neutral status by 2030. India is also working towards restoring 26 million hectares of degraded land by 2030
- **National Action Plan to Combat Desertification (NAPCD):** A comprehensive plan launched by the Government of India in 2010 to address the root causes of desertification and land degradation in India, and to promote sustainable land use practices that will benefit both the environment and local communities.
- **Integrated Watershed Management Program (IWMP):** It is designed to address the challenges of land degradation, soil erosion, water scarcity, and declining agricultural productivity in India's watersheds.
- **National Land Use and Conservation Board:** It is responsible for promoting sustainable land use practices and combating desertification in India.
- **Desert Development Programme:** Launched in 1977, it aims to minimize the adverse effect of drought and to rejuvenate the natural resource base of the identified desert areas.

E-Waste: An Unplugged Crisis

Syllabus Mapping: GS-3, Environment, Waste Management, Pollution

Context

According to data presented in Rajya Sabha, India witnessed a surge in electronic waste (e-waste) generation over the past five years, rising from 1.01 million metric tonnes (MT) in 2019-20 to 1.75 million metric tonnes (MT) in 2023-24.

E-waste and its Types

According to the Global E-waste Statistics Partnership (GESP), Electronic waste, or e-waste, refers to all items of electrical and electronic equipment (EEE) and its parts that have been discarded by its owner as waste without the intent of re-use.

Types of E-waste

- **Large household appliances:** e.g., refrigerators, washing machines, air conditioners
- **Small household appliances: e.g.,** vacuum cleaners, toasters, coffee makers
- **IT and telecommunications equipment:** e.g., computers, laptops, printers, telephones

- **Consumer equipment: e.g,** televisions, radios, and other audiovisual equipment.
- **Lighting equipment: e.g.,** light bulbs and lamps.
- **Electrical and electronic tools: e.g.,** drills, saws

Toxic Elements in E-waste

Pollutant	Use and Impact
Lead (Pb)	• Lead is commonly used in cathode ray tubes (CRTs) found in older televisions and computer monitors. • Exposure to lead can cause damage to the nervous system, brain development problems, and anaemia.
Mercury (Hg)	• Mercury is used in fluorescent lamps, switches, and batteries. • Exposure to mercury can cause neurological and developmental problems, kidney damage, and respiratory problems.
Cadmium (Cd)	• Cadmium is used in rechargeable batteries and some types of electronic components. • Exposure to cadmium can cause kidney damage, lung cancer, and bone disease.
Polybrominated diphenyl ethers (PBDEs)	• PBDEs are flame retardants used in plastics, foams, and textiles. • Exposure to PBDEs can cause developmental problems, thyroid disorders, and liver damage.
Polyvinyl chloride (PVC)	• PVC is a common plastic used in electronic components and cables. • PVC can release toxic chemicals during production and disposal, and exposure to PVC can cause respiratory problems and cancer.

Trends in E-Waste Generation

According to the Global E-Waste Monitor 2024,

62 billion kg produced worldwide in 2022.

- Only 22.3% formally collected and recycled, meeting just 1% of rare earth element demand.
- Europe leads in per capita e-waste generation, followed by Oceania and the Americas.
- India is the 3rd largest e-waste generator (4,100 million kg), after China and the USA.

Impact of E-Waste

- **Environmental impacts:** Improper disposal of e-waste can lead to environmental pollution, such as soil contamination, air pollution, and water pollution. This is due to the presence of hazardous substances such as lead, mercury, cadmium, and brominated flame retardants, which can cause long-term damage to ecosystems and human health.
- **Human health impacts:** Exposure to hazardous substances found in e-waste can cause serious health problems such as cancer, birth defects, neurological damage, and respiratory illnesses.
- **Economic impacts:** E-waste holds valuable metals like gold, silver, and copper, but improper management leads to resource loss and missed recycling benefits.
- **Social impacts:** Informal e-waste recycling by marginalized groups fosters inequality, exploitation, and unsafe conditions.

Global E-Waste Management

- **The Mobile Phone Partnership Initiative (MPPI):** It was launched in 2022 under the Basel Convention. It was developed to address the growing problem of e-waste generated by mobile phones and to promote sustainable practices in the mobile phone industry.
- **Nairobi Declaration on the Environmentally Sound Management of Electrical and Electronic Waste:** It was adopted at the eighth meeting of the Conference of the Parties to the Basel Convention in 2006. Parties to the Convention agreed to develop policies and strategies aimed at improving the environmentally responsible collection, proper separation from household waste, repair, recycling, and final disposal of electronic waste (e-waste). Additionally, they committed to preventing the illegal trafficking of e-waste.
- **R2 Code of Practices:** R2 stands for Responsible Recycling. R2 Code of Practices is a standard specifically created for the electronics recycling industry by Sustainable Electronics Recycling International (SERI).

E-Waste Management in India

- **E-Waste (Management) Rules, 2022**
  - Introduced the concept of a **modified Extended Producer Responsibility (EPR)**
  - Applicable to every manufacturer, producer, consumer, bulk consumer, collection centres, dealers, e-retailer, refurbisher, dismantler and recycler.
  - All the manufacturers, producers, refurbishers and recyclers are required to register on a portal developed by CPCB.
  - Producers of notified Electrical and Electronic Equipment (EEE), have been given annual E-Waste Recycling targets based on the generation from the previously sold EEE or based on sales of EEE. Provision for generation and transaction of EPR Certificate has been introduced.
  - Management of solar PV modules /panels/ cells added in new rules.
  - Puts restriction on lead, mercury and other hazardous substances beyond the maximum prescribed concentration to be used in EEE.
  - **Roles and Responsibilities**
    - **Role of manufacturers**: will make the end product recyclable
    - **Role of State Governments**:Will designate industrial space for e-waste dismantling and recycling facilities, undertaking industrial skill development and establishing measures for protecting the health and safety of workers engaged in the dismantling and recycling facilities for e-waste.
    - **Role of Central Pollution Control Board (CPCB):** Will conduct random sampling of electrical and electronic equipment placed on the market to monitor and verify the compliance of reduction of hazardous substances provisions.
- **E-Waste (Management) Amendment Rules, 2024**
  - Filing deadlines for returns or reports by manufacturers, producers, refurbishers, or recyclers can be relaxed for up to nine months.
  - The Central Government may set up multiple platforms to facilitate the exchange or transfer of EPR certificates.
  - The exchange price for EPR certificates must fall within the range set by the Central Pollution Control Board.

Challenges in E-waste Management in India

- **Poor Recycling Infrastructure:** There are very few governments approved e-waste recycling centres in the country, which only constitutes about 1/5th of the total amount of e-waste generated each year.
- **Unsustainable and ecologically degrading practices:** The formal sector recycling is limited to manual sorting and mechanical dismantling of e-waste management in India. On the other hand, the informal sector extracts metals using methods such as open-air incineration and acid leaching, which are hazardous and exacerbate environmental pollution and health risks.
- **Market Challenges:** Uncertainty in sourcing sufficient e-waste and lack of cost-effective recycling technologies deter private sector investment.
- **Insufficient E-Waste Data:** Poor state-level inventories and limited data on domestic and imported e-waste hinder effective management.
- **Lack of Awareness and Incentives:** Limited public awareness about e-waste hazards leads to low recycling rates. Consumers often sell e-waste to informal buyers due to financial incentives and a lack of formal collection points.

Steps to Strengthen E-Waste management in India

- **Expand Recycling Infrastructure:** Formal recycling centres should be established and their capacities enhanced. Infrastructure upgrades in informal units must be incentivized to align with environmental and safety regulations.
- **Mature recycling technologies:** There is an urgent need for deploying mature recycling technologies alongside existing manual techniques to improve the recycling efficiency of the large volumes of e-waste management in India.
- **Effective Policy Instruments:** Advanced recycling or disposal fees must be introduced on electronic products to fund e-waste management. Such fees should incentivize safe recycling practices.
- **Train Informal Sector**:Training programs under initiatives like the National Skill Development Mission should be introduced to enhance the skills of workers in e-waste handling and connect them with formal systems.

- **Public Awareness:** Nationwide campaigns should be conducted to educate people about safe e-waste disposal and its hazards. Producers must be mandated to run awareness programs at grassroots levels.
- **Research and Development**: Investments must be made in innovative recycling technologies to manage emerging e-waste streams like lithium-ion batteries and advanced materials.
- **Strengthen Regulatory Enforcement:** Compliance with e-waste regulations should be monitored rigorously, with transparency in actions and public availability of compliance data and e-waste inventories.
- **Learning from Best Practices:** The government may refer to methods adopted by other countries for efficient collection and recycling of e-wastes. E.g., South Korea, one of the largest producers of electronics managed to recycle 21 per cent of the total 0.8 million tonnes of e-waste that it produced in 2015

The Rising Threat of Ocean Acidification: Impacts and Solutions

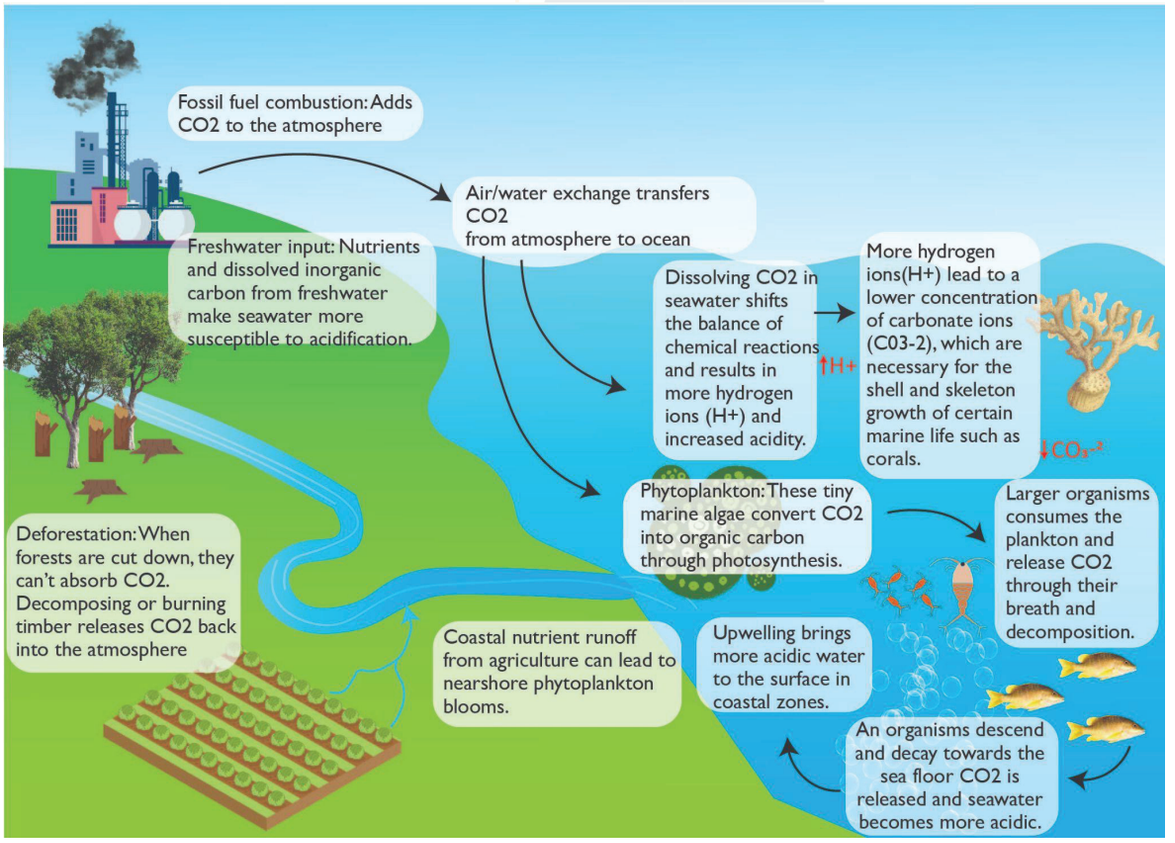
Syllabus Mapping: GS-3, Environment, Climate Change

Context

A new technology promises to remove carbon from the atmosphere and prevent ocean acidification.

Ocean Acidification and its Process

Ocean acidification is a process that occurs when carbon dioxide from the atmosphere dissolves in seawater, leading to a decrease in pH and an increase in acidity.



Mechanism of Ocean Acidification

- The burning of fossil fuels, deforestation, and other human activities result in the release of large amounts of carbon dioxide into the atmosphere.
- Approximately a quarter of the carbon dioxide released into the atmosphere is absorbed by the ocean.
- When carbon dioxide enters the ocean, it dissolves in the saltwater, forming carbonic acid.
- Carbonic acid is a weak acid that dissociates into hydrogen ions and bicarbonate ions.

- Ocean acidification results from an increased concentration of hydrogen ions and a reduction in carbonate ions due to the absorption of increased amounts of carbon dioxide.

Status of Ocean Acidification

- Since the Industrial Revolution, ocean pH has dropped by **0.1 units**, representing a **30% increase in acidity**.
- Projections suggest a **pH drop of 0.3–0.4 units by 2100** under high-emission scenarios, potentially causing irreversible damage to marine ecosystems.

Impact of Ocean acidification

According to the IPCC, by 2100 AD, the pH of the ocean could decrease to about 7.8. This will make the ocean 150 percent more acidic and affect half of all marine life.

On Marine Ecosystems:

- **Impact on Calcifying organisms**: Ocean acidification reduces the availability of carbonate ions, essential for many marine organisms, such as corals, oysters, clams, and sea urchins, for their shells and skeletons.
- **Impact on Coral Dependent organisms:** The population decline of corals and coral bleaching threatens the survival of coral dependent species such as lams, seahorses, sponges, and sea turtles.
- **Vulnerability to Stressors:** Marine organisms weakened by acidification are more vulnerable to additional stressors, such as rising ocean temperatures and pollution.
- **Changes in Ocean Circulation:** The acidification of the ocean can alter the balance of seawater chemistry and affect ocean circulation patterns.
- **Disruption of Marine Food Webs:** Changes in the abundance and health of foundational species like plankton can have cascading effects on the entire ecosystem

On Coastal Communities:

Fisheries: The productivity and distribution of some commercially important fish species (such as Pacific salmon and Atlantic cod) may be affected by ocean acidification.

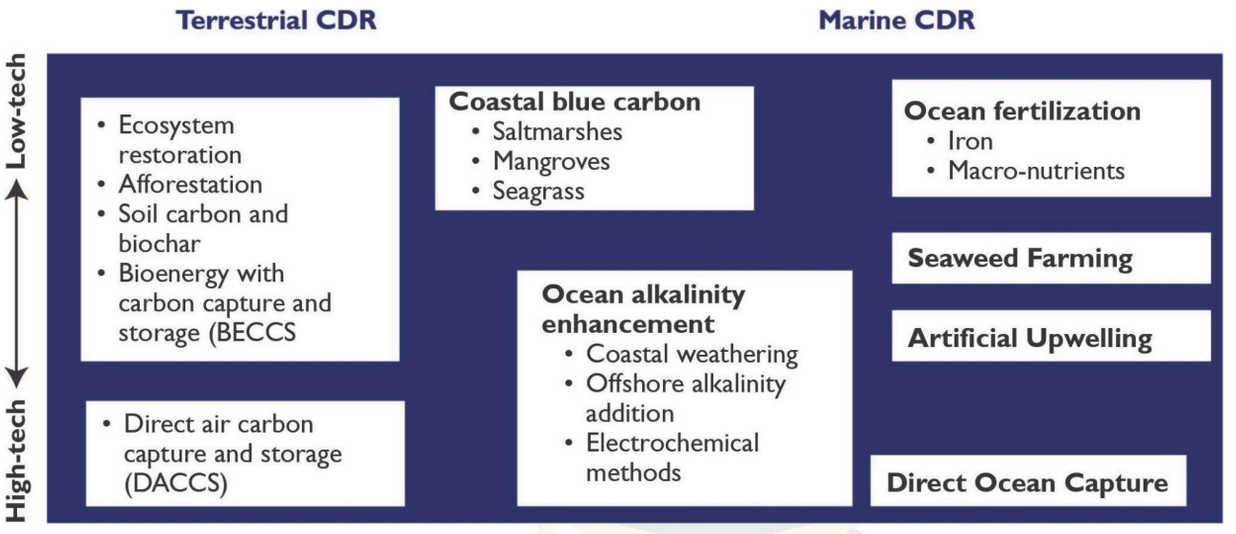
- **Threat to Food Security:** The decline in the populations of marine life and changes in the structure of marine food webs can reduce the availability of food for human consumption.
- **Loss of Tourism:** Ocean acidification may lead to deterioration in marine recreation opportunities and appeal, leading to loss of tourism opportunities.
- **Loss of Ecosystem Service**s: There would be loss of ecosystem services, such as coastal protection, as reefs deteriorate.
- **Social and Cultural Impact:**
  - Loss of cultural values related to maritime and fisheries traditions
  - Disappearance, or stagnation, of smaller and more isolated coastal fishing communities with increasing outward migration.
- **Climate Change:** Increased ocean acidity reduces the ocean's capacity to absorb CO2, thus diminishing its role as a carbon sink and its ability to regulate the global climate.

Solutions to Ocean Acidification

- **Reduce Carbon Emissions:** Limiting atmospheric CO_2 reduces ocean absorption rates.
- **Seaweed Farming:** Seaweed absorbs CO_2 and may locally mitigate acidification.
- **Growing Plankton:** Promoting plankton growth helps trap CO_2 in the ocean depths.
- **Geoengineering:** Innovative technologies like altering ocean chemistry to neutralize CO_2 can help address the problem.
- **Marine Carbon Dioxide Removal (mCDR) Strategies:** Refers to a set of techniques that aim to enhance the ocean's natural ability to absorb and store carbon dioxide (CO2) from the atmosphere.
  - **Categories of mCDR Approaches**
    - **Biotic Approaches:** Utilize living systems such as mangroves and macro algae for biomass burial at sea
    - **Abiotic Approaches:** Involve manipulating physical or chemical properties of seawater, such as through Ocean Alkalinity Enhancement (OAE).

Ocean Alkalinity Enhancement (OAE)

- Ocean alkalinization is an approach to carbon removal that involves adding alkaline substances to seawater to enhance the ocean's natural carbon sink.
- Adding alkalinity to the ocean removes carbon dioxide (CO2) from the atmosphere through a series of reactions that convert dissolved CO2 into stable bicarbonate and carbonate molecules, which in turn causes the ocean to absorb more CO2 from the air to restore equilibrium.



Importance of mCDR for Climate Goals

- Several studies tell us that the **land is saturated** because soils and rocks are so severely damaged that they no longer support efficient carbon capture.
- To cap global warming at **1.5°C**, emissions must stay under **570 billion tonnes of CO_2** and reach net-zero by 2050.
- Current trends predict this carbon budget will be exhausted by **2031**, underscoring the urgency of integrating mCDR with emission reductions.

Challenges to Marine Carbon Dioxide Removal (mCDR)

- **Environmental Risks and Uncertainty:** Techniques such as ocean iron fertilization may disrupt marine ecosystems, including oxygen depletion in deeper waters.
  - Unintended consequences, such as altering food webs or creating harmful algal blooms, remain poorly understood.
- **Energy and Resource Intensive:** Abiotic methods like Ocean Alkalinity Enhancement (OAE) require substantial energy inputs, particularly in mining and processing minerals.
  - Scaling these methods globally demands massive infrastructure and resources.
- **Economic and Financial Constraints:** High upfront costs for research, deployment, and ongoing management deter investment.
  - Limited financial incentives or carbon credit systems to support large-scale marine interventions.
- **Regulatory and Governance Issues:** International laws, like the London Protocol, restrict certain activities in marine environments, creating legal uncertainties.
  - Lack of a coordinated global framework for regulating mCDR techniques.
- **Public Perception and Acceptance:** Abiotic approaches are often viewed as unnatural or risky, leading to skepticism and resistance.
  - Insufficient public awareness about the potential benefits of mCDR exacerbates opposition.

Way Forward

- **Strengthen Research and Innovation:** Investing in research is essential to better understand the environmental impacts, scalability, and technical feasibility of both biotic (living organisms-based) and abiotic (non-living) methods for carbon dioxide removal (mCDR).

- **Establish Governance Frameworks:** Developing international regulatory structures for mCDR is crucial, ensuring that these efforts are aligned with global climate agreements, such as the United Nations Framework Convention on Climate Change (UNFCCC).
  - Promoting collaboration among nations, scientists, and industries will help standardize practices, ensuring consistency and accountability in the implementation of mCDR technologies worldwide.
- **Integrate with Climate Strategies:** mCDR should be seen as a complementary tool in the fight against climate change, rather than a standalone solution.
  - It is important to integrate these initiatives with existing climate strategies, aligning them with Nationally Determined Contributions (NDCs) under the Paris Agreement.
- **Improve Monitoring Technology:** To effectively monitor carbon capture and storage, it is important to leverage advancements in technology such as satellite imaging, autonomous underwater vehicles (AUVs), and machine learning.
- **Public Engagement and Advocacy:** Engaging stakeholders, including coastal communities and industries, in decision-making processes will foster broader support for mCDR and ensure that local perspectives are considered in policy design.
- **Incentivize Deployment:** To stimulate large-scale deployment of mCDR technologies, financial incentives such as carbon credits or subsidies should be implemented.

TOPICS FOR PRELIMS

Silica Mining

Syllabus Mapping: Geography, Environmental Issues, Pollution

Context

National Green Tribunal (NGT) has directed the Central Pollution Control Board (CPCB) to prepare detailed pan-India guidelines for silica sand mining and silica washing plants.

About Silica

- Silica or silicon dioxide (**SiO_2**), is a naturally occurring mineral found in quartz, sand, and other rocks.
- **Silicon(27.7%) and Oxygen(46.6%)** are the earth's two most abundant elements of earth's crust and together they make **silica.**
- **Types of Silica:**
  - **Crystalline Silica:** Found in quartz; most commonly used in industries.
  - **Amorphous Silica:** Found in volcanic rocks and some synthetic forms.
- **Applications of Silica:**
  - Construction (cement, glass, ceramics).
  - Electronics (semiconductors, optical fibres).
  - Renewable energy (solar panels).
  - Chemicals (silicones, silica gels).

Harmful Impact of Silica Mining

- **Pollution:** The SPM (Suspended Particulate Matter) generated by silica mining and from the rubble heaped on the side of mines, pose threat to the local environment.
- **Deterioration of Ground Water and Natural Drainage System**
  - Excessive groundwater extraction for washing silica sand significantly lowers the water table.
  - The refining process leads to surface run-off, causing the accumulation of mud, silt, and sand.
  - The natural drainage system is disrupted due to blockages in natural channels caused by sediment accumulation.
- **Land Degradation**: It occurs due to excavation, interference with natural drainage, groundwater depletion, stacking of mine waste, loss of fertile topsoil, and degradation of forest land.
- **Impact on Human Health:** Prolonged exposure to respirable crystalline silica (RCS) can lead to serious respiratory diseases such as silicosis, lung cancer, and chronic obstructive pulmonary disease (COPD).

Lake Effect Snow

Syllabus Mapping: Geography, Climatology

Context

Several states in the USA such as New York, Pennsylvania, Ohio and Michigan are witnessing snowfall due to the 'Lake Effect Snow.'

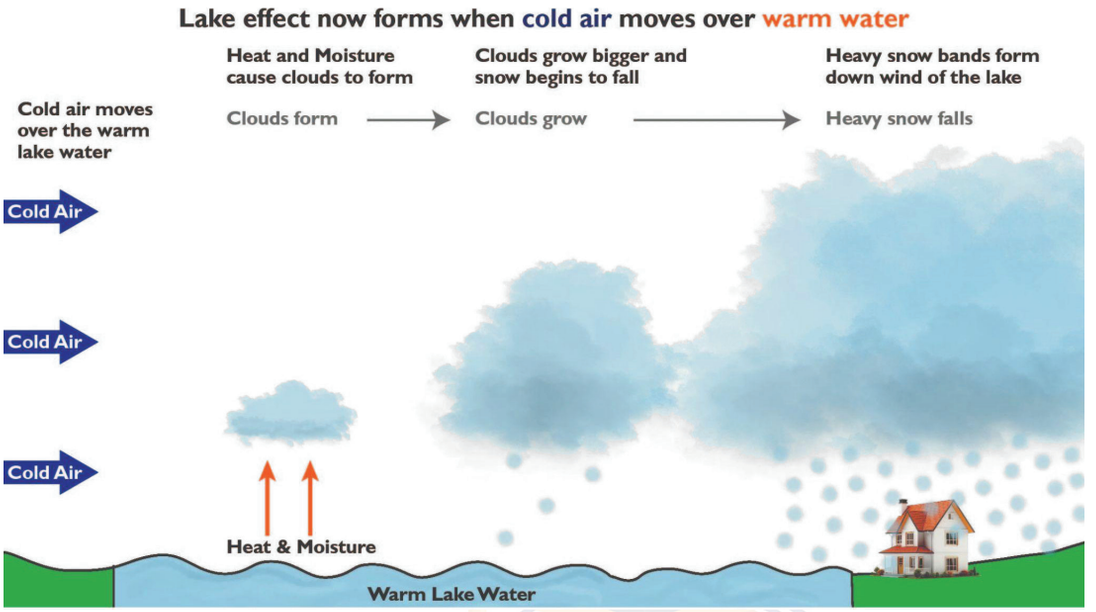
About Lake Effect Snow

It is a localized weather phenomenon characterized by **heavy snowfall near large bodies of water,** commonly observed around the **Great Lakes in North America** during the colder months.

Mechanism of Lake Effect Snow

- Cold air (generally originating from Canada) moves over the warmer surface of the lakes.

- The lower layer of air is warmed by the lake, gaining moisture as it rises through the colder atmosphere above.
- This warm, moist air ascends, and as it cools rapidly, the moisture condenses to form clouds.
- These clouds then develop into a narrowband, leading to intense snowfall, often accumulating 2-3 inches or more per hour.



Copper Shortage in India

Syllabus Mapping: Geography, Minerals, Resources

Context

India faces a potential copper shortage as new Quality Control Order (QCO) norms for refined copper imports restrict non-Bureau of Indian Standards (BIS)-certified imports.

About Quality Control Order (QCO) norms for refined copper imports

- The QCO mandates BIS certification for refined copper imports to prevent substandard supplies. Due to these, imports from **non-certified producers**, including **Japan, are barred.**
- The certification process requires a **resistivity test**, involving:
  - Production of thin copper wires.
  - Testing at BIS-approved labs in India.

About Copper

- Copper is a soft brown metal found in igneous and metamorphic rocks.
- Three primary copper ores, viz. **Chalcopyrite, copper sulphide, and basic carbonates.**
- During the extraction of copper from ores, a few other minerals and metals, such as gold, silver, lead, zinc, etc., are also extracted.
- Copper is resistant to corrosion and does not rust.
- Good conductor of heat and electricity
- **Types of refined copper**:
  - **Refined copper** -the end product where impurities are removed from copper ore.
  - **Finished copper-copper** that has been processed and shaped into its final form such as wires, tubes, pipes, sheets etc.

Distribution of Copper

Country	Areas
Chile (Largest Producer)	Copper Mountain of Chuquicamata, El Teniente, Rio Blanco, Braden
Peru	Moquegua region
USA	Arizona, Globe, Miami, Nevada, New Mexico
Canada	Sudbury, Lynn Lake, Sheridon

Country	Areas
Sweden	Falun Mine
Germany	Mansfield
CIS	Degtyarsk, Kazakhstan
Australia	Mt Isa, Mt. Morgan
India	• India has low grade copper ore Copper Reserves in India • Total Reserves around 46 million tonnes. • **States with Highest Reserves:** Rajasthan (50%) Madhya Pradesh (24%) Jharkhand (19%). **Production:** • Madhya Pradesh (Highest producer): Balaghat, Malanjkhand • Rajasthan: Khetri- Singhana belt in Jhunjhunu district and Alwar district • Jharkhand: Singhbhum district. **Note:** In 2023-24, India sourced 80% of its copper imports from Japan.

Uses of Copper

- It is widely used in electrical works for making wires, generators, transformers, electronics, etc.
- Due to its high malleability, copper is commonly used in the metallurgical industry to make cables, fittings, and parts for automobiles.
- It is used to make many alloys.
  - When combined with tin, it produces **bronze.**
  - When it is mixed with gold, it produces **guinea gold**.
  - With zinc, it produces **brass,** and with nickel, it produces **Monel metal.**
  - When copper is mixed with aluminium, it produces **duralumin.**

Santa Ana Winds

Syllabus Mapping: Geography, Climatology

Context

The Franklin Fire in Malibu, California, has affected approximately 22,000 people, with experts citing Santa Ana winds and climate change as key factors driving the wildfires.

About Santa Ana Winds

- These are **dry and warm (often hot) winds in the Southern California** area that blow in from the desert -- which includes the Great Basin of the western United States.
- It is named after **Southern California's Santa Ana Canyon.**
- **Origin:** These winds blow **when high pressure builds over the Great Basin** - Area between the **Rocky Mountains and Sierra Nevada** (a mountain range in the Western United States) and the **pressure is low over California's coast**.
- The pressure difference triggers powerful winds to move from the Basin's inland deserts, located to the east and north of Southern California, over the mountains toward the Pacific Ocean.
- As these winds descend the mountains, they compress and heat up, causing their humidity to drop—sometimes to less than 20%, or even below 10%. →This extremely low moisture dries out vegetation, making it highly flammable.
- Santa Ana winds generally occur from **October to January.**

Important Hot Local Winds

Wind	Region	Description
Loo	Plains of Northern India and Pakistan	A very hot and dry wind, which blows in the months of May and June, usually in the afternoon
Fohn	Alps mountain	A warm, dry, gusty wind which occurs over lower slopes on the lee side of a mountain barrier
Chinook	Eastern Slopes of the Rockies	A very dry and warm wind with a capacity to evaporate snow. The meaning of chinook is the 'Snow eater'
Sirocco	Sahara Desert	A hot, dry wind blowing north across the Mediterranean Sea
Leveche	Spain	A dry, dust laden wind blowing from Sahara Desert into Spain
Khamsin	Northern Africa and Arabia	A hot desert, dry, dust-laden, wind occurring mainly in Egypt. Occurs during the period February to June, being most frequent in March and April.

Wind	Region	Description
Zonda	Argentina	A warm, dry wind on the edge of the Andes
Harmattan	West Africa	A hot, dry, dusty north-eastern wind blowing out of the Sahara across the Sahel. It is hot from about March to June and cool from November to February

Firefly Sparkle

Syllabus Mapping: Geography, Universe

Context

NASA's James Webb Space Telescope (JWST) has discovered a distant galaxy called "Firefly Sparkle.

Key Features of Firefly Sparkle

- **Formation:**
  - The firefly galaxy was formed 100–400 million years after the Big Bang.
  - Its current observed state shows it as an infant galaxy, still in the process of assembling.
- **Size and Structure:**
  - **Mass:** About 10 million stars, equivalent to the size of the Sun.
  - **Neighbouring Galaxies:** Two smaller neighbouring galaxies named Firefly-Best Friend and Firefly-New Best Friend.
- **Comparison with Milky Way:** At this stage, Firefly Sparkle is 10,000 times less massive than the present-day Milky Way.
- **Significance of the Discovery**
  - **Insights into Galactic Formation:** Provides a direct look at how galaxies like the Milky Way might have looked like in their infancy. Its mass and structure align with theoretical models of early Milky Way-like galaxies.
  - **Understanding Evolution:** Represents early formation phase in the evolutionary process of galaxies.

Gravitational Lensing

Gravitational lensing is a phenomenon that occurs when a massive celestial body bends and warps space, causing light to bend and magnify. This effect allows astronomers to observe objects that would otherwise be too faint or distant to detect.

Hubble Tension

Syllabus Mapping: Geography, Universe

Context

Recent observations from NASA's James Webb Space Telescope have provided further evidence that the universe is expanding more rapidly than previously expected.

Key findings

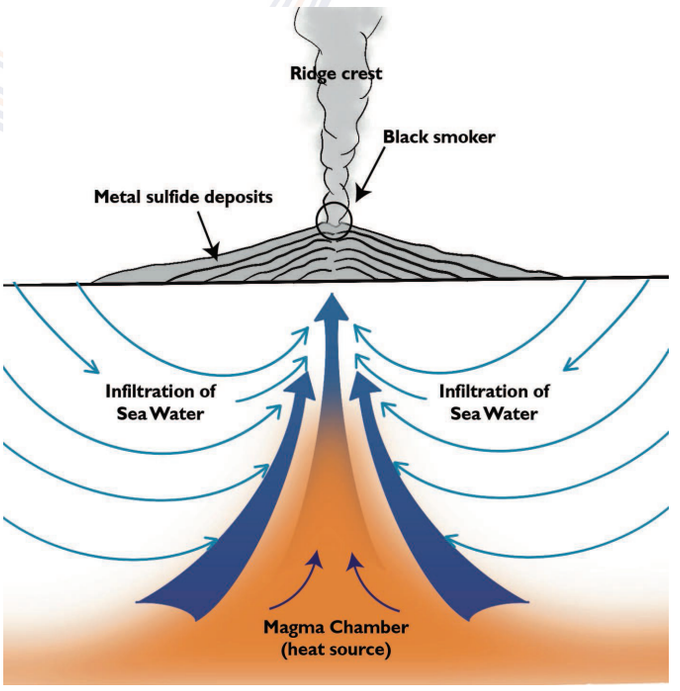
- Data from the Webb telescope indicates that the universe's expansion rate is approximately **8% faster than what is predicted based on current astrophysical models.** This phenomenon is known as the **Hubble Tension.**
- **Hubble's Law**: Also known as **Hubble Constant**, it says that the universe is expanding at a rate of **67–68 kilometres per second per megaparsec (a megaparsec is 3.26 million light-years).**
- **Understanding Dark Matter and Dark Energy:**
  - **Dark Matter:** Comprising about 27% of the universe, dark matter is an invisible form of matter inferred from its gravitational effects on visible matter.
  - **Dark Energy:** Believed to constitute approximately 69% of the universe, dark energy is a hypothesized form of energy that drives the accelerated expansion of the universe.

Hydrothermal Vents

Syllabus Mapping: Geography, Oceanography

Context

India's Deep Ocean Mission has achieved a groundbreaking milestone with the discovery of an active hydrothermal vent 4,500 meters below the surface of the Indian Ocean. It was a joint effort by the National Institute of Ocean Technology (NIOT) and the National Centre for Polar and Ocean Research (NCPOR)



About Hydrothermal Vents

- Hydrothermal vents are like geysers, or hot springs, on the ocean floor. They can be active (with plumes) or inactive.
- **First hydrothermal vent** was discovered in 1977 on the **Galápagos Rift**
- **Formation:** They form along mid-ocean ridges where tectonic plates diverge.
  - Magma from Earth's mantle rises, creating new crust and volcanic mountain chains.
  - Seawater seeps into the crust, heats up, and shoots back out, carrying dissolved minerals that solidify into chimney-like structures when they meet cold seawater.
  - Hot seawater in hydrothermal vents does not boil because of the extreme pressure at the depths where the vents are formed.

Significance of Hydrothermal vents

- **Mineral Resources:** These vents produce rare minerals like nickel, cobalt, and manganese, essential for modern technology and clean energy solutions.
- **Unique Ecosystems:** They host life forms that thrive without sunlight, relying on **chemosynthesis**—a process where organisms convert inorganic chemicals like hydrogen sulfide into energy.
- **Carbon Pool:** Hydrothermal vents have been found to act as a recycling and decomposition system for dissolved organic carbon, which is essential in the context of the global carbon pool.

Deep Ocean Mission (DOM)

- It is a **Central Sector Scheme** of the **Ministry of Earth Sciences.**
- DOM is one of nine missions under the Prime Minister's Science, Technology, and Innovation Advisory Council (PMSTIAC).
- **Aim:** To develop technologies and capabilities for deep sea exploration.
- **Major Components:**
  1. Development of Technologies for Deep Sea Mining, and Manned Submersible.
  2. Development of Ocean Climate Change Advisory Services
  3. Technological innovations for exploration and conservation of deep-sea biodiversity:
  4. Deep Ocean Survey and Exploration
  5. Energy and freshwater from the Ocean
  6. Advanced Marine Station for Ocean Biology
- **Samudrayaan project:** It is aimed to develop a self-propelled manned submersible to carry 3 human beings to a water depth of 6000 meters in the ocean. Under the project, MATSYA6000, a manned submersible vehicle has been developed by the National Institute of Ocean Technology (NIOT), Chennai.

Tungsten

Syllabus Mapping: Geography, Minerals, Resources

Context

The Tamil Nadu Legislative Assembly unanimously adopted a special resolution urging the Union government to immediately cancel the tungsten mining rights granted to Hindustan Zinc Limited in Madurai district.

About Tungsten (or Wolfram)

- **Appearance**: A shiny, silvery-white metal.
- **Ores**: Scheelite and Wolframite.
- **Unique Properties**:
  - Highest melting point of all metals at **3,422°C (6,192°F)**.
  - Density of **19.3 g/cm³**, comparable to gold.
  - Very hard, especially when alloyed with other metals (measured at **7.5 on the Mohs scale**).
  - High resistance to thermal expansion.
  - Resistant to oxidation and most acids.
  - Retains strength at high temperatures.
  - Does not vaporize easily, even at high temperatures.

Uses of Tungsten

- **Electronics and Electrical Industry**:
  - **Filaments** in incandescent and halogen bulbs due to its high melting point.
  - **Electrodes** in gas tungsten arc welding (GTAW) due to its high conductivity.
  - **Semiconductors** and **X-ray tubes** because of its ability to withstand heat.
- **Aerospace and Defence**:
  - Used in **high-speed aircraft, missiles**, and **rocket engine nozzles** for its heat resistance.
  - **Armour-piercing projectiles** and **radiation shielding** due to its high density.
- **Manufacturing and Machining**: **Tungsten carbide** (WC), an incredibly hard compound, is used in:
  - Cutting tools, drills, and milling instruments.

  - Mining tools, wear-resistant parts, and abrasives.
- **Medical Sector**:
  - **Radiation shielding** in medical imaging (X-rays, CT scans).
  - **Medical electrodes** in surgical instruments.
- **Jewellery**: **Tungsten carbide rings** and accessories due to their scratch resistance and durability.
- **Automotive**:
  - **High-performance engines** and **braking systems**.
  - **Counterweights** for balancing vehicles.
- **Chemical Industry**: **Catalysts** in chemical reactions and petroleum refining.
- **Sports and Recreation**: **Fishing weights**, **darts**, and **golf club heads** due to its density and durability.

Tungsten Reserves and Production in India

- In India, the total reserves of tungsten have been estimated to be 87.39 million tonnes.
- Main reserve at Degana, Rajasthan.
- Tungsten resources in India are mainly distributed in Karnataka (42%), Rajasthan (27%), Andhra Pradesh (17%), and Maharashtra (9%).
- The remaining 5% of resources are in Haryana, Tamil Nadu, Uttarakhand, and West Bengal.
- Tungsten is one of the 30 critical minerals in India.
- Tungsten has been **included in the list of Critical and Strategic Minerals** by the MMDR (Amendment) Act, 2023.
- Note: China is the world's largest producer of tungsten, accounting for about 84% of the global supply

Manganese

Syllabus Mapping: Geography, Minerals, Resources

Context

A study conducted by the Mahavir Cancer Sansthan in Bihar has revealed that manganese contamination in water is contributing to cancer cases in the Gangetic plains of Bihar.

About Manganese

- It is a Ferro alloy metal.
- It is hard, heavy, and silvery.
- It is exploited as ores as well as nodules on the deep seafloor.
- There are two types of manganese ores- **Pyrolusite and Psilomelane.**
- **Uses of Manganese**
  - Steel contains about 1% manganese, which increases its strength. It also improves workability and resistance.
  - It is used in railway tracks, safes, rifle barrels, and prison bars.
  - Used in various chemical industries as an oxidizer to prepare disinfectants and other chemicals.
  - Also used in making electric batteries, paints, and plastics.

Distribution of Manganese

Country	Areas
South Africa (Largest Producer)	Postmasburg, Kuruman and west of Kimberly.
China	Guangxi, Hunan, and Cuizhou provinces.
CIS	Nikopol and Tokmak in Ukraine, Chiature in Georgia, UluTeljakin in the Urals, Usa in Kuzbass.
Ghana	Nsuta
Brazil	Near Mecapa in Amapa, Minas Gerais, Urucum in western Mato Grosso.
India	• **Madhya Pradesh** (Highest producer): Balaghat-Chhindwara-Nimar-Mandla and Jhabua districts. • **Maharashtra:** Nagpur, Bhandara and Ratnagiri districts. • **Orissa:** Bonai, Kendujhar, Sundergarh, Gangpur, Koraput, Kalahandi and Bolangir.
Others	Deposits as nodules, especially in the Pacific Ocean.

Toxicity of Manganese

- Small amounts are beneficial, excess manganese can be toxic.
- **Sources of Exposure:**
  - **Water:** Groundwater with high Mn levels (natural or industrial pollution).
  - **Air:** Industrial emissions from mining, welding and steel production.
  - **Soil and Food:** Geogenic sources or contaminated irrigation water.
- **Health Effects:**
  - **Neurological:** Chronic exposure can lead to Manganism, a condition similar to Parkinson's disease.
  - **Cognitive Impairments:** Memory loss, learning difficulties.
  - **Cancer Risk:** Recent studies indicate prolonged Mn exposure may contribute to carcinogenesis (e.g., the Bihar study on water contamination)

India State of Forest Report 2023

Syllabus Mapping: Geography, Environment, Forests

Context

The Ministry for Environment, Forest and Climate Change released the 18th India State of Forest Report 2023 (ISFR 2023).

Key Takeaways from ISFR 2023

1. Total Forest and Tree Cover

- Forest and tree cover constitute 25.17% of India's geographical area.
  - Forest cover: 21.76%
  - Tree cover: 3.41%
- **Dense Forest Area**: 4,10,175 sq km.
- **Increase Since 2021**:
  - Total forest and tree cover increased by 1,445 sq km.
  - Net forest cover increased by 156.41 sq km, raising the geographical area under forest cover to 21.76% (a rise of 0.05%).

2. Carbon Stock

- **Total Carbon Stock**: 7,285.5 million tonnes.
- **Increase Since 2021**: 81.5 million tonnes.
- **Soil Organic Carbon**: Represents 55.06% of the total stock.

3. Forest and Tree Cover in Specific Regions

- **Western Ghats Eco-Sensitive Areas (WGESA)**:
  - Forest cover: 44,043.99 sq km (73% of WGESA).
  - Loss over 10 years: 58.22 sq km.
- **North Eastern Region**:
  - Total forest cover: 1,74,394.70 sq km (67% of the region's geographical area).
  - Decline since 2021: 327.30 sq km.
  - **Mizoram**: Increased forest cover by 178 sq km.
- **Hill Districts**:
  - Forest cover: 2,83,713.20 sq km (40% of the geographical area).
  - Increase since 2021: 234.14 sq km.
- **Agroforestry**:
  - Green cover under agroforestry: 1,27,590.05 sq km.
  - Increase since 2013: 21,286.57 sq km.
  - Total growing stock: 1,291.68 million cubic meters (28.56% increase since 2013).

4. State-Wise Changes in Forest and Tree Cover

- **Maximum Increase**:
  - Chhattisgarh: 683.62 sq km
  - Uttar Pradesh: 559.19 sq km
  - Odisha: 558.57 sq km
  - Rajasthan: 394.46 sq km
- **Maximum Decrease**:
  - Madhya Pradesh: 612.41 sq km
  - Karnataka: 459.36 sq km
  - Ladakh: 159.26 sq km
  - Nagaland: 125.22 sq km

5. States with Largest Forest Cover

- **In Terms of Area**: Madhya Pradesh, Arunachal Pradesh, Chhattisgarh.
- **In Terms of Percentage of Geographical Area**:
  - Lakshadweep: 91.33%
  - Mizoram: 85.34%
  - Andaman & Nicobar Islands: 81.62%
- **States with Forest Cover Above 33%**: 19 states/UTs.
- **States with Forest Cover Above 75%**: Mizoram, Lakshadweep, Andaman & Nicobar Islands, Arunachal Pradesh, Nagaland, Meghalaya, Tripura, and Manipur.

6. Mangrove Cover

- **Total Mangrove Cover**: 4,992 sq km (0.15% of India's geographical area).
- **Decrease Since 2021**: 7.43 sq km.

7. Trees Outside Forest (TOF)

- **TOF Contribution**: 37.11% of total forest and tree cover.

8. Bamboo Resources

- **Total Bamboo-Bearing Area**: 1,54,670 sq km.
- **Increase Since 2021**: 5,227 sq km.
- **States with Maximum Bamboo Area**: Madhya Pradesh, Arunachal Pradesh, Maharashtra, Odisha.

India State of Forest Report

It is a comprehensive report prepared biennially by the **Forest Survey of India (FSI).**

Important Definitions in ISFR

- **Recorded Forest Area**: Land recorded as forest in government records.
- **Forest Cover**: Includes land with a tree canopy density exceeding 10%, irrespective of ownership and legal status. It encompasses orchards, bamboo, palms, and plantations, covering at least one hectare.
- **Tree Cover**: Patches of trees outside Recorded Forest Area, less than one hectare in size, irrespective of canopy density.
- **Dense Forests**: Areas with a canopy density of 40% and above.
- **Very Dense Forests (VDF)**: Lands with forest cover having a canopy density of 70% and above.
- **Open Forests (OF)**: Lands with forest cover having a canopy density between 10% and 40%.
- **Trees Outside Forest (TOF)**: All trees growing outside recorded forest areas, irrespective of patch size.

Forest Survey of India

- **Establishment**: June 1, 1981.
- **Headquarters**: Dehradun, Uttarakhand.
- **Parent Ministry**: Ministry of Environment, Forest and Climate Change (MoEFCC), Government of India.
- **Purpose**: Regular assessment and monitoring of forest resources, including surveys, training, research, and extension activities.

Key Responsibilities of Forest Survey of India

- Biennial Forest Cover Mapping using satellite imagery for nationwide analysis.
- Comprehensive data collection on forest resources.
- Real-time surveillance of forest fires.
- Mapping and analytics for resource management.
- Forest Carbon Assessment for reporting to international platforms like UNFCCC.
- Capacity building for forest management.

Corporate Average Fuel Efficiency (CAFE) norms

Syllabus Mapping: Geography, Environment, Forests

Context

The government found eight carmakers, including Hyundai, Kia, Mahindra, and Honda, exceeding fleet emission limits in 2022-23, potentially violating CAFE norms and facing penalties.

Bharat Stage (BS) Norms

- Bharat Stage (BS) emission standards are a set of regulations to control the release of air pollutants from internal combustion engines and spark-ignition engines, including motor vehicles.
- The Central Government has made it mandatory that all vehicle manufacturers, both two-wheelers and four-wheelers, must manufacture, sell and register only BS-VI engines from 1st April 2020.

Criteria	BS-IV	BS-VI
NO2 emissions limit	80mg/km	60mg/km
PM emissions limit (petrol vehicles)	N/A	4.5mg/km
NOx emissions limit (diesel vehicles)	250mg/km	80mg/km
Sulphur content in fuel	50ppm	10ppm
Selective Catalytic Reduction (SCR) and Diesel Particulate Filter (DPF)	Not included	Included
Onboard Diagnostic (OD)	Not included	Included

- **Difference Between CAFE and BS VI**:
  - **CAFE Norms**: Focus specifically on limiting CO_2 emissions to improve fuel efficiency.
  - **BS VI Standards**: Broader in scope, addressing all major pollutants, including NOx (Nitrogen Oxides) and SOx (Sulphur Oxides).

About CAFÉ Norms

CAFE norms were introduced by the Government of India in 2017 under the Energy Conservation Act, 2001.

- **Phase I**: Initiated in 2017–18 with a CO_2 limit of 130 g/km, applicable until 2022.
- **Phase II**: Began in 2022–23, setting a stricter CO_2 limit of 113 g/km.

Note: The term "Corporate Average" refers to the sales-volume-weighted average for each automaker

- **Aim of CAFE norms**: To enhance vehicle fuel efficiency, reduce CO_2 emissions, minimize oil dependency, and improve pollution control.
- **Cover:** Passenger vehicles (petrol, diesel, LPG, CNG, hybrid, and electric) with a gross weight below 3,500 kg.
- **Ministry of Road Transport and Highways** is the **nodal agency** responsible for monitoring and reporting a summary of annual fuel consumption by automobile manufacturers at the end of each fiscal year.

Sacred Groves

Syllabus Mapping: Environment, Forests

Context

Villagers in western Rajasthan are worried about the State's plan to classify orans (sacred groves) as deemed forests.

About Sacred Groves

Sacred groves, also known as sacred forests, are areas of forest that are protected and preserved by local communities due to their religious, cultural, and ecological significance.

- **Distribution of Sacred Groves in India**
  - In India, Sacred Groves are found all over the country and abundantly along the Western Ghats.
  - According to some studies, the total number of sacred groves in India could be in the range of 100,000 – 150,00.

- **Examples:** Gumpa Forests (Arunachal Pradesh), Bani (Jammu Kashmir), Pavithravana (Telangana), Swami Shola (Tamil Nadu)

Significance of Sacred Groves

- **Ecological Significance**
  - Important habitats for a wide range of plant and animal species that have been conserved by local communities sustainably.
  - Often associated with ponds, streams or springs, which provide for water to the local community.
  - Vegetation cover of the sacred groves enhances the soil stability and prevents soil erosion in the area.
- **Socio-Cultural Significance**
  - Hold religious and cultural significance for local communities and are often associated with deities or ancestral spirits.
  - Act as repositories of traditional knowledge.

Subabul

Syllabus Mapping: Environment, Biodiversity, Flora

Context

Researchers at the Institute of Advanced Study in Science and Technology (IASST), Guwahati, have identified the potential of Subabul (Leucaena leucocephala), in managing insulin resistance associated with Type II Diabetes.

About Subabul

- It is a fast-growing leguminous tree, native to **Central America and Mexico.**
- Subabul has become widespread in **tropical & subtropical regions** worldwide due to its adaptability & diverse uses.
- **Distribution in India:** Mainly found in Andhra Pradesh, Kerala, Maharashtra, Odisha and Tamil Nadu
- **Invasiveness:** It is considered an invasive species in some regions, as it competes with native plants and spreads aggressively.
- **Water Use:** It is a high-water-consuming tree, raising concerns in water-scarce areas.

Uses of Subabul

- **Food and Nutrition:** Immature seeds and leaves are consumed in soups or salads. It is rich in protein and fibre.
- **Medicinal Applications:**
  - Used in traditional medicine for treating diabetes, intestinal parasites and inflammation.
  - Recent research at **IASST, Guwahati** indicated its potential for managing type II diabetes through compounds like **quercetin-3-glucoside.**
- **Wood and Fuel:**
  - Subabul provides high-quality firewood and is a source of charcoal.
  - Used for crafting furniture, paper pulp, and lightweight construction materials.
- **Agroforestry:** Intercropped with food crops like maize or millets due to its ability to enhance soil quality.
- **Environmental Benefits:**
  - Effective in **phytoremediation** (removal of heavy metals from contaminated soil).
  - Absorbs large amounts of carbon dioxide, making it a potential climate-change mitigation species.

Hydroxymethanesulphonate

Syllabus Mapping: Environment, Pollution

Context

According to a recent study, hydroxymethanesulphonate is reshaping our understanding of aerosol chemistry in extreme conditions and its impact on air quality.

About Hydroxymethanesulphonate

- It is a **secondary aerosol,** formed when **formaldehyde reacts with sulphur dioxide in the presence of liquid water.**
- Traditionally thought to occur only in clouds and fog, but found to occur in aerosol particles in Fairbanks winters.
- **Role of Temperature:** Extremely low temperatures (around -35°C) cause supercooling of aerosol particles. Supercooled aerosols allow hydroxymethanesulphonate to form within them.
- **Aerosol acidity** depends on the relative concentration of:
  - **Sulphate ions (SO_4^{2-})** - Increase acidity.
  - **Ammonium ions (NH_4^+)** - Neutralize acidity.
- **Behaviour of Ammonium in low temperatures:** In low temperatures, ammonium ions are less likely to evaporate into ammonia gas. This build-up of ammonium ions further reduces acidity. This creates favourable conditions for hydroxymethanesulphonate formation.
- **Impact on environment:**
  - Contributes to **PM2.5 pollution**, worsening air quality.
  - Also influences cloud formation and radiative properties which further affect climate.

Related Concepts

- **Aerosols**: Tiny solid or liquid particles suspended in the air.
  - **E.g.** Dust, smoke, fog, chemical particles like sulphates and ammonium etc.
- **Particulate Matter (PM):** A mix of solid particles and liquid droplets suspended in air.

  - **PM 2.5**: Ultrafine particles (<2.5 micrometres), harmful due to their ability to enter lungs and cause health problems like asthma, reduced lung function, and premature death.
- **Supercooling:** It is a process where liquid water remains unfrozen even at temperatures below 0°C.

Persistent Organic Pollutants

Syllabus Mapping: Environment, Pollution

Context

A decade-long study reveals the severe impact of persistent organic pollutants on Orcas (Killer Whale), even in remote oceans.

About Persistent Organic Pollutants (POPs)

POPs are a group of toxic chemicals that persist in the environment for a long time and can cause harm to human health and the environment.

Characteristics of Persistent Organic Pollutants

- **Persistence**: POPs resist degradation, persisting in the environment for years, decades, or even centuries.
- **Bioaccumulation and Biomagnification**: POPs accumulate in fatty tissues and increase in concentration as they move up the food chain.
- **Long-range Transport**: POPs travel far through air and water, impacting areas far from their source.
- **Toxicity**: POPs are highly toxic even at low levels, causing cancer, reproductive issues, immune damage, and endocrine disruption.
- **Chemical Stability**: POPs resist degradation by sunlight, heat, and chemical processes.
- **Lipophilicity**: POPs accumulate in fatty tissues, leading to higher concentrations in fat-rich animals like marine mammals.

Stockholm Convention on POPs

- It is a global treaty to protect human health and the environment from persistent organic pollutants (POPs).
- **Background:** The Convention was adopted in 2001 and came into force in 2004.
- **Members**: There are 186 parties to the Convention and 152 signatories.
- **Key Features:**
  - The convention currently regulates 31 chemicals as POPs under three annexes named Annex A (Elimination), Annex B (Restriction) and Annex C (Unintentional production).
  - It requires parties to adopt a range of control measures to reduce and, where feasible, eliminate the release of POPs.
  - For intentionally produced POPs, parties must prohibit or restrict their production and use, subject to certain exemptions, such as the continued use of DDT. The Stockholm Convention also requires parties to restrict trade in such substances.
  - For unintentionally produced POPs, the Stockholm Convention requires countries to develop national action plans to address releases and to apply "Best Available Techniques" to control them.
  - It also seeks to ensure the sound management of stockpiles and wastes that contain POPs.

Important POPs

POPs	Important Facts	Impact on Environment	Impact on Human Health
DDT	Organochlorine insecticide Widely used in the mid-20th century for agricultural and public health purposes Has been banned or restricted in many countries Main food sources of DDT exposure for humans are meat, fish, and dairy products	Can Bioaccumulate in food chain Can remain in soil and water for long period Disrupt the endocrine system and affect the reproductive health of animals	Probable human carcinogen Can interfere with hormones and reproductive health Can have neurological effects Can suppress the immune system.
Endosulfan	Organochlorine pesticide	Highly toxic to fish, birds & insects Soil and water contamination	Potent neurotoxin that can affect the nervous system Can interfere with the reproductive system Can disrupt endocrine system Possible human carcinogen
Chlorinated hydrocarbons	Widely used as insecticides, herbicides, fungicides, and industrial solvents	Can bioaccumulate Highly toxic to fish, birds & insects Soil and water contamination	Potent neurotoxin that can affect the nervous system Can interfere with the reproductive system Can disrupt endocrine system Possible human carcinogen

POPs	Important Facts	Impact on Environment	Impact on Human Health
Perfluoroalkyl Acids (PFAAs)	group of synthetic chemicals Used a wide range of industrial and consumer products like non-stick cookware, waterproof clothing, carpets, firefighting foam, and electronic components.	Can bioaccumulate Highly toxic to fish, birds & insects Soil and water contamination	Liver damage Thyroid disease Possible human carcinogen Can interfere with the reproductive system.

Champions of Earth Award

Syllabus Mapping: Environment

Context

The United Nations has honoured ecologist **Madhav Gadgil** with the Champions of the Earth award for his work in the Western Ghats. He led the Western Ghats Ecology Expert Panel, recommending the region's classification as an Ecologically Sensitive Area.

About Champions of Earth Award

- It is the United Nations' **Highest Environmental Honour.**
- It was started in **2005.**
- The award is presented annually by the **United Nations Environment Programme (UNEP).**
- The award aims to inspire global action for a sustainable future by spotlighting exceptional environmental achievements
- **Categories:** The award recognizes leaders in 4 categories:
  - Policy leadership
  - Inspiration and action
  - Entrepreneurial vision
  - Science and innovation
- **Young Champions of the Earth:** In 2017, the program was expanded to include the Young Champions of the Earth award. This award recognizes talented innovators between the ages of 18 and 30.

United Nations Environment Programme (UNEP)

It is a specialized agency of the United Nations that focuses on environmental issues and sustainable development. It is headquartered in Nairobi, Kenya.

Background: It was established in 1972, following the United Nations Conference on the Human Environment held in Stockholm.

Functions:

UNEP serves as the leading global authority on environmental matters.

- It provides guidance, coordinates efforts, and promotes cooperation among nations to address environmental challenges.
- It hosts the secretariats of several multilateral environmental agreements and research bodies. These include: the Convention on Biological Diversity (CBD), the Minamata Convention on Mercury, The Basel, Rotterdam and Stockholm Conventions, the Convention on Migratory Species and the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) etc.
- It is one of several implementing agencies for the Global Environment Facility (GEF) and the Multilateral Fund for the Implementation of the Montreal Protocol.
- It assigns specific years to topics to raise awareness and engagement.
- **World Environment Day:** It is led by UNEP and held annually on 5 June since 1973. It seeks to raise awareness on various environmental issues. The Republic of Korea will host World Environment Day 2025 with a focus on ending plastic pollution globally.

Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES) Reports

Syllabus Mapping: Environment, Biodiversity

Context

The IPBES released the Transformative Change report and the Nexus Report.

About Transformative Change report

- It is a thematic assessment report that looked at underlying causes of biodiversity loss, determinants of transformative change and options for achieving the 2050 Vision for Biodiversity.
- From 1992 to 2023, 2,802 social movements challenged nearly 46,955 environmental threats, undermining 13 of the 23 Kunming-Montreal Global Biodiversity Framework Targets.
- While 54% of these actions achieved reforms such as environmental improvements and compensations, 27% resulted in regressive outcomes, including violence against defenders and overlooked gender-based violence.

About Assessment Report on the Interlinkages Among Biodiversity, Water, Food and Health (Nexus Report)

- The report underscores the deep interconnections among global challenges like climate change, biodiversity loss, hunger, water scarcity, and health risks.
- It stresses that addressing these issues in isolation is both inefficient and counterproductive, as they are interlinked and exacerbate one another.
- It also highlights that current economic activities severely impact biodiversity, climate, food systems, water resources,

and health, with the unaccounted costs estimated to range between $10-25 trillion annually.

Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES)

- It is an independent intergovernmental body established by States to strengthen the science-policy interface for biodiversity and ecosystem services
- It focuses on conservation and sustainable use of biodiversity, long-term human well-being and sustainable development.
- It is not a United Nations body. However, UNEP provides secretariat services to IPBES.

Arctic Report Card

Syllabus Mapping: Environment, Biodiversity

Context

According to the National Oceanic and Atmospheric Administration's (NOAA) latest Arctic Report Card, the Arctic Tundra has transitioned from a carbon sink to a carbon emitter. Also, a study published in Nature Communications, predicts that the Arctic Ocean could witness its first ice-free day (less than 1 million square kilometres of sea ice) by 2030, or even as early as 2027 under specific conditions.

Carbon Storage in the Arctic Tundra

- Arctic tundra stores carbon in permafrost, a layer of soil that remains frozen for at least **2 consecutive years.**
- Cold conditions prevent the decomposition of organic matter, trapping carbon for millennia.
- Arctic soils **contain over 1.6 trillion metric tonnes of carbon, which is double the amount of carbon in the atmosphere.**
- Over the past 40 years, Arctic sea ice extent has been shrinking at a rate of **12.6% per decade,** an unprecedented decline in the last 1,500 years (MIT Climate Portal, 2023).

Reasons for Increased Carbon Emissions

- **Rising Temperatures:** The Arctic is warming **4 times faster than the global average.**
  - 2024 had the second-warmest surface air temperatures in the Arctic since 1900.
- **Thawing permafrost:** It is the process by which the ice in permafrost melts, leaving behind soil and water. It activates microbes in the soil, breaking down organic matter and releasing **CO2 and methane (CH4).**
  - CH4 is a more potent GHG than CO2. (Intensifying warming)
- **Albedo:** White ice reflects more heat and sunlight. However, when ice melts the grey or brown land surface gets exposed which absorbs more sunlight. This increases the local temperature at the surface and in turn leads to more warming.
- **Increased Wildfires:** The Arctic has seen more frequent and intense wildfires in recent years.
  - 2024 was the **2nd-biggest year for wildfire emissions**, and 2023 had the worst wildfire season on record.
  - Wildfires release GHGs and accelerate permafrost thawing.
- **Net Carbon Loss:** Between 2001 and 2020, the Arctic tundra released more carbon than its plants absorbed, likely for the first time in millennia.

Consequences of an Ice-Free Arctic

- Loss of reflective sea ice will increase solar energy absorption by darker ocean surfaces, accelerating Arctic warming and intensifying global warming and extreme weather events in mid-latitudes.
- Complete melting of the Greenland Ice Sheet could raise sea levels by six meters, endangering coastal communities worldwide.
- The loss of sea ice and melting permafrost threaten Arctic species, including polar bears, walruses, arctic foxes, snowy owls, and reindeer.
- Arctic communities face significant risks to their infrastructure, livelihoods, and traditional practices due to these changes.

Arctic Region

- It is a polar region, located at the northernmost part of Earth.
- Most scientists define the Arctic as the area within the Arctic Circle, a line of latitude about 66.5° north of the Equator.
- The Arctic is dominated by the Arctic Ocean basin, and the icy reaches of Scandinavia, Russia, the U.S. state of Alaska, Canada, and Greenland.

Arctic Tundra

- It is a vast, treeless biome characterized by its cold, dry and rocky terrain.
- **Location:** It is the northernmost biome, covering areas north of the Arctic Circle up to the polar ice cap. It is located between the taiga (boreal forest) and the Arctic Ocean.
- **Climate:** It is the coldest of the biomes. It also receives low amounts of precipitation, making the tundra similar to a desert.
  - Tundra winters are long, dark, and cold, with mean temperatures below 0°C for six to 10 months of the year.
  - The temperatures are so cold that there is a layer of permanently frozen ground below the surface, called permafrost.
  - Precipitation in the tundra totals 150 to 250 mm a year, including melted snow.
- **Soil:** The tundra's soil is rocky and nutrient-poor due to low decomposition rates. Organic material accumulates in the form of peat and humus (organic matter), making it a significant carbon sink.
- **Animals:** It is home to many animals, including herbivores like lemmings, arctic hares, squirrels and carnivores like arctic foxes, wolves and polar bears.

Arctic Council

- It is an intergovernmental forum promoting cooperation, coordination and interaction among the Arctic States, Arctic Indigenous Peoples and other Arctic inhabitants on common Arctic issues.
- It was established on 19 September 1996 when the governments of Canada, the Kingdom of Denmark, Finland, Iceland, Norway, the Russian Federation, Sweden, and the United States signed the Ottawa Declaration.

Species in News

Species	Details
Arabian Leopard 	• Smallest leopard subspecies. • **Habitat:** Saudi Arabia, Oman, and Yemen (usually seen in mountain ranges and deserts). • They can be identified by their unique pale yellow, deep golden, tawny, and grey fur. • **Conservation Status:** – IUCN: Critically Endangered – CITES: Appendix I • To raise awareness about the Arabian leopard, the United Nations General Assembly has proclaimed February 10 as the International Day of the Arabian Leopard • **Habitat:** All tropical and temperate seas
Shortfin Mako Shark 	• The shortfin mako shark is renowned for its exceptional leaping ability, often observed breaching the water surface while hunting. • With a hydrodynamically efficient design, it features a pointed snout, triangular dorsal fin, and a large crescent-shaped tail fin. • This species is yolk-sac ovoviviparous, giving birth to live young. Embryos rely on unfertilized eggs (oophagy) for nutrition during the 15-18 month gestation period. • Its diet primarily consists of cephalopods and bony fish, such as mackerels and tunas. • **Conservation Status:** – IUCN: Endangered globally; Critically Endangered in the Mediterranean Sea – CITES: Appendix II
Siberian Tiger/Amur Tiger 	• One of the larger tiger subspecies. • **Habitat:** Mountain forests of eastern Russia, with a small population ranging across the border into China. • Coat colour is a lighter orange than other tiger subspecies, and becomes even more so in winter. • Their coat is longer and thicker than other subpopulations because of the colder climate • They have a thick mane around the neck and extra fur on their paws, which protects them against the cold. • **Conservation Status:** – IUCN: Endangered – CITES: Appendix I

Places in News

Place/River	Details
Denali Fault	• It is a major intra continental dextral (right lateral) strike-slip fault located in the southern half of Alaska in the Alaska Range. • It extends from northwestern British Columbia, Canada, to the central region of the U.S. state of Alaska. • It is located on the boundary between the Pacific and North American tectonic plates, where the Pacific Plate is subducting beneath the North American Plate
Kilauea Volcano	• It is located along the southeastern shore of Hawaii Island. • It is an active shield volcano. • It was formed as the Pacific tectonic plate moved over the Hawaiian hotspot in the Earth's underlying mantle
Polavaram Dam	• It is a multipurpose project on the Godavari River in Andhra Pradesh. • It will facilitate inter-basin water transfer from the Godavari to the Krishna through a link canal. • The project has been accorded National project status by the Union Government of India (As per the Andhra Pradesh Reorganization Act, 2014). – Benefit: 90% of the funding for the project will be given by the central government. • It will submerge a portion of the Papikonda National Park in Andhra Pradesh. • Tribes facing displacement due to this project: Koya, Konda Reddi and Konda Kamari.
Sathanur Dam	• It is one of the major dams in Tamil Nadu constructed across the Thenpennai River also called as Pennaiyar River in Thandarampet taluk (Tiruvannamalai district). • It was constructed in 1958.
Siang upper Multipurpose Project	• Located in the Upper Siang District of Arunachal Pradesh, the site lies near the Siang River, a key tributary of the Brahmaputra River. • The Siang River originates near Mount Kailash in Tibet, where it is known as the Yarlung Tsangpo, and flows eastward for over 1,000 km. • It creates a distinctive horseshoe bend around the Namcha Barwa peak before entering Arunachal Pradesh. • Upon reaching Assam, it converges with the Dibang and Lohit rivers to form the Brahmaputra.
Godavari River	• It is **India's 2nd longest river** after the Ganga. It is also called **`Dakshina Ganga`.** • **Origin:** Brahmagiri Mountain at Trimbakeshwar, Nashik (Maharashtra). • **Tributaries:** – **Left bank:** Purna, Pranhita, Indravati and Sabari. – **Right bank:** Pravara, Manjira and Maner. • **States:** Maharashtra, Telangana, Andhra Pradesh, Chhattisgarh, Odisha • **Important Places:** Nashik, Trimbekshwar, Paithan, Nanded, Bhadrachalam • **Godavari basin is bounded by various Hills & Mountains:** Satmala hills, Ajanta range, Mahadeo hills and Eastern & Western Ghats. • The **Coringa mangrove forests** in the Godavari delta are the third-largest mangrove formation in India.
Pennaiyar River	• It is also known as Thenpannai. • **Origin:** Eastern slope of Nandidurg Mountain (Chennakaseva Hills), Karnataka. • States: Karnataka and Tamil Nadu. • **77% drainage basin** of the river lies in Tamil Nadu. • **Tributaries:** Markandeya, Kambainallur, Pambar, Vaniyar, Kallar, Valayar etc. • **Important Cities:** Bangalore, Hosur, Tiruvannamalai, and Cuddalore. • Pennaiyar river is **mentioned in Sangam literature**. • **Important temples:** Penneswaraar Temple, Dakshina Tirupati, Veerateshwarar Temple. • The river is disputed between Karnataka and Tamil Nadu over Karnataka's intent to construct a dam on Markandeya River.

Place/River	Details
Gandhamardan Hills	• It is located in between Balangir and Bargarh district of Odisha. • The hills are estimated to hold 104.78 million tonnes of bauxite reserves. – Recently, Adani Group's land acquisitions has rekindled fears of exploitation in the region • A Botanical Survey of India report records at least 220 varieties of medicinal plants. • The hill is home to two ancient structures: the Harishankar Temple on the southern slope and the Nrusinghanath Temple on the northern site. • It was declared as a Biodiversity Heritage Site in 2023.
Erg Chebbi Dunes	• They are a large sand sea in **southeastern Morocco,** known for its towering dunes and a popular destination for travelers. • The dunes stretch about 28 kilometers from north to south and 5–7 kilometers from east to west and around 150 meters in height.
Noamundi Mine	• It is located in West Singhbhum district of Jharkhand. It is famous for the mining and export of world-class haematite iron ore. • The Noamundi fields are owned by the TATA Iron and Steel Industry. • Recently, Tata Steel Ltd. has operationalized an all-woman shift (India's first) at the mine.
Ratapani Tiger Reserve	• **Location:** It is situated in the Vindhyachal Mountain Ranges of Madhya Pradesh. (Raisen and Sehore districts) • **Rivers:** Narmada, Kolar • **Fauna:** Tigers, leopards, sloth bears, hyenas, spotted deer, sambar deer etc. • **Flora:** Dry and moist deciduous forests. About 55% of the area is covered by teak. • Houses **Bhimbetka rock shelters** • Madhya Pradesh government has declared Ratapani Wildlife Sanctuary as State's 8th Tiger Reserve.
Gandhi Sagar Wildlife Sanctuary	• **Location:** Mandsaur and Neemuch district in western Madhya Pradesh, bordering Rajasthan. • **River:** The River Chambal flows through the sanctuary, dividing it into two parts. • **Flora:** Khair, Salai, Tendu, Palash etc. • **Fauna:** Chinkara, Nilgai, and Spotted Deer, Leopard, Striped Hyena, and Jackal, crocodiles and turtles. • Houses Chaturbhujnath temple, Bhadkaji rock paintings & Hinglajgarh fort. • Gandhi Sagar Wildlife Sanctuary and the reservoir is also a designated Important Bird and Biodiversity Area (IBA).
Moldova	• It is a **landlocked** country in Eastern Europe, on the northeastern corner of the Balkans. • **Capital:** Chișinău, • Moldova is bordered by Romania to the west and Ukraine to the north, east, and south. • The unrecognized breakaway state of Transnistria lies across the Dniester river on the Moldova's eastern border with Ukraine. • Moldova is **not a member of the European Union** but was granted EU candidate status in 2022. • Recently, Moldova inaugurated its embassy in New Delhi
Syria	• It is located in West Asia, located in the Eastern Mediterranean and the Levant. • It is bounded by the Mediterranean Sea to the west, Turkey to the north, Iraq to the east and southeast, Jordan to the south, and Israel and Lebanon to the southwest. • **Aleppo:** It is Syria's 2nd largest city, located in Northern Syria. – The UNESCO World Heritage Site, Old City of Aleppo, is located here. • **Hama:** It is a strategically significant city in central Syria. – It protects Damascus, the capital and seat of President Bashar al-Assad's government.
Kerch Strait	• It is located in **Eastern Europe** and is the only water body which **connects the Black Sea with the Sea of Azov.** • It separates the **Kerch Peninsula (Crimea)** from the **Taman Peninsula (Russia).** • It is an **important global shipping route &** also a key point of conflict between Russia and Ukraine after Moscow annexed the Crimean Peninsula in 2014. • **Kerch Strait Bridge:** – It is also known as the **Crimean Bridge** as it links mainland Russia with Crimea. – Its construction was completed in 2018, it includes a road and rail connection and is the **longest bridge in Europe (19 km**.) • Recently, a Russian oil tanker carrying thousands of tonnes of oil products split apart during a heavy storm, causing an oil spill in the Kerch Strait.

Place/River	Details
Libya	• **Location:** Situated in North Africa, bordered by the **Mediterranean Sea to the north.** • **Bordering Countries:** Egypt, Sudan, Chad, Niger, Algeria and Tunisia. • **Prominent Mountains:** Nafusa and Jebel Akhdar. • **Desert:** The Majority of Libya is covered by the Libyan Desert (part of the Sahara Desert). • **Important ports:** Benghazi, Misrata, Derna & **Tripoli (capital).** • **Facts:** – Libya has no permanent rivers. Over **97% of Libya's freshwater comes from groundwater.** – It is one of the most water-scarce countries in the world.
Georgia	• **Location:** Situated in the Eastern European region of the **South Caucasus,** bordered by **Black Sea to the West.** • **Bordering Countries:** Russia, Azerbaijan, Armenia & Turkey. • **Major Rivers:** Inguri, Rioni, and Kodori. • **Conflict Regions:** Abkhazia, South Ossetia and Ajaria. • Recently, Eleven Indians have died in Georgia's Gudauri due to carbon monoxide poisoning.
Gelephu Mindfulness City (GMC)	• **Gelephu** is a town in southern Bhutan, near the India-Bhutan border. • GMC is an ambitious project by **Bhutan** to create a sustainable urban hub **(Carbon Neutral)** that emphasizes mindfulness, economic growth and environmental sustainability. • It is planned as a **Special Administrative Region (SAR)** and spans approximately **2,500 square kilometers**. • It will focus on eco-friendly industries such as IT, education, hotels and hospitals. • It aims to address Bhutan's challenges like youth unemployment, urban migration and economic diversification.
Shri Sampurnanand Khula Bandi Shivir	• It is situated in Sanganer, near Jaipur, Rajasthan. • It was set up in **1963**, it is the longest-functioning and largest open-air jail in India. • The Supreme Court is currently hearing a petition challenging the Jaipur Development Authority's (JDA) order allocating two plots of jail land for constructing a satellite hospital

News In Short

Biodiversity Credit

Context: A study, published in the journal Proceedings of the Royal Society B, highlighted "deep uncertainties" within the biodiversity credit market.

About Biodiversity Credit

- The World Economic Forum defines Biodiversity Credits as a verifiable, quantifiable and tradeable financial instrument that rewards positive nature and biodiversity outcomes through the creation and sale of either land or ocean-based biodiversity units over a fixed period.
- They are designed as innovative financing mechanisms to attract private investments in conserving and restoring biodiversity.
- Estimates by the World Economic Forum place the biodiversity credit market's current value at $8 million, with projections suggesting a surge to $2 billion by 2030 and $69 billion by 2050.

World Liquid Gas Association

Context: The World Liquid Gas Association (WLGA) has launched a new roadmap to expand access to clean cooking solutions across Africa.

About World Liquid Gas Association

- It is an organization that represents the global liquid gas industry and promotes safety and good business practices.
- The WLGA's primary goal is to increase demand for liquid gas and to promote compliance with safety and business practices.

Surface Hydrokinetic Turbine Technology (SHKT)

Context: Central Electricity Authority (CEA) has recognized SHKT under the Hydro Category to drive innovations and explore alternate technologies to achieve net-zero emission targets.

About SHKT

- An innovative method for utilizing the kinetic energy of flowing water to generate electricity, SHKT offers a sustainable alternative to traditional hydroelectric systems.
- Unlike conventional approaches that rely on dams or reservoirs, this technology operates directly in natural water sources like rivers, tidal streams, and ocean currents, showcasing its potential for eco-friendly energy production.

- **Advantages:**
  - Avoids environmental impact associated with dam construction & Minimal disruption to aquatic ecosystems.
  - Lower capital investment compared to large hydropower project
  - Can be deployed in remote areas where other energy sources are unavailable.
- **Challenges:**
  - Dependent on water flow speed and volume; not suitable for stagnant or slow-moving water bodies.
  - Subject to wear and tear from debris, sediment, and aquatic vegetation.

Gen Cast

Context: Google DeepMind has developed the first AI model to predict the weather more accurately than the best system currently in use.

About Gen Cast

- It is a new AI-based weather forecasting model developed by Google DeepMind.
- It offers faster and more accurate predictions for up to 15 days in advance.
- It uses generative AI, a type of AI commonly used for creating images, videos, and music, to "generate" multiple weather possibilities.

Algae-based solution for wastewater treatment

Context: Researchers have developed a sustainable wastewater treatment method using a microalgae-bacterial consortium to remove toxic ammonium from wastewater.

About Microalgae-Bacterial Consortium Approach

- It uses a photo-sequencing batch reactor (PSBR), integrating bacteria and microalgae.
- It significantly reduces energy costs for oxygen supply and aeration.
  - Conventional ammonium removal relies on aeration, an energy-intensive process. Aeration accounts for up to 90% of a treatment plant's energy consumption.

Mars' Moons

Context: Martian moons Phobos and Deimos may have been formed by a passing asteroid being ripped apart by Mars's gravitational pull, according to a study.

About Mar's Moons

- Mars has 2 moons - **Phobos & Deimos.**
- **Facts about Mars' moons:**
  - Both moons are irregularly shaped and covered with craters.
  - They are made of rock and iron ānd are among the smallest moons in the solar system.
  - They are thought to be **captured asteroids or debris** from the early formation of our solar system.
  - **Phobos is slowly moving closer to Mars.** In about **50 million years,** it will either collide with the planet or disintegrate, potentially forming a ring around Mars.

Natural Pearl Farming

Context: The Government of India, through the **Department of Fisheries (DoF)** has implemented various initiatives to promote natural pearl farming across the country.

About Natural Pearls

- **Natural pearl farming** involves the cultivation of pearls through sustainable methods in freshwater or marine environments.
- Pearls are the **only gemstones** in the world that come from a living creature.
- **Mollusks** such as **oysters and mussels** produce pearls.
- **States Practicing Pearl Farming**: Gujarat, Maharashtra, Bihar, Odisha, Kerala, Rajasthan, Jharkhand, Goa and Tripura.
- **Advantages of Pearl Farming:** Alternate source of income for farmers, Low Environmental Impact, Employment Opportunities & Promotes Eco-Tourism

India's Ocean Floor Clean-Up Initiative

- India launched its first large-scale ocean floor clean-up operation in Maharashtra's Sindhudurg coral reefs, aimed at restoring marine biodiversity and ecosystems.
- The initiative addresses the alarming accumulation of marine debris on ocean floors and coral reefs, which poses a grave threat to marine biodiversity and ecosystems

INTERNATIONAL RELATIONS & INTERNAL SECURITY

TOPICS FOR MAINS

Deepening ties between Bangladesh and Pakistan

Syllabus Mapping: GS-Paper 2, GS Paper 3, Neighbourhood, Border Issues

Context

Pakistan and Bangladesh are deepening their relationship, a development that could have wide-ranging consequences for regional geopolitics, particularly for India. Further, communal violence against the Minorities in Bangladesh has highlighted the country's ongoing struggles in maintaining communal harmony.

About Bangladesh

- Bangladesh is the world's **eighth-most populous** nation with nearly 180 million people and the **35th-largest economy**.
- It is the **second-largest exporter of ready-made garments (RMG).**
- It is **home to Bangladesh Rural Advancement Committee (BRAC)** – the world's largest NGO– and Grameen Bank (founded by Nobel Laureate Prof. Muhammad Yunus, a pioneer of microfinance).
- The country's identity is rooted in **Bengali nationalism**, emphasizing **linguistic and cultural distinctiveness over religious uniformity**.
- Bangladesh's constitution uniquely **balances secular principles with Islam** as the state religion.
  - A Supreme Court judgment in 2016 reinforced that this recognition does not undermine the state's secular obligations.
- **All religious communities** are entitled to **equal protection under the law.**

Socio-economic and political difference between Bangladesh and Pakistan

Aspects	Bangladesh	Pakistan
Foundation and Identity	• Founded on **Bengali nationalism**. • The 1971 Liberation War was a struggle to assert its distinct **Bengali identity** against the **communal identity.** • While Islam is the state religion, Bangladesh's Constitution ensures secularism and the equal rights of all religious communities.	• Created on the basis of **religious identity**. • Pakistan's identity is deeply tied to **Islamic ideology**, with religion playing a central role in governance and society. • Over time, the country has moved toward greater **religious conservatism**.
Treatment of Minorities	• **Legal protections and cultural inclusivity for minorities**. • Instances of violence are isolated, and public sentiment often supports the protection of minority communities.	• **Systemic discrimination and violence**, **with limited state intervention** to protect minority's rights. • Minorities facing forced conversions and mob violence.
Governance and Political Evolution	• Had a **civilian-led government**, despite periods of military intervention. • The political landscape has been shaped by competition between major secular parties, emphasizing democratic principles.	• Military has played a dominant role in politics, with frequent coups and military-backed governance. • Democracy is often undermined by the military and judiciary, with civilian governments struggling to maintain authority.
Counter-terrorism and Radicalization	• **Proactive in dismantling extremist networks** such as Jama'atul Mujahideen Bangladesh (JMB) and Harkat-ul-Jihad-al Islami Bangladesh (HuJI-B)**.** • State and public sentiment **reject extremist ideologies**, ensuring minimal support for radical movements.	• **Struggles with deeply entrenched extremist groups** like Tehrik-i-Taliban Pakistan (TTP) and Lashkar-e-Taiba (LeT). • Extremist ideologies have **greater societal and political influence**, with groups occasionally receiving tacit support.

Aspects	Bangladesh	Pakistan
Role of Women	• Women play a significant role in public life, with prominent female leaders like **Sheikh Hasina and Khaleda Zia** shaping its political landscape. • The country has made notable strides in women's empowerment, particularly in education and employment sectors.	• Women face significant **societal restrictions**, especially in conservative regions. • Gender inequality remains a major challenge, with limited representation in politics and public life.
Regional and Global Outlook	• Prioritizes **regional cooperation** and peacekeeping efforts, maintaining a balanced foreign policy. • Emphasizes cultural diplomacy and integration into global markets.	• Faces **isolation in global forums** due to its alleged support for militant groups and internal political instability. • Its foreign policy is largely shaped by security concerns, particularly its rivalry with India.

Despite these differences the bonhomie between Bangladesh and Pakistan increased after the interim government took power.

Deepening ties between Pakistan and Bangladesh:

- **High level Visits:**
  - Visit of Pakistan's Joint Chief of Staff Committee Chairman, Lieutenant General Sahir Shamshad Mirza, to Dhaka. This will be the first visit by a senior Pakistani military officer to Bangladesh in over 53 years.
  - Meeting between Pakistan's Prime Minister Shahbaz Sharif and Bangladesh's Mohammad Yunus, the Chief Advisor to the interim government of Bangladesh in Cairo, where both leaders discussed unresolved issues from the 1971 Bangladesh Liberation War.
- **Defence Cooperation:**
  - Training of Bangladeshi soldiers by the Pakistani military in February 2024 —a program that will last for about a year. This is the first such military cooperation between the two countries since the 1971 war.
  - Bangladesh Navy is set to participate in Pakistan's 'Aman' maritime exercise in February, a significant step that indicates a growing alignment between their military forces.
- **Simplified visa:** Interim government in Bangladesh has simplified the visa process for Pakistanis to further strengthen trade and economic relations.

Implication for India and Region:

- **Concern of Islamic terrorist:** India would have security concerns about transfer of weapons and explosives to Bangladesh for use by Islamic terrorists who have been set free by the Yunus-led interim government
- **Border security issues:** Pakistan has the policy of bleeding India with thousand cuts and does not leave a single opportunity to support insurgencies in India. Pakistan can collaborate with the anti-India regime of Bangladesh to destabilise the North East. It will be a sweet spot considering the long tough terrain of the Indo-Bangladesh Border.
- **Threat to North eastern India:** Pakistan support to organised crime in the north east like human trafficking and drug trafficking may destabilise the Northeastern India.
- **Threat to Siliguri Corridor:** Strained relation with Bangladesh will act as a threat to the Siliguri corridor. The China-Pakistan-Bangladesh axis will be against Indian interest in the **Siliguri Corridor.**
- **Threat to connectivity to North east:** India has been cooperating with Bangladesh to have connectivity with the North east. For example, both countries have operationalized the Agreement for the usage of Chittagong and Mongla Ports in 2023 for transit cargo between Northeast and mainland India.
- **Strategic implication:** In the previous Hasina led government, India and Bangladesh had strategic cooperation in the defence sector. For example, both countries conduct joint naval exercises in Milan and joint military exercises such as SAMPRITI. It may disrupt the support of Pakistan to Bangladesh in the defence sector.
- **Threat of Three front war:** India has been concerned about the two front war with China and Pakistan. The security environment will be more complex with Bangladesh coming along with China and Pakistan against India.
- **Threat to minorities:** Bengali nationalism has been the binding factor for all the religions. However, Pakistan will promote radicalisation on the basis of religious identity in Bangladesh and it will be a threat to the life and freedom of religion of the minorities.

- **Refuge influx:** Persecution of the minorities in Bangladesh will create refuge problem in India
- **Regional disintegration:** Threat to regional integration with Bangladesh coming infold from Pakistan. For example, it may disrupt the progress of integration of BIMSTEC
- **Impact on Export:** Export to Bangladesh will be impacted. For example, export of cotton, agricultural products will be impacted.

Way Forward for India

- **Diplomatic effort:** In the current scenario, Pakistan is diplomatically in the advantageous position in the political atmosphere of Bangladesh. However, India should have diplomatic talk with the interim government to secure the interest of India.
- **Engagement with all stakeholders:** Bangladesh has been governed by an interim administration which has granted the decision-making power to several individuals from the civil society and student organisations. India need to engage with all parties of the political spectrum in Bangladesh like Student leaders as well as main opposition party Bangladesh Nationalist Party (BNP).
- **Confidence building measures:** India needs to engage with the people of Bangladesh to increase their confidence in India. It will help decrease the anti-India sentiment in Bangladesh.
- **Extradition of Hasina:** Bangladesh's interim government has sent a note verbale to the Indian government to extradite former prime minister Sheikh Hasina. It has been the bone of contention between India and Bangladesh. India needs to ensure that Sheikh Hasina must have a fair trial and help Bangladesh state agencies to conduct this. This will help build confidence with the Bangladesh interim government.
- **Security along the border:** India needs to ramp up security along its border with Bangladesh, deploying technological solutions and conducting high-level Border Security Force inspections to address vulnerabilities and curb infiltration and smuggling along unfenced border areas.

India Nigeria Relations

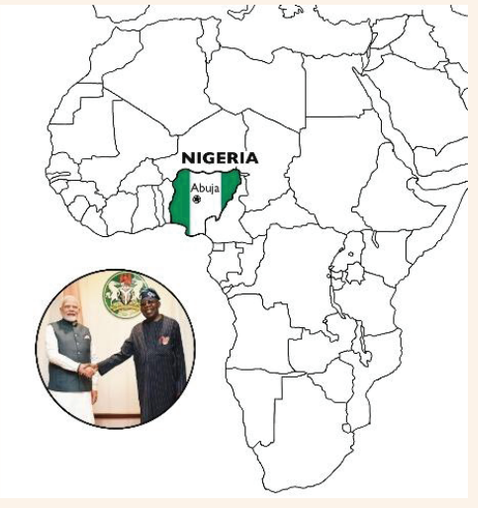
Syllabus Mapping: GS-Paper 2, Bilateral Relations

Context

Prime Minister Narendra Modi's visit to Nigeria marks a significant step in strengthening ties with Africa's most populous nation and its second-largest economy. The Prime Minister was also conferred the **Grand Commander of the Order of the Niger**, Nigeria's second-highest national honor, making him the second foreign dignitary to receive it since 1969.

Economic and Political Context in Nigeria

- Nigeria is the largest democracy and economy in Africa, playing a crucial role at the African Union and in regional diplomacy.
- Nigeria has been facing economic and security challenges, with President Bola Tinubu taking bold reform measures since 2023.
- Tinubu has withdrawn petroleum subsidies costing $10 billion annually, led to the Naira (Nigerian Currency) to depreciate, and dismissed several top officials, leading to economic turbulence and inflation.
- These reforms aim to rejuvenate the Nigerian economy, although they have sparked public dissatisfaction.



India and Nigeria Relations

- **Bilateral Trade:** As West Africa's largest economy, Nigeria serves as a gateway for Indian businesses in the region. Currently bilateral trade stands at $7.9 billion, down from a peak of $11.8 billion in 2022-23. India is Nigeria's second-largest trading partner in Africa.
- **Trade Opportunities:** India could benefit from importing Nigerian goods such as palm oil, hides, ginger, and Gum Arabic.
  - India's services sector, including IT, banking, health care, and education, also has growth potential in Nigeria.
- **Energy Security:** Nigeria is a major oil exporter and key to India's diversification of energy sources.
- **Indian Investments**: Over 150 Indian companies have investments in Nigeria worth approximately $27 billion.
- **Indian Diaspora:** Nearly 50,000 Indians reside in Nigeria, contributing positively to the local economy and regarded for their professionalism. The fact that both countries are good in English also adds to comfort and communication.
- **South-South Cooperation:** India-Nigeria relation is an important pillar of the south-South Cooperation.
- **High level visits:** Since the first visit of Indian PM J.L. Nehru, there has been regular diplomatic engagement between both countries that shows the interest of both countries in strengthening the relationship.
- **Developmental Assistance**: India offers concessional loans (over $100 million) and capacity-building programs in Nigeria, emphasizing the "India Way" of development partnerships.

Strategic Areas of Cooperation

- **Historical Context:** The two countries share a legacy dating back over half a millennium. A notable historical figure is Baba Ghor, a gem merchant from Kano who settled in Gujarat around 1500 AD.
- **Defence and Security:** Nigeria seeks to upgrade its defence capabilities to combat terrorism and economic instability, particularly issues like **Boko Haram and Gulf of Guinea piracy.**
  - India has experience in similar challenges and can provide a comprehensive package of defence supplies and training.
  - 7 Nigerian Presidents have been trained as defence officers in India.
- **Economic Stabilisation:** Nigeria is facing a foreign exchange shortage and seeks India's assistance for economic stabilisation.
  - Potential areas for cooperation include:
    - Partnerships for upstream hydrocarbons.
    - Infrastructure development.
    - A bilateral comprehensive economic partnership agreement.
    - Financial facilitation through lines of credit and barter arrangements.

Challenges to Bilateral Engagement

- **Decline in Trade:** India's bilateral trade with Nigeria is currently at **half its peak from a decade ago**. Trade declined from **$14.95 billion in 2021-22** to **$7.89 billion in 2023-24** due to India's increasing oil imports from Russia.
- **Lack of continuous engagement:** There has been a **lack of regular high-level diplomatic engagements**.
  - **E.g.,** Modi's visit comes after 17 years, and the joint commission meeting in 2024 was the first in 13 years.
- **Limited Investment from India in Nigeria's oil sector:** Despite being the top buyer of the Nigerian crude oil, India does not have upstream assets in Nigeria.
- India's **aid to Nigeria is currently channelled through the African Union**, which may limit the direct impact of development assistance on bilateral relations.
- **Diaspora:** Large Nigerian diaspora comes to India who are often subjected to racial discrimination and stereotyped and subjected violence, which creates challenges in the relationship.
- **Nigeria-China Ties and Concerns for India**
- **Chinese Presence**: Nigeria hosts **over 200 Chinese companies**, making it China's largest export market and second-largest trading partner in Africa.
  - China has funded **22 major infrastructure projects** worth **$47 billion**, including the Lekki Deep Sea Port and the Abuja Light Rail.
- **Debt Diplomacy**: Chinese loans account for **11.28% of Nigeria's external debt**, raising concerns about dependency.

- **Technology and Mining**: Huawei has a significant presence in Nigeria, building mobile infrastructure and training local workforce.
  - China dominates the mining sector, including lithium processing for EV batteries.
- **Strategic Edge**: China's investments in critical infrastructure and natural resources could limit India's influence and opportunities in Nigeria.

Way Forward

- **Frequent high level political visits:** Enables the comprehensive framework of the bilateral relation and upgrades it.
- **Strategic Engagement**: Strengthen defense and counterterrorism cooperation with Nigeria to balance China's growing influence.
  - Promote joint ventures in security, focusing on piracy and drug trafficking in the Gulf of Guinea.
- **Finding new areas of cooperation:** After coming to power various initiatives have been taken to rejuvenate the economy and security. In this India can leverage its capability to help Nigeria.
  - For example, Diversify trade with Nigeria beyond oil, focusing on technology, agriculture, and renewable energy.
- **Direct development assistance:** Instead of channelling the development assistance through the African Union, India can directly provide the development assistance that suits the diverse and unique requirements of Nigeria.

Expand capacity-building initiatives and concessional loans for social infrastructure.

  - Leverage India's expertise in IT, healthcare, and education to address Nigeria's developmental needs.
- **Engagement with Diaspora:** Engagement with the diaspora, which is the second largest employer in Nigeria, can help in framing good relations with Nigeria.
- **Encouraging the Private players:** Indian government should encourage various Indian players in Nigeria to increase the bilateral trade between both countries.
  - Increase Indian investments in Nigerian infrastructure and industrial sectors.
- **People-to-People Ties**: Foster cultural and academic exchanges to strengthen grassroots connections.
  - Engage the Indian diaspora in Nigeria to enhance bilateral relations.

Significance of West Africa to India

- **Natural Resources**: West Africa is rich in natural resources, including oil, natural gas, gold, and bauxite, essential for India's energy security and industrial growth.
  - Nigeria, the largest oil producer in Africa, is a key supplier of crude oil to India.
- **Trade Opportunities**: India is one of the largest trading partners of West African countries.
  - Major imports include energy resources and agricultural products like cocoa (from Ghana and Côte d□Ivoire).
- **Market for Indian Goods and Services**: West Africa offers a significant market for Indian pharmaceuticals, IT services, automobiles, and agricultural machinery.
  - Indian generic drugs are in high demand due to their affordability and quality.
- **Maritime Security**: The Gulf of Guinea, part of West Africa's maritime zone, is critical for global trade and energy supplies.
  - India has a strategic interest in ensuring freedom of navigation and combating piracy in this region.
- **Counterbalancing China's Influence**: China has a significant presence in West Africa through investments and infrastructure projects.
  - Strengthening ties with West African countries helps India maintain its influence and diversify partnerships.
- **Energy Security:** West Africa is a crucial supplier of energy resources:
  - Nigeria, Ghana, and Senegal are emerging exporters of LNG (Liquefied Natural Gas), meeting India's rising energy demands.
- **Indian Investments in Infrastructure**: India supports infrastructure development in West Africa through **Lines of Credit (LoCs)** via the Export-Import Bank of India.
  - Projects include roads, railways, power generation, and agriculture.
- **Capacity Building and Technical Assistance**: Programs under the **India-Africa Forum Summit (IAFS)** focus on skill development, IT training, and healthcare initiatives.
  - The Pan African e-Network project connects Indian educational and medical institutions with West African nations.
- **Indian Diaspora**: West Africa is home to a vibrant Indian community involved in business, especially in Nigeria and Ghana.
  - Diaspora engagement enhances cultural ties and promotes India's soft power.
- **Cultural Affinity**: Shared colonial history and participation in the Non-Aligned Movement have fostered goodwill.
  - Bollywood movies and Indian cuisine enjoy popularity in the region.

- **UN and Other International Forums**: West African countries often align with India on global issues, such as climate change and sustainable development.
  - Their support is crucial for India's bid for a permanent seat in the **UN Security Council**.
- **South-South Cooperation**: India promotes development partnerships with West Africa under South-South Cooperation frameworks, strengthening solidarity among developing nations.
- **Food Security and Agriculture**: Collaboration in agriculture can help tackle food security challenges in West Africa while providing India with opportunities to export agricultural technology.
- **Health Cooperation**: India has supplied affordable vaccines and generic medicines to West African nations, playing a vital role during the COVID-19 pandemic.
- **Digital and Fintech Growth**: West Africa is witnessing rapid growth in digital services and fintech, offering opportunities for Indian IT companies.
- **Renewable Energy Cooperation**: The International Solar Alliance (ISA), led by India, provides a platform to collaborate with sun-rich West African nations on renewable energy projects.

India Bhutan Relation

Syllabus Mapping: GS-Paper 2, Neighbourhood

Context

Bhutanese King Jigme Khesar Namgyel Wangchuck recently visited India.

Joint Statement of the recent India-Bhutan Meeting

- Both expressed satisfaction at the excellent state of bilateral relations and reaffirmed their commitment to further strengthen it.
- India reiterated full support to the socio-economic development in Bhutan based on the priorities of the Royal Government.
- Bhutan thanked for **development support for Bhutan under the 13th Five Year Plan (2024-29)**
- Bhutan Shared progress of Gelephu Mindfulness City Special Administrative Region
- Both expressed satisfaction over the opening of the **Integrated Check Post at Darranga, Assam**.
- Both expressed satisfaction that **the 1020 MW Punatshangchhu-II hydro power project** was nearing completion

India Bhutan Relations: An Overview

India and Bhutan share a **unique and special relationship** that is based on a long history of cultural, economic, and political ties.

- **Strategic Importance:** Despite its small size, Bhutan occupies a strategically important position in South Asia and has been a key partner for India in regional cooperation efforts.
- **Establishment of Diplomatic ties:** Diplomatic relations between India and Bhutan were established in 1968 with the establishment of a **special office of India in Thimphu.**
- **1940 treaty of Friendship and cooperation:** The basic framework of India-Bhutan bilateral relations is **the Treaty of Friendship and Cooperation signed in 1949** between the two countries and revised in February 2007.
  - The 1949 Treaty ensured peace and non-interference in each other's internal affairs.
  - The 2007 Treaty replaced the previous requirement for Bhutan to seek India's advice on foreign policy and highlighted the importance of sovereignty and collaboration rooted in shared interests.
- The Golden Jubilee of the establishment of formal diplomatic relations between India and Bhutan was celebrated in the year 2018.

Cooperation between India and Bhutan

Trade Relations:

- **Agreement for Free Trade:** The **India Bhutan Transit and Trade Agreement of 1972**, which was most recently extended in November 2016, governs trade between the two nations.
- The agreement creates a free-trade zone between the two nations and allows for the duty-free transit of commodities from Bhutan to other nations.
- **Trade:** India is Bhutan's top trade partner both as an import source and as an export destination
  - **India's merchandise trade (excluding electricity):** It has reached USD 1606 million in 2022-23.

  - **India's exports to Bhutan:** Petrol & diesel, passenger cars, rice, wood charcoal, cellphones, Coke and semicoke, soya-bean oil, excavators, electric generators &motors, parts for turbines, transport vehicles, bitumen.
  - **India's top imports from Bhutan:** Ferro-silicon, Ferro-silico-manganese, Portland pozzolana cement, Dolomite chips, Ordinary portland cement, Silicon Carbide,Cardamoms, betel nut, oranges, semi-finished products of iron or non-alloy steel, boulders, etc.
  - **Investment:** India is the leading source of investments in Bhutan, comprising 50% of the country's total FDI.
- **Indian companies in Bhutan:** Punjab National Bank, State Bank of India, Tata Power Company Ltd
- **Financial partnership: T**he launch of the RuPay card and BHIM app has enhanced financial partnership between India and Bhutan.
- **Integrated Check Post:** First Integrated Check Post (ICP) along the India-Bhutan border was inaugurated at Darranga in Assam on Thursday (November 2024)

Economic Support:

- Bhutan's top partner for development is India. India has been providing financial support to Bhutan's FYPs since the First Five Year Plan of Bhutan was introduced in 1961. For Bhutan's 12th FYP, India has allocated **Rs. 4500 crore.** In 2024,India doubled the financing of the 13th Five year plan to 10,000 crore.
- **Gelephu Mindfulness City Project:** It is an **innovative urban development project** that integrates economic growth with mindfulness, holistic living, and sustainability. India has assured Bhutan for the continued support for this.

Hydropower Relations

- **India is a key player in the creation of hydropower projects.** Indo-Bhutan hydropower cooperation began in 1961 with the signing of the **Jaldhaka agreement**.
- The Jaldhaka project is situated on the Indian side of Indo-Bhutan border in West Bengal.
- The major part of power produced at Jaldhaka hydropower plant was exported to southern Bhutan.
- India is supporting Bhutan in its efforts to become **carbon negative.**
- **Financing the hydropower projects:**
- **Commissioning of the 336 MW Chukha Hydropower Project (CHP) in 1987:** India funded it with 60 percent grant and 40 percent loan at the interest rate of 5 percent payable over a period of 15 years after commissioning.
- **1,020 MW Tala Hydroelectric Project:** financed by the Government of India, with 60 per cent grant and 40 per cent loan.
- Both signed the "Framework Inter-Governmental Agreement" concerning development of Joint Venture Hydropower Projects through the Public Sector Undertakings of the two countries. This provided the framework for implementing the four HEPs of Kholongchhu, Bunakha, Wangchu and Chamkharchu totalling 2120 MW.
- Construction of two major hydroelectric power projects are underway in Bhutan. The 1200MW Punatsangchu I is expected to be completed by 2024/2025 and the 1020MW Punatsangchu II commissioned in 2022.
- Tata Power in November , 2024) entered into a strategic partnership with Bhutan's Druk Green Power Corporation Ltd (DGPC) for the development of 5,000 MW of clean energy capacity in the Himalayan nation.
- Additionally, **India and Bhutan have a Joint Group of Experts (JGE) to handle floods**.

Connectivity:

- **First Cross-border Rail Link Between India And Bhutan: Kokrajhar (Assam)-Gelephu rail link,** promoting enhanced connectivity between regions will be operationalised.
- India supports the **construction of Gelephu airport**, aimed at attracting investment and facilitating economic growth.
- A new land route was opened to boost trade between India and Bhutan. This route links West Bengal's Jaigaon with Ahlay, Pasakha in Bhutan
- Other Specific projects include establishing **new rail links between Barhath-Samtse**, as well as **strengthening waterway navigation on the Brahmaputra**

Border Control and Security:

- Bhutan is located between India and China, and its strategic location helps protect **India's Siliguri Corridor** (also known as Chicken's Neck- a narrow stretch of land of about 22 kilometres.).
- Concerning border management and security-related issues between the two nations, there is a system at the **Secretary level.**

- In order to ease coordination on border management and other relevant issues, there is also a **Border District Coordination Meeting (BDCM) Mechanism between the bordering States and the Royal Government of Bhutan (RGoB).**
- The Indian Military Training Team (IMTRAT) is permanently based in western Bhutan and assists and trains the Royal Bhutan Army.
- The **Eastern Air command of the Indian Air force provides Bhutan with Air security,** as the country does not have an air force.
- India's Border Road Organisation, has built the majority of roads in Bhutan under project '**DANTAK**'

Multilateral Collaboration:

- India and Bhutan are members of **South Asian Association for Regional Cooperation (SAARC),** which deals with the economic, social, and cultural development of the South Asian region**.**
- Additionally, the two of them participate in other multilateral forums like **BIMSTEC** (Bay of Bengal Initiative for Multi Sectoral Technical and Economic Cooperation), **BBIN** (Bangladesh, Bhutan, India, and Nepal), etc.
- Bhutan supports a permanent **seat at the UN Security Council for India.**

Education and Cultural cooperation:

- **Scholarship to the students:** Over 1000 scholarships are being provided annually by GoI for Bhutanese students to study in India in a wide range of disciplines.
- **Students in Indian Universities:** approximately 4,000 Bhutanese are studying in undergraduate courses in Indian Universities on a self-finance basis.
- **ICCR Scholarship:** 25 slots are provided every year to students from Bhutan under the ICCR Scholarship.
- **Bhutan's Druk Research & Education Network (DrukREN)** was integrated with India's **National Knowledge Network,** a pivotal step in advancing eLearning initiatives and knowledge exchange.
- **India-Bhutan Foundation:** It was established in August 2003 with the aim of enhancing people to people exchanges in areas such as education, arts and culture and environment protection.

People to People partnership:

- Bhutan is home to about 60,000 Indian citizens, the majority of whom work in the building of roads and hydroelectric power plants.
- In addition, border towns serve as the entry and exit points for 8000–10,000 daily workers from Bhutan.

Challenges In India-Bhutan Relations

- **Chinese Influence**: India backed Bhutan's claim over Doklam as it is strategically important for India's security. However Bhutan has shown interest in resolving the Boundary dispute with China without discussion with India. The previous government had signed a three-step roadmap in January 2023. In the past, Bhutanese officials consulted their Indian counterparts prior to holding border talks with China.
  - **Dominance of the region by China could threaten the Siliguri Corridor**, a narrow stretch that connects the Indian mainland with its north-eastern states.
- **Issues in hydropower trade**: India's past changes in power purchasing policy, refusal to admit Bhutan into the National Power Grid, etc has created a rift in the relationship.
- **Hideout for militants:** Militant outfits like **United Liberation Front of Assam (ULFA)**, **National Democratic Front of Bodos (NDFB)**, etc use the dense forests of Southern Bhutan as their hideouts and operate against India.
  - **Operation All Clear (2003-04)** was the first action against these militants by Bhutan.
- **BBIN initiative**: The **Bangladesh-Bhutan-India-Nepal (BBIN) Motor Vehicle Agreement**, proposed by India to improve connectivity in the region, is on hold by Bhutan due to environmental concerns.
- **Access to trade:** Bhutan is diversifying its market by reaching out to Bangladesh, with the two countries having signed a preferential trade agreement in 2021.

Way Forward

- **Initiating Trilogue:** Opening such communication channels can minimise uncertainties as questions of peace and conflict cannot be resolved by potential stand-offs (like Doklam) in the future.

- **Diversifying economic engagements:** For now, India's economic relations with Bhutan continue to be dominated by hydropower projects.
  - Strengthening collaboration in fields such as fintech, space tech, and biotech between the two countries can lead to a stronger partnership.
- **Improving people-to-people ties:** Soft power diplomacy can be induced through Buddhism and by encouraging more tourist exchanges between the two countries.
- **Security measures**: **Establishment of contact points** between countries and mechanisms for real-time sharing of information in criminal matters,
  - **Capacity building and skill development** of law enforcement personnel manning border check-posts,
  - **Development of a Standard Operating Procedure (SOP**) on repatriation for the Indo-Bhutan border.

Pakistan at the UNSC, the points of its compass

Syllabus Mapping: GS-Paper 2, Neighbourhood

Context

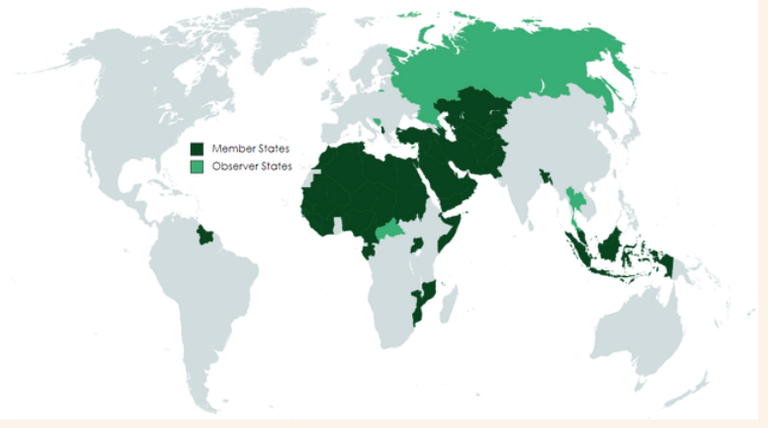
In January 2025, Pakistan will begin its term as an elected non-permanent member of the United Nations Security Council.

Pakistan's UNSC Entry

- Pakistan will join the **United Nations Security Council (UNSC)** as a **non-permanent member** for a two-year term starting **January 1, 2025**, marking its **eighth term** in the Council.
- **Composition of the UNSC for 2025-26:**
  - **New Elected Members:** Denmark, Greece, Pakistan, Panama, and Somalia will replace Ecuador, Japan, Malta, Mozambique and Switzerland.
  - **Current Non-Permanent Members:** Algeria, Guyana, the Republic of Korea, Sierra Leone and Slovenia.
- With Pakistan's entry, nearly **half (5 out of 10)** of the elected members of the UNSC will be from the **Organisation of Islamic Cooperation (OIC)**.

Organization of Islamic Cooperation (OIC)

- OIC is an organization that promotes international peace and harmony and protects the interests of the Muslim world.



- It was established in **1969** after the **Al-Aqsa Mosque in Jerusalem** was set on fire by an Australian extremist Jew.
- It is the **2nd-largest intergovernmental organization** in the world after the United Nations
- **Membership: 57 states** spread over **4 continents.**
- **HQ:** Jeddah, Saudi Arabia.

Pakistan's Stated Priorities in UNSC

- **Afghanistan Relations:** Pakistan is expected to focus on **Afghanistan**, using its term to repair its relations with the **Taliban**. It will likely have the support of **Russia** and **China** in this regard.

- **Palestinian Cause & Gaza:** Pakistan, with the backing of OIC countries, is expected to advocate for a ceasefire in Gaza and further the Palestinian cause within the UNSC.
- **Peacekeeping:** As a significant contributor to **UN peacekeeping missions**, Pakistan will push for better peacekeeping efforts and reforms in the UNSC.

Challenges India Faces

- **Anti India initiatives:** Relations between India and Pakistan remain strained and India should prepare for **anti-India initiatives** from Pakistan during its UNSC term.
  - Despite some backchannel communications, India and Pakistan do not have enhanced multilateral cooperation in the UN, particularly in the UNSC.
  - Pakistan's diplomatic strategy will likely include attempts to undermine India's position, especially regarding issues like **terrorism** and **Kashmir**.
  - **Sanction against terrorists**
  - **UNSC 1267 Sanctions:** Pakistan has historically tried to deflect international criticism of its role in terrorism by accusing India of terrorism against Pakistan.
  - Pakistan has unsuccessfully attempted to list **Indian nationals** as terrorists under **UNSC Resolution 1267**.
- Pakistan will likely continue to raise the issue of **Jammu and Kashmir (J&K)**.
  - **Pakistan's lobbying** for UNSC consultations on Kashmir post-India's **abrogation of Article 370** was unsuccessful, with most **P-5 countries (permanent members - USA, China, UK, France & Russia)** showing no interest.
  - Pakistan might present Kashmir as an ongoing **international dispute** in the UNSC, though the issue is largely considered **bilateral**.
- **Islamophobia and Counter-Terrorism:**
  - Pakistan has tried to use **Islamophobia** as a justification for terrorism, seeking to incorporate it into **UN counter-terrorism strategies**.
  - In 2021 and 2023, Pakistan, with OIC support, pushed for a reference to Islamophobia in the **UN Global Counter-Terrorism Strategy**, but India successfully blocked these efforts.
  - In 2023, however, OIC-backed resolutions on **Islamophobia** were inserted into UNSC documents, with broader international backing, including **China** and **Russia**.
- **Indus Waters Treaty and Bilateral Issues:**
  - In 2024, Pakistan raised the issue of the **Indus Waters Treaty** in the UNSC, despite it being a **bilateral issue** between India and Pakistan which the UNSC did not address.
  - This was seen as a misuse of the UNSC for domestic political purposes.
- **Pakistan's Internal Challenges and Multilateralism:**
  - Pakistan's **internal political and economic struggles** have hindered its ability to focus on constructive multilateralism. Despite this, it will continue to use the **UNSC platform** to pursue its national agenda.

Way forward for India

- **Support From Permanent members:** India should gather support from permanent council members Russia, France and the US to blunt Pakistan's efforts in the Kashmir issue.
- **Diplomatic talk with China:** There has been a thaw in India-China relations since the Kazan Summit, Restoration of patrolling in border areas, and resumption of Special Representative (SR) meetings. India should use the momentum in diplomatic talks to weaken the Chinese support to Pakistan in UNSC and take a balanced approach.
- **Talk with other no-permanent members:** India should plan to coordinate with other non-permanent members of UNSC, including old African partner Algeria, besides Greece, Denmark and Slovenia, which are non-permanent members in the Security Council.
- **Focus on Humanitarian Diplomacy:** India should actively engage in countering Pakistan's use of Islamophobia narrative by promoting peacekeeping contributions, humanitarian assistance, and multilateral cooperation.

Pakistan's entry into the UNSC in 2025 will likely result in **continued anti-India initiatives**, especially around issues like **terrorism**, **Kashmir**, and **Islamophobia**. India should be prepared for these diplomatic challenges but can count on support from **like-minded countries** to counter these efforts.

India- Sri Lanka Relations

Syllabus Mapping: GS-Paper 2, Neighbourhood

Context

Recently, newly elected Sri Lankan President Anura Kumara Dissanayake (AKD) visited India.

Key decision taken during visit of President Dissanayake to India

Trade and Investment Cooperation: Both leaders agreed to

- Continue discussions on the **Economic & Technological Cooperation Agreement**.
- **Enhance INR-LKR trade settlements** between the two countries.
- Encourage investments in key sectors in Sri Lanka to enhance its export potential.

Strategic & Defence Cooperation: To tackle various security threats such as terrorism, drug/narcotics smuggling both leaders agreed to

- Explore the possibility of concluding a framework **Agreement on Defence Cooperation**;
- Foster cooperation **in hydrography;**
- Provision of **defence platforms** and assets to augment Sri Lanka's defence capabilities;
- Intensify collaboration through **joint exercises, maritime surveillance, and defence dialogue**
- Extend assistance to strengthen capabilities of Sri Lanka on disaster mitigation, relief and rehabilitation, including through training, joint exercises and sharing of best practices; and
- Enhance capacity building and training for Sri Lankan defence forces

Regional and Multilateral Cooperation:

- Welcomed signing of the Founding Documents of the **Colombo Security Conclave** headquartered in Colombo.
- India conveyed its full support for Sri Lanka's Chairmanship of the IORA.

People-Centric Digitization:

- Implementation of Sri Lanka Unique Digital Identity (SLUDI) project
- Roll out Digital Public Infrastructure (DPI) in Sri Lanka with assistance from India.
- Extending the use of UPI digital payments for the benefit of both countries

Energy Development:

- Implementation of the **solar power project in Sampur**
- Supply of **LNG from India to Sri Lanka**. establishment of a high-capacity power grid interconnection between India and Sri Lanka.
- Cooperation amongst India, Sri Lanka and UAE to implement a **multi-product pipeline** from India to Sri Lanka
- Development of **offshore wind power potential in Palk Strait**

Debt restructuring:

- Both leaders agreed that a strategic shift from debt-driven models towards investment led partnerships across different sectors

Connectivity:

- Resumption of the passenger ferry service between Nagapattinam and Kankesanthurai
- Rehabilitation of Kankesanthurai port in Sri Lanka, with grant assistance from the Government of India.

AREAS OF COOPERATION BETWEEN INDIA AND SRILANKA

Economic Cooperation:

India has traditionally been among Sri Lanka's largest trade partners and Sri Lanka remains among the largest trade partners of India in the SAARC

- **Bilateral trade:** Merchandise trade between India and Sri Lanka reached USD 5.5 billion in FY 2023-24 with India's exports amounted to USD 4.1 billion while Sri Lanka's exports reached USD 1.4 billion.
- **Investment in Srilanka:** India is also one of the largest contributors to Foreign Direct Investment in Sri Lanka. According to the Central bank of Sri Lanka, the total FDI from India so far exceeds US$ 2.2 billion
- **Proposed Economic and Technology Co-operation Agreement (ETCA):** It is being negotiated to further broaden the scope of FTA and to strengthen the Rules of Origin. 14 rounds of negotiations have been conducted so far with the

latest round of discussion held in July 2024 in Colombo. The India-Sri Lanka Free Trade Agreement (ISFTA) is a bilateral trade agreement that came into effect in 2000.

- **Cooperation in different sectors:** Both sides concluded agreements in the areas of renewable energy, development of Trincomalee, dairy cooperation, digital transactions through UPI payments and the Solar Power Project in Sampur.
- **Assistance during the economic crisis:** India has provided multifaceted assistance to Sri Lanka, close to USD 4 billion, during the economic crisis in 2022.

People to people ties

- **Buddhism** is one of the strongest pillars connecting the two nations and civilizations. India in 2020, announced USD 15 million grant assistance for protection and promotion of Buddhist ties between India and Sri Lanka.
- **Internally Displaced Persons**: Both countries share a broad understanding on major issues of international interest. In recent years, significant progress in implementation of developmental assistance projects for Internally Displaced Persons (IDPs) and disadvantaged sections of the population in Sri Lanka has helped further cement the bonds of friendship between the two countries.
- **People of Indian Origin** (PIOs) comprise Sindhis, Borahs, Gujaratis, Memons, Parsis, Malayalis and Telugu speaking persons who have settled down in Sri Lanka (most of them after partition) and are engaged in various business ventures. Though their numbers are much lesser as compared to Indian Origin Tamils (IOTs), they are economically prosperous and are well placed.

Connectivity and Tourism:

- **Connectivity between India and Srilanka:** India and Sri Lanka entered into an Open Sky Agreement in 2016 enabling Sri Lankan Airlines to operate an unlimited number of flights to six Indian airports namely Delhi, Mumbai, Hyderabad, Kolkatta, Bengaluru & Chennai.
- **Pessenger Ferry:** Resumption of the passenger ferry service between Nagapattinam and Kankesanthurai. During the recent visit of newly elected Sri Lankan President Anura Kumara Dissanayake in Delhi in December 2024, it was decided that a ferry service will be started between Rameshwaram and Talaimannar to boost connectivity.
- **Grid and pipeline:** iBoth countries plan to establish electricity grid connectivity and multi-product petroleum pipelines. LNG will be supplied for Sri Lankan Power plants.
- **Tourism:** India is the leading tourist source market in 2023 with around 3 lakh arrivals (~20 % of ~1.48 million total arrivals) and in 2024 (till October 2024) with around 3.2 lakh arrivals (~19.3 % of 1.65 million total arrivals).

Defence and strategic cooperation

- **Institutional mechanism:** Annual Defence Dialogue is held between the Defence Secretaries every year to review and add momentum to bilateral defence cooperation.
- **Joint exercise:** India and Sri Lanka conduct one of the largest joint Military exercises called **'Mitra Shakti'**. Both conduct joint naval exercises called '**SLINEX'**. Sri Lanka participates in MILAN the multilateral naval exercise hosted by the Indian Navy
- **Training:** India is the largest provider of **defense training programs** to Sri Lankan soldiers and Defence officials.
- **India as 'first responder':** India has been 'first responder' for Sri Lanka with the Indian Navy and Indian Coast Guard having intervened in Sri Lankan waters to avert large scale environmental damage such as MV XPress Pearl in May 2021 and MT New Diamond in September 2020.
- **Security Cooperation:** Security cooperation on counter terrorism and other related areas are also an important aspect of our bilateral relationship. The Colombo Security Conclave has emerged as a key platform in recent times to address such issues at a regional level.

Development Cooperation:

India's development cooperation with Sri Lanka stands out as one of the most important pillars of our bilateral relationship

- India funds development projects with the grants, concessional loans.
- These development projects extend to all 25 districts of Sri Lanka and cut across several sectors including infrastructure, housing, health, livelihood and rehabilitation, education, industrial development, etc
  - India housing project: 60000 homes with grant assistance of INR 1800 crore.
  - India extended grant assistance of INR 300 crore towards implementing Sri Lanka Unique Digital Identity project similar to Aadhar of India.

- **Other projects:** Cultural Center at Jaffna; upgradation of Northern Railway line and track-laying; island-wide 'Suwa Seriya' Emergency Ambulance Service; restoration of Thiruketheeswaram Temple at Mannar; developmental projects focusing on Indian Origin Tamils (announced by Prime Minister Shri Narendra Modi in July 2023)

Need to Enhance Ties With Sri Lanka

Enhanced cooperation with Sri Lanka is crucial given the challenges India faces in its immediate neighborhood.

- **Strained Relations with Bangladesh:** Ties with **Bangladesh** are currently strained, limiting strategic options for regional collaboration.
- **Maldives' Economic Vulnerability: Maldives**, facing economic distress, accepted a short-term liquidity inflow of an RBI swap after China cooled its request for aid.
- **Nepal's Alignment with China: Nepal's PM K P Sharma Oli** has signed a framework agreement with **China** to advance Belt and Road Initiative (BRI) infrastructure projects.
- **Instability in Afghanistan:** Under **Taliban rule**, Afghanistan is grappling with economic hardship, making it a potential hub for **narcotics trade** and **illegal migration**.
- **Myanmar's Regional Risks:** Myanmar's instability also increases risks of **illegal migration** and cross-border issues for the region.
- **Stalemate with Pakistan:** India's relations with **Pakistan** remain largely frozen, with little progress towards normalization.

Concerns in India and Sri Lanka relations

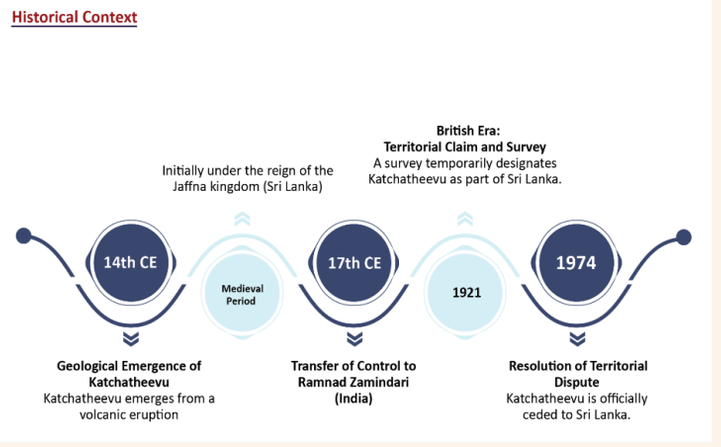
- **China's Influence:** China's involvement in developing strategic assets like the **Hambantota Port** raises security concerns for India. China has been increasingly using these posts for collecting surveillance data on India.
- **Tamil Minority Issues:** The need to address the aspirations of **Sri Lanka's Tamil minority**, especially concerning the implementation of the **13th Amendment** for devolution of power.
- **Fishermen Dispute:** Frequent disputes over **Tamil Nadu fishermen** straying into Sri Lankan waters (such as near Katchatheevu Island), leading to arrests and tensions.
- **Economic Vulnerabilities:** Sri Lanka's heavy reliance on **external debt** and need for continued **IMF support** pose challenges for economic stability.

Katchatheevu Island

- Katchatheevu is an **uninhabited off-shore island** in the **Palk Strait.**
- It was formed due to **volcanic eruptions** in the 14th century.
- The 285-acre land was **jointly administered** by India and Sri Lanka during **British rule.**
- It has been **used by fishermen** from both countries for centuries as a resting point during **fishing expeditions in the Palk Strait.**
- The island lacks fresh water sources, making it unsuitable for permanent habitation.

The Indo-Sri Lankan Maritime Agreement of 1974

- Aimed to definitively resolve the maritime boundary between India and Sri Lanka.
- The Indian Government ceded Katchatheevu to Sri Lanka, deeming it of minimal strategic value, to strengthen ties with Sri Lanka.
- The **agreement allowed Indian fishermen** access to Katchatheevu for **rest, drying nets, and shrine visits** without a visa, though it left some **issues regarding fishing rights** unresolved.
- **Subsequent developments:**
  - **1976**: The fishing vessels and fishermen of India shall **not engage in fishing in the historic waters, the territorial sea and the Exclusive Economic Zone of Sri Lanka,** creating ambiguity over fishing rights near Katchatheevu.
  - **Impact of Sri Lankan Civil War (1983-2009)**: The conflict put border disputes on hold, with Indian fishermen often encroaching into Sri Lankan waters, leading to tensions over fishing practices and resources.



– The Sri Lankan navy began strictly enforcing maritime boundaries, leading to the arrest and, in some cases, allegations of mistreatment of Indian fishermen.

Way Forward

- **Strategic Balance with China:** Continued **Indian investments** and infrastructure support to counterbalance China's influence.
  - Ensuring **Sri Lanka's maritime policies** are aligned with India's security interests.
- **Resolving Tamil Minority Issues:** Supporting the implementation of **Sri Lanka's 13th Amendment**.
  - Engaging diplomatically to ensure the rights of the **Tamil minority** are respected.
- **Coordinated Fishing Agreements:** Establish a **coordinated fishing model** to reduce tensions over fishing disputes.
- **Governance and Anti-Corruption Initiatives:** India can assist in **governance reforms**, **digitization**, and **modernization of agriculture** in Sri Lanka.
- **Strengthening Economic Ties:** Expediting an **upgraded Free Trade Agreement (FTA)** by 2025 and a comprehensive trade deal by 2026.
  - Piloting a regional Production-Linked Incentive (PLI) 2 scheme in Sri Lanka to boost mutual business interests.
  - Broaden business collaboration to include more sectors (**food processing**, **textiles and garments**, **auto parts**, and **IT-related services**) and regions (all **four southern Indian states**).
- **Enhanced Connectivity:** Improve **physical connectivity** for trade and tourism.
- **Economic Stability Initiatives:** Providing aid and **trade-related assistance** to bolster economic recovery.

India Russia Relations

Syllabus Mapping: GS-Paper 2, Bilateral Relations

Context

India will be crucial to play a central role in maintaining the global balance of power which is even more relevant as the world increasingly is witness to conflict between the western world on one side and Russia and China on the other. In this context, Indo-Russian relationship will be the most consequential bilateral dynamic in 2025.

India's Efforts to Maintain Global Order

- **Bridge between Russia and the West**: India acts as a bridge between Russia and an otherwise alienated Western ecosystem.
  - Through its multilateral commitment, India anchors Russia to the global system and fosters connectivity across geopolitical divides.
- **Global supply-chain security in the Arctic**: The Arctic is emerging as a crucial region for **natural resources, shipping routes**, and strategic interests.
  - Without India's involvement, a strong **Russia-China alliance** could dominate this region.

  - India's growing presence in the Arctic, supported by partnerships with **European and Nordic countries**, helps balance this potential dominance.
  - **Example**: The proposed **Chennai-Vladivostok corridor** is a maritime trade route connecting India and Russia.
- **Moderation in Multilateral Groupings:** India plays a crucial role in **multilateral organizations** like **BRICS (Brazil, Russia, India, China, South Africa)** and the **Shanghai Cooperation Organisation (SCO)**.
  - India ensures these platforms are **not used against the West**.

India's approach, as articulated by External Affairs Minister **S. Jaishankar**, is **non-Western** but **not anti-Western**. They are complementary to Western-led systems rather than antagonistic.

In this context, let's discuss different perspectives of the bilateral relation of India and Russia.

Importance of India-Russia Relations

- **Strategic High-Tech Collaboration:** Russia remains India's **most reliable partner** for advanced technological supplies, particularly in **defense and strategic systems**.
  - While Western nations like **France and the United States** are gradually easing restrictions on dual-use technology (which can have both civilian and military applications), they still impose limitations on certain critical technologies.
  - The **West's restrictions** mean India cannot fully rely on Western countries for its **undersea warfare** and **long-range weapon systems**.
  - Russia plays a crucial role by providing the necessary technology without such limitations.

Example: **BrahMos missile**, a supersonic cruise missile co-developed by India and Russia, exemplifies this collaboration.

- **Energy Trade and Price Stability**: India's trade with Russia in fossil fuels (oil and gas) helps ensure **global energy price stability**.
  - Even though sanctions are in place to curb Russia's profits due to its actions in Ukraine, India ensures that its trade with Russia complies with these sanctions.
- **Geopolitical Balancing: Russia-China Dynamics:** India helps prevent Russia from becoming overly dependent on China. A Russia that is forced into a subordinate role to China would destabilize the **global power balance** and be harmful to Western interests.

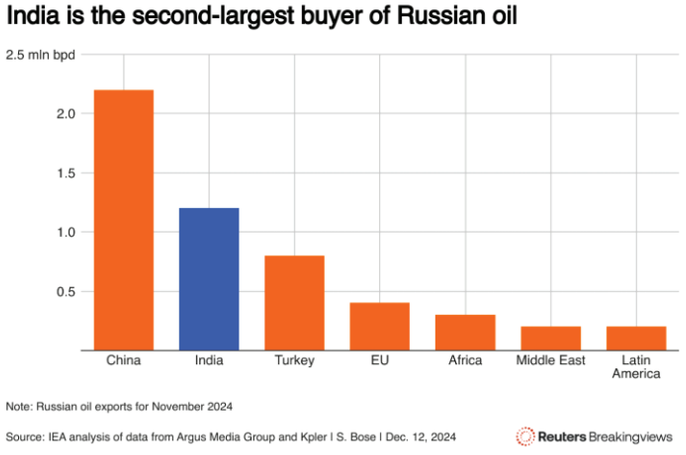
Timeline of India Russia Relations

Timeline of India - Russia Relationship

- **Foundational Partnership (Since 1947):** Russia has been a key ally to India since its independence, investing in crucial sectors like heavy machinery, energy, and steel.
- **Treaty of Peace and Friendship (1971):** Solidified India-Russia relations, emphasizing their commitment to global peace and security.
- **Post-Soviet Union Relations (1990s):** Continued collaboration with the Treaty of Friendship and Cooperation (1993) and Military-Technical Cooperation agreement (1994).
- **Strategic Partnership Declaration (2000):** During President Putin's visit, this declaration marked a new cooperation era in diverse sectors.
- **Dialogue Mechanisms Establishment:** Regular interactions and progress in cooperative activities through various dialogue levels.
- **Elevation to Special Partnership (2010):** Upgraded to a "Special and Privileged Strategic Partnership" during the Russian President's visit to India.
- **BRICS Presidency (2015):** Russia's BRICS Presidency further strengthened the partnership with various events and meetings.
- **Military Technical Cooperation (2021-2031):** A decade-long agreement finalized during the first India-Russia 2+2 Dialogue.
- **75 Years of Diplomacy (2022):** Celebrated the 75th anniversary of diplomatic relations, highlighting the enduring bond between the two countries.

Areas of Cooperation

- **Political Cooperation:** Both countries form a part of several multilateral forums such as the Shanghai Cooperation Organisation, BRICS, and Connectivity projects such as INSTC (International North-South Transport Corridor), etc.
  - Russia has backed India joining the Nuclear Suppliers Group (NSG) and Asia Pacific Economic Cooperation (APEC)
  - Russia supports India's position on the Kashmir issue.
  - In July 2024, Prime Minister Narendra Modi was awarded the Order of St. Andrew the Apostle, Russia's highest state honour, for "his contribution to fostering India-Russia ties".
- **Economic Cooperation:** Bilateral trade between India and Russia reached a record high of US$65.70 billion in FY 2023-24.
  - India and Russia established a Strategic Partnership Declaration in 2000, which was elevated to a Special and Privileged Strategic Partnership in 2010.
  - Both countries' targets are to boost bilateral investment to US$50 billion and bilateral trade to US$30 billion by 2025 and US$100 billion by 2030.
  - The India-Russia Double Taxation Avoidance Agreement (DTAA), effective since 1996, seeks to eliminate double taxation and reduce fiscal evasion.
- **Defense Cooperation:** Russia ranks first in the field of military-technical cooperation with India. However, in recent years, India's share of Russian arms exports decreased from 58% in 2014-2018 to 34% in 2019-2023.
  - India purchased various military equipment from Russia such as the S-400 Triumph Missile system.
  - Kamov 226 helicopters, T-90S tank to be jointly manufactured under the Make in India initiative.
  - Both countries have jointly developed several Defense technologies: BrahMos supersonic cruise missile, Sukhoi Su-30 fighter aircraft, the Fifth Generation Fighter Aircraft (FGFA), and the Akula-class nuclear submarine.
  - **Military Technical Cooperation Agreement (2021-2031)** was signed during the inaugural India-Russia 2+2 Dialogue in December 2021.
    - This agreement outlines a decade-long framework for defense cooperation, including joint development and production of military equipment, components, and spare parts.
  - **Bilateral exercise:** Exercise Indra, India and Russia also participate in multilateral military exercises, such as Vostok 2022.
- **Infrastructure and Connectivity Projects:**
  - **International North-South Transport Corridor (INSTC):** This multimodal network aims to connect Mumbai to Moscow through Iran and Central Asia, reducing transport time and boosting trade efficiency.
  - **Chennai-Vladivostok Maritime Corridor:** This proposed route seeks to connect the ports of Chennai (India) and Vladivostok (Russia), enhancing maritime trade and energy transport.
- **Energy Cooperation:** In February 2024, India and Russia upgraded an agreement to build six civil nuclear power plants in the **Kudankulam Nuclear Power Plant,** Tamil Nadu.



  - India is the **2nd largest buyer of Russian Oil**.
  - Recently, Russia's state-owned oil company **Rosneft** and India's **Reliance Industries** signed a 10-year deal involving the supply of **500,000 barrels per day** of crude oil valued at approximately **$13 billion annually**.

Issues in Russia-India relation

- **Russia's Closer Ties with China:** Russia's deepening partnership with China, especially amid escalating Sino-Indian tensions.
- **Impact of the Ukraine Conflict:** The ongoing conflict in Ukraine has led to delays in the delivery of critical defence equipment to India, notably the S-400 missile defence systems and spare parts for fighter jets.
  - This situation undermines India's defence preparedness and confidence in Russian military hardware.
- **Economic Imbalance**: The bilateral trade relationship is marked by a significant imbalance, with India experiencing a substantial trade deficit.
  - In the fiscal year 2023-24, India's exports to Russia were valued at $4.3 billion, while imports stood at $61.44 billion, largely due to increased energy imports.
- **Shift Towards Western Suppliers:** India's efforts to diversify its defence procurement, including increased engagements with Western countries, may affect the traditional defence ties with Russia.
  - This shift is influenced by the need for advanced technology and reliable supply chains.

Way Forward

- **Diversify Defense Procurement:** Reduce reliance on Russian military hardware by increasing defense acquisitions from Western countries and strengthening domestic production under the Make in India initiative.
- **Address Trade Imbalance:** Boost Indian exports to Russia in key sectors like pharmaceuticals, agriculture, and IT while negotiating favorable trade agreements and alternative payment mechanisms to manage the deficit.
- **Strengthen Energy Cooperation:** Leverage Russia's role as a key energy supplier by securing long-term deals and exploring partnerships in renewable energy to create a balanced and sustainable energy relationship.
- **Enhance Multilateral Diplomacy:** Utilize platforms like BRICS and the Shanghai Cooperation Organization (SCO) to reinforce strategic ties with Russia while balancing relations with Western allies and navigating Sino-Russian dynamics.
- **Build Strategic Resilience:** Establish localized facilities for maintenance and production of critical defense equipment, ensure technology transfer, and accelerate indigenous development to mitigate delays and supply chain vulnerabilities.

PM Visit to Kuwait

Syllabus Mapping: GS-Paper 2, Bilateral Relations

Context

Prime Minister Narendra Modi visited Kuwait on December 21-22, 2024. It is the first visit by an Indian Prime Minister in 43 years, the last being Indira Gandhi's visit in 1981.

Outcomes of Prime Minister Modi's Visit to Kuwait

- **Strategic Partnership**: India and Kuwait elevated their relationship to the level of a "strategic partnership."
- **Memorandums of Understanding (MoUs)**:
  - **Defence Cooperation**: An MoU was signed for the exchange of defence personnel, joint exercises, and the supply of military equipment.
  - **Cultural Exchange**: An MoU was signed to promote cultural exchange and sports cooperation.
- **Economic Ties**:
  - Prime Minister Modi invited a delegation from the Kuwait Investment Authority to explore investment opportunities in India in sectors like energy, medical devices, pharmaceuticals, and infrastructure.
  - Discussions were held to deepen bilateral economic cooperation.
- **Institutional Mechanisms**: Joint Working Groups (JWGs) were established in areas such as trade, investment, education, technology, agriculture, security, and culture. Existing JWGs on health, manpower, and hydrocarbons were reaffirmed.
- **Cultural Engagement**: Translators of Indian epics such as the Ramayana and Mahabharata into Arabic were met and honored, highlighting the cultural connection between the two countries.

MoU on Cultural Exchange Programme (CEP) between India and Kuwait for the years 2025-2029: To facilitate greater cultural exchanges in art, music, dance, literature and theatre, cooperation.

- **Recognition of Friendship**: Prime Minister Modi received the Mubarak Al-Kabeer Order, Kuwait's highest honor, underscoring the strong bilateral ties.

- **Visit to Gulf Spic Labour Camp**: PM Modi visited a labor camp in Kuwait where over 90% of inhabitants are of Indian origin, reflecting the importance of the Indian diaspora in the bilateral relationship.
- **Kuwait's membership of International Solar Alliance (ISA):** To address key common challenges to the scaling up of use of solar energy to help India and Kuwait develop low-carbon growth trajectories.
- **MoUs on Sports:** To strengthen bilateral cooperation in the field of sports between India and Kuwait by promoting exchange of visits of sports leaders.

Significance of Kuwait for India

- **Historical Relations**: India was one of the first countries to establish diplomatic relations with Kuwait in 1961, post its independence.
  - The Indian Rupee was legal tender in Kuwait until 1961.
- **Strategic Importance**: Located at the northeast end of the Persian Gulf, Kuwait shares borders with Iraq and Saudi Arabia and hosts key U.S. military bases.
  - It is the only monarchy in the Gulf region that has successfully experimented with democracy.
  - It plays a neutral and mediatory role in resolving regional disputes.
- **Energy Partner**: Kuwait has the world's **sixth-largest oil reserves** and is a founding member of OPEC.
  - It was the **sixth-largest crude oil supplier to India** in FY 2023-24, catering to about 3% of India's energy needs.
- **Sovereign Wealth Fund**: Kuwait's Sovereign Wealth Fund (KIA) is the **fourth-largest globally**, valued at $924 billion (March 2024).
  - KIA has invested over $10 billion indirectly in India, showcasing its economic partnership potential.
- **Cultural and People-to-People Ties**:Around 1 million Indians form the **largest expatriate group in Kuwait**, strengthening ties through cultural exchanges and remittances.
  - India's educational influence is significant, with **26 CBSE-affiliated schools** in Kuwait educating over 60,000 students.

Areas of cooperation between India and Kuwait

- **Trade Relations**: Bilateral trade stood at **$10.47 billion in FY 2023-24**, with India consistently ranking as one of Kuwait's top trading partners.
  - India imported crude oil and exported food, textiles, and other goods to Kuwait.
- **Indian Business and Professional Council (IBPC)**:An association of about 200 businessmen/ professionals in Kuwait who are actively involved in promoting India-Kuwait business relations.
- **COVID-19 Collaboration**: India supplied **2 lakh vaccine doses** to Kuwait during the pandemic.
  - Kuwait provided vital medical supplies to India, including oxygen cylinders and concentrators, during the second COVID wave in May 2021.
- **Cultural Initiatives**:
  - Historically, India-Kuwait relationship has been anchored by close cultural contacts and mutual exchange. During the year 2021-22, Embassy celebrated 60th anniversary of establishment of diplomatic relations between India and
  - Events like the **Festival of India** (March 2023) and the weekly **'Namaste Kuwait' Hindi radio program** have deepened cultural bonds.
- **People-Centric Cooperation**:
  - Professionals like engineers, doctors, chartered accountants, scientists, software experts, management consultants, architects; technicians and nurses; retail traders and businessmen are present in Kuwait.
  - There are over 200 Indian associations registered with the Embassy. These associations are interested in organizing cultural programmes as well as charitable activities on a regular basis.

Issues in India-Kuwait Relation

- **Lack in momentum:** India-Kuwait relation has not been transcended to the next level like many other countries in the Gulf region. This reflects a lot of scope in the relation between India and Kuwait.

- **Labour and manpower issues:** Various issues faced by Indian workers in Kuwait include complaints of wage non-payment or delay, long working hours, passport retention and exploitation by recruitment agents etc.

For example, In June 2024, the death of 45 Indian workers in a fire in Kuwait reflected the dismal working conditions.

- **Skewed Trade relation:** The primary concern with India's trade with Kuwait is a significant lack of diversification, meaning that the majority of India's exports to Kuwait are concentrated on a few basic food items, while the bulk of imports from Kuwait are primarily crude oil, leading to a heavy reliance on hydrocarbon exports from Kuwait and limited exploration of other potential trade sectors between the two nations.

Future prospect of India-Kuwait Relation

- **Strengthening Bilateral Agreements**: Explore new areas of cooperation to bolster ties and diversify the trade relations beyond import of crude oil and export of cereals.
- **Economic Collaboration**: Discussions on cooperation between **Kuwait Investment Authority (KIA) and India's National Investment and Infrastructure Fund (NIIF)**.
  - For example, Exploration of Kuwait's participation in India's **strategic oil reserves**.
- **Infrastructure and Education**: India could assist in Kuwait's **'Vision 2035' infrastructure initiatives**, potentially building institutes like IITs, IIMs, and modern hospitals.
- **Sustainable and Technological Cooperation**: Kuwait's potential joining of the **Coalition for Disaster Resilient Infrastructure** (CDRI) also Collaboration in **space technology**, including launching satellites for Kuwait.
- **Aviation and Connectivity**: Addressing Kuwait's request for additional airline seat allotments to improve connectivity.
- **Geopolitical Engagement**: Addressing the stagnation in India-Kuwait relations and aligning policies to strengthen India's overall West Asia strategy.

Indian Navy's Undersea Warfare

Syllabus Mapping: GS-Paper 3, Security

Context

The Indian Navy commenced 2024 with significant advancements in its operational capabilities, particularly through Operation Sankalp.

Operation Sankalp

- Focus on ensuring shipping security from piracy and providing assistance to ships targeted by Houthis in areas like the Gulf of Aden, the Arabian Sea, and the waters off the east coast of Somalia.
- Reinforced India's status as a preferred security partner and first responder.
- **Milestones**:
  - Over 110 lives saved, including 45 Indian seafarers.
  - Escorting approximately 1.5 million tons of critical commodities.
  - Seizing over 3,000 kgs of narcotics.
- Note: US and other European Union countries operations to tackle the Houthi threat in the Red Sea **Operation Prosperity Guardian and Operation Aspides** respectively.

Other Key Developments in Undersea Warfare

- **Commissioning of INS Arighaat (2024):**
  - India's second indigenous nuclear-powered ballistic missile submarine (SSBN).
  - Enhances the third leg of India's nuclear triad.
  - **Features of INS Arighaat:**
    - Advanced sonar and propulsion systems.
    - Upgraded acoustic dampening.
    - Higher indigenous content compared to INS Arihant.
  - Successfully tested the K-4 submarine-launched ballistic missile (SLBM) with a 3,500 km range, placing most of China within striking distance.

- **Approval of Project-77 (P-77):**
  - The Cabinet Committee on Security approved construction of two nuclear-powered attack submarines (SSNs).
  - Delivery of the first SSN by 2036-37 with over 90% indigenous content.
  - India becomes the only non-P5 nation to operate both SSBNs and SSNs.

Developments in Conventional Submarines

- **Project-75 (Scorpene Class Submarines):**
  - Sixth Scorpene boat, **INS Vaghsheer**, to be commissioned soon.
  - Plan to order three more Scorpene boats with 60% indigenous content.
- **Project-75(I) (AIP-Enabled Submarines):**
  - Focus on Air Independent Propulsion (AIP) technology to increase non-nuclear boat efficacy.
  - Collaboration with Spain (Navantia) and Germany (Thyssenkrupp Marine Systems - TKMS).
  - Indigenous content is expected to start at 45% for the first boat and rise to 60% by the sixth boat.
- **Approval of Unmanned Underwater Vehicles (UUVs):**
  - Development of 100-tonne UUVs at a cost of ₹2,500 crore.
  - Aim: Enhance undersea capabilities with cost-effective, strategic enablers.

Challenges in Modernization

- **Lack of priority to navy for a long time:** For a long time India saw its principal security threats from land borders ie China and Pakistan, and not from the maritime sector.
  - This led India's limited defence budget to overwhelmingly focus on building army, airforce and nuclear capabilities overlooking modernisation of the navy.
  - However, considering the increasing maritime threats of piracy and activity of China in the Indian Ocean Region, there is a need to take naval and maritime security seriously.
- **Budgetary Constraints:** Hinders timely acquisitions and modernization efforts. Currently, the defence budget is over-whelmingly focussed on personnel salaries and pensions and limited on capital acquisition and technology development.
- **Excessive Time Delays:** Inefficiencies in specifying requirements, shortlisting manufacturers, and evaluating tenders.
- **Technology constraints:** Defence technologies such as that of nuclear submarines are closely guarded and are available to advanced countries or their allies. For example, The USA and UK are offering nuclear submarines under the AUKUS partnership to Australia. However, they have denied this technology to India, despite India being a member of the QUAD grouping.
- **Limited domestic capacity:** India's shipbuilding industry lacks adequate capacity and capability to design and develop these systems indigenously. However, in recent past, India has taken successful steps to develop an indigenous aircraft carrier i.e. INS Vikrant.
- **Corruption in acquisition:** The frequent allegations of corruption and bureaucratic apathy puts constraints in quickly prioritising and finalising acquisition of critical maritime defence systems.
- **Lack of adequate private participation:** There is a lack of private sector participation in the ship and naval systems manufacturing in India. Most large ship builders are under the public sector which constraints innovation and technological leadership.

Way forward

- **Strategic Focus Areas:** Streamlined acquisition processes. Balancing investments across undersea, surface, and aviation elements to create a robust blue-water navy.
- **Collaboration with Strategic Partners:**
  - Potential for enhanced cooperation with friendly maritime nations.
  - Alignment with India's vision of Security and Growth for All in the Region (SAGAR).
- **Promotion of a Free and Inclusive Indo-Pacific:** Focus on maritime stability to support India's growth and geopolitical goals.
- **Navy-Industry-Research collaboration** where the demands of the navy and research institutions and industry which manufactures the systems are integrated.

TOPICS FOR PRELIMS

Crime Against Humanity (CAH Treaty)

Syllabus Mapping: International Treaty and Convention

Context

In December 2024, the United Nations General Assembly (UNGA) adopted a resolution by approving the text for a proposed treaty aimed at preventing and punishing crimes against humanity (CAH).

Background

- CAH were first codified in the **1945 London Charter**, which established the Nuremberg Tribunal to prosecute atrocities committed during World War II.
- Further addressed in the statutes of the International Criminal Tribunals for the former Yugoslavia and Rwanda.

Reasons for a Dedicated CAH Treaty

- **Jurisdictional Limitations**: The ICC's jurisdiction covers only member states, limiting action in non-member states.
- **State Accountability**: Unlike the Rome Statute, a CAH treaty could hold states accountable for failing to prevent CAH, similar to the Genocide Convention.
  - **Example**: The Gambia filed a case against Myanmar at the ICJ under the Genocide Convention for violations against the Rohingya population.
- **Expanded Scope**: Potential to include new acts like:
  - Starvation of civilian populations.
  - Gender apartheid and forced pregnancy.
  - Use of nuclear weapons and terrorism.
  - Exploitation of natural resources and crimes against indigenous populations.

Gap in Accountability for Crimes Against Humanity (CAH)

Limited Governance Framework: Unlike **genocide** (governed by the Genocide Convention, 1948) and **war crimes** (covered by the Geneva Conventions, 1949), CAH lack a dedicated treaty.

- Currently, CAH are addressed only under the Rome Statute of the International Criminal Court (ICC).
- The Rome Statute defines CAH as acts like murder, extermination, enslavement, deportation, torture, imprisonment, and rape when committed as part of a widespread or systematic attack directed against civilians with knowledge of the attack.

India's Position on the CAH Treaty

- **Non-Party Status**: India is not a party to the Rome Statute and has raised concerns about ICC jurisdiction over issues like prosecutorial powers and the exclusion of nuclear weapon use from war crimes definitions.
- **Definition of CAH:** India argues that only crimes committed during armed conflicts should qualify as CAH and opposes including enforced disappearance as a crime under this framework. Instead, it advocates for terrorism to be recognized as a CAH.
- **Lack of Domestic Legislation:** India has no specific domestic laws addressing international crimes like CAH or genocide.
  - **Judicial Observation (2018)**: Justice S. Muralidhar (Delhi High Court) in **State vs Sajjan Kumar** highlighted the absence of such laws as a significant gap.
  - Recent amendments to Indian criminal laws failed to incorporate CAH and genocide.

India's Potential Role:

- Incorporating CAH in domestic law aligns with India's emphasis on territorial jurisdiction.
- Leading global efforts against impunity for human rights violations would reinforce India's aspiration to be a 'Vishwaguru.'

Rebel Group Seizes Strategic Trading Town in Myanmar

Syllabus Mapping: Locations

Context

A key trading town in northeastern Myanmar, Kanpaiti, has been captured by the Kachin Independence Army (KIA).

Key Developments

- **Fall of Kanpaiti:**
  - Kanpaiti is an important trading town on the China-Myanmar border.
  - It is located in Myitkyina District, Kachin State of Myanmar.
  - Kanpaiti serves as a hub for rare earth mineral mining, critical for producing electric motors, wind turbines, advanced electronics and high-tech weapons.
  - The mines in the region supplied **$1.4 billion worth of rare earth minerals to China in the previous year.**

- **Remaining Border Control:**
  - After this loss, the military retains control over only one town with a border crossing into China: **Muse.**
- **Major Armed Groups:**
  - **KIA:** It is a non-state armed group and the military wing of the **Kachin Independence Organization (KIO),** a political group of ethnic Kachins in Northern Myanmar
  - **Rohingya Solidarity Organisation (RSO):** It is a militant group involved in the conflict between the Rohingya and the Burmese government. It was formed in **1982** with the aim of establishing an autonomous region for the Rohingya.
  - **Arakan Rohingya Salvation Army (ARSA):** It operates in Rakhine state in northern Myanmar, where the mostly-Muslim Rohingya people have faced persecution.

Riyadh Design Law Treaty

Syllabus Mapping: International Treaty and Convention

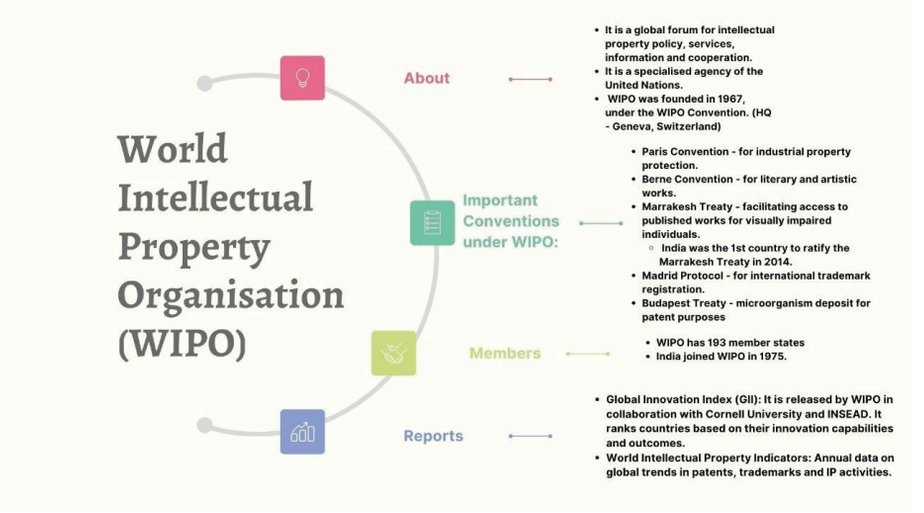
Context

India has signed the **Final Act of the Riyadh Design Law Treaty .**

About Riyadh Design Law Treaty (DLT)

- It is a landmark agreement adopted by member states of the **World Intellectual Property Organization (WIPO)** after nearly **two** decades of negotiations.
- The treaty aims to streamline and harmonize global design protection frameworks, emphasizing inclusivity and support for innovation.
- **Key Features:**
  - Relaxed time limits for applications.
  - Reinstatement of lost rights and correction/addition of priority claims.
  - Simplified procedures for recording assignments and licenses.
  - Option to file multiple designs in a single application.
- **Benefit to India after signing this Treaty:**
  - It will empower startups and SMEs to secure design rights globally, boosting their competitiveness and supporting market growth.
  - Design registration that will lead to more innovation.

About World Intellectual Property Organization (WIPO)



India has contributed $ 2 billion to BRICS bank

Syllabus Mapping: Regional Groupings

Context

According to the Ministry of Finance India has contributed nearly $2 billion to the BRICS New Development Bank (NDB).

About BRICS Bank/ New Development Bank (NDB)

- **Establishment:** NDB was officially launched in 2014 during the **6th BRICS summit in Fortaleza, Brazil. (HQ-Shanghai, China)**
- **Founding members:** Brazil, Russia, India, China, South Africa.
- **New members:** Bangladesh, Egypt & UAE.
  - Its membership is **open** to members of the United Nations.
- **Capital**: The Bank has an **initial authorized capital of 100 billion dollars** and an initial **subscribed capital of 50 billion dollars.**
- **Governance Structure:**
  - NDB is overseen by a Board of Governors made up of the finance ministers of the BRICS countries.
  - The bank's president is chosen from among the member countries, and the remaining members are represented by four vice presidents.
  - While **new members can join the NDB, the 5 BRICS countries will retain a minimum of 55% of total shares.**
- **Purpose:**
  - Promote sustainable development in BRICS nations and other developing economies.
  - Support infrastructure development, which is critical for economic growth.
  - Reduce reliance on traditional financial institutions like the World Bank and IMF.
  - Promotes use of local currencies to reduce reliance on the US dollar

ICJ begins hearing on landmark climate change case

Syllabus Mapping: International Organisation

Context

International Court of Justice is hearing a landmark case on climate change obligations, initiated by **Vanuatu**, to determine the legal responsibilities of countries in protecting the climate system and the consequences for those causing harm.

International Legal frameworks involved in the case

- Paris Agreement & UNFCCC
- UN Convention on the Law of the Seas
- Convention on Biological Diversity
- Convention to Combat Desertification
- Universal Declaration of Human Rights
- International Covenant on Civil and Political Rights
- UN Charter

About International Court of Justice (ICJ)

- ICJ is the **primary judicial body of the United Nations (UN).**
- It was established in **1945** and is located in **The Hague, Netherlands.**
  - **It is the only UN principal organ not in New York.**
- **Purpose:** To settle legal disputes between countries and to provide legal advice to authorized UN agencies and specialized organizations.
- **Judges:** It has **15 judges who serve nine-year terms.**
  - The UN General Assembly and the Security Council elect the judges, and both bodies vote separately but simultaneously.
  - To be elected, a candidate must receive an absolute majority of votes in both bodies.
- **Official languages:** The official languages of the ICJ are English and French.
- **Advisory opinions:** The ICJ's advisory opinions are not binding, but they are associated with the court's prestige and authority. The requesting organization can choose to act on the opinion or not.
- The **hearings of the ICJ are always public.**

Difference between ICC & ICJ

Parameter	ICC (International Criminal Court)	ICJ (International Court of Justice)
Establishment & HQ	2002, Hague (Netherlands)	1946, Hague (Netherlands)
UN Relation	Independent- may receive case referrals from UN Security Council	Official court of the UN, known as the World Court
Case types	Criminal prosecution of individuals	Contentious between parties, and advisory opinions

Parameter	ICC (International Criminal Court)	ICJ (International Court of Justice)
Subject matter	Genocide, crimes against humanity, war crimes, crimes of aggression	Maritime disputes, sovereignty, natural resources, trade, treaty violations and treaty interpretations, human rights, etc.
Funding	Contributions from parties to the Rome Statute, voluntary contributions from the UN, governments, corporations, organisations, etc.	UN

New Phase of Syrian Conflict

Syllabus Mapping: International Developments

Context

Syrian rebels swiftly toppled President Bashar al-Assad's 24-year regime, forcing the 59-year-old leader to flee to Moscow, where he was granted asylum.

Syrian War

- The conflict began in **2011 during the Arab Spring,** with protests against **President Bashar al-Assad's rule.**
- Over time, the war evolved into a multi-faceted conflict involving domestic opposition groups, foreign powers and extremist organizations.
- **Other Reasons:**
  - **Authoritarian Rule:** Decades of oppressive governance under the Assad family created widespread resentment among the population.
  - **Economic Hardship:** High unemployment, corruption, and economic inequality fueled public dissatisfaction.
  - **Sectarian Divide:** Syria's Sunni majority resented the dominance of the Alawite minority, to which Assad belongs.
  - **Internal Fragmentation:** The conflict fragmented into multiple factions, including the Assad regime, opposition groups, Kurdish forces, and extremist organizations like ISIS.

Key Rebel Groups & Players in the Current Offensive

- **Hayat Tahrir al-Shaam (HTS):**
  - **Origin:** Began as Jabhat al-Nusra, al-Qaeda's branch in Syria, later renamed Jabhat Fateh al-Shaam in 2016, and evolved into HTS in 2017.
  - **Leadership:** Led by Abu Mohammad al-Jolani.
  - HTS is designated a terrorist group by the US, Russia, and Turkey.
- **Syrian Democratic Forces (SDF):**
  - **Composition:** Kurdish militias.
  - **Area under control:** Administers northeastern Syria autonomously.
  - **Former US Support:** Heavily supported during the Trump administration before the abrupt withdrawal of US forces.
- **Syrian National Army (SNA):**
  - **Origin:** Emerged from the Free Syrian Army in 2011.
  - Supported by Turkey and opposes both Assad and the SDF.
  - **Role:** Jointly conducting operations with HTS under the "Military Operations Command" established in 2019.
- **Assad's regime:** Controls most of Syria, with support from **Russia, Iran and Hezbollah.**
- **Turkey:** Historically backs Syrian rebels and controls trade and access in Idlib. It has controlled northern Syria since 2016.

Important locations of Syria

Global One-Stop Centres

Syllabus Mapping: Government Initiative

Context

The Union government has approved the establishment of nine One-Stop Centres to assist women facing distress in foreign countries.

About Global One-Stop Centres (OSCs)

- These centres aim to provide comprehensive assistance to women in vulnerable situations.
- **Proposed Locations:**
  - **Gulf Countries (7 Centres with Shelter Facilities):** Bahrain, Kuwait, Oman, Qatar, UAE, and Saudi Arabia (with centres in Jeddah and Riyadh).
  - **Non-Shelter Centres (2):** Toronto (Canada) and Singapore.
- **Services Provided:**
  - **Shelter Facilities:** Immediate safe accommodation for women in distress.

- **Legal Aid:** Assistance for accessing justice, particularly for women abandoned by overseas spouses.
- **Counselling:** Psychological support to help women navigate distressing situations.
- **Emergency Assistance:** Provision of medical care and crisis intervention.

- **The Indian Community Welfare Fund (ICWF)** will play a vital role in extending welfare measures to distressed Indian nationals

Asia-Oceania Meteorological Satellite Users' Conference

Syllabus Mapping: International Conference

Context

The 14th Asia-Oceania Meteorological Satellite Users' Conference has commenced in New Delhi.

About Asia-Oceania Meteorological Satellite Users' Conference (AOMSUC)

- It is a premier event for meteorologists, earth scientists, satellite operators and students from across the globe.
- This year's conference is hosted by the **India Meteorological Department (IMD), Ministry of Earth Sciences.**
- The **1st AOMSUC was held in Beijing (China) in 2010.** Since then, it has been hosted annually in various locations across Asia-Oceania.

- **Aim of the conference:**
  - Promote the importance of satellite observations.
  - Advance satellite remote sensing science &Engage young scientists in the field.
  - Provide a platform for dialogue and collaboration between satellite operators and users.
  - Encourage the development of new technologies for weather satellite sensing.

Border dispute between Kyrgyzstan and Tajikistan

Syllabus Mapping: Border Disputes

Context

Central Asian neighbours Kyrgyzstan and Tajikistan announced a border demarcation deal on the last contested frontier in the region, potentially ending decades of territorial disputes.

Background of Border Dispute

- The conflict is over a **970 km-long border** shared by Kyrgyzstan and Tajikistan in Central Asia.
- **Cause**: Disputes over territorial claims and resource access (water, grazing land) in the densely populated **Ferghana Valley.**
- Borders were drawn during the Soviet era without considering ethnic and community alignments.
  - Approximately **30% of the border remains undefined**, leading to frequent clashes.

Facts

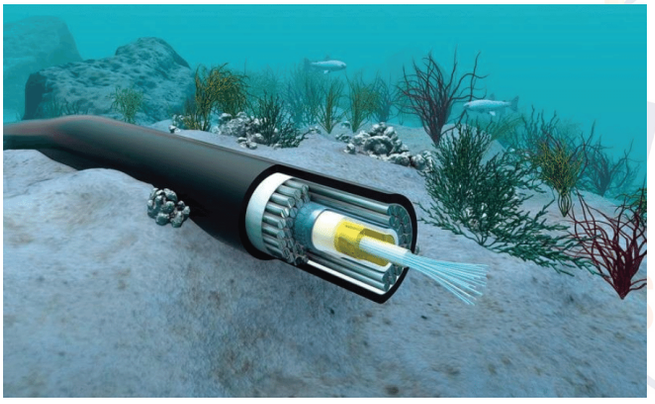
- **Longest border between any 2 countries in the world:**
  - **1st -** USA & Canada
  - **2nd -** Kazakhstan-Russia
  - **3rd -** Argentina-Chile
  - **6th - India & Bangladesh**
- India has **15,106.7 Km of land border and a coastline of 7,516.6 Km** including island territories.
- India shares its land border with **7 Countries:** Bangladesh (4,096 km), China (3,488 km), Pakistan (3,323 km), Nepal (1,751 km), Myanmar (1,643 km), Bhutan (699 km) & Afghanistan (106 km).

International Advisory Body for Submarine Cable Resilience

Syllabus Mapping: International Organisation

Context

The International Telecommunication Union and the International Cable Protection Committee have jointly launched the **International Advisory Body for Submarine Cable Resilience**.



About International Advisory Body for Submarine Cable Resilience

- The aim of this body is to strengthen the resilience of submarine cables, which are essential to the functioning of the global digital economy.
- **Role and Functions:**
  - Promote best practices across governments and industries to reduce risks, improve cable resilience, and ensure swift repair.
  - Provide strategic guidance on issues like increasing traffic, aging infrastructure, and environmental threats to submarine cables.
- **Members:** 40 members from around the world consisting of public and private sectors. The members include experts from various field including submarine cable operators, telecommunications companies, government agencies, ministers, heads of regulatory authorities and senior experts in telecommunications.
- It has the **initial term of 2 years.**
- **India's telecom secretary** is also part of the body.

About Submarine Telecom Cables

- Submarine cables are fiber-optic cables that run along the ocean floor, carrying data between continents. They are also known as **undersea cables.**
- They are the backbone of the global internet, responsible for the majority of international communications, including video calls, email, and webpages.

International Telecommunication Union (ITU)

- It is a **United Nations agency** that coordinates global telecommunications networks and services. (ITU became a specialized agency of the United Nations in 1947).
- ITU was founded in **1865** with the **International Telegraph Convention**.
- **HQ -**Geneva, Switzerland.

International Cable Protection Committee (ICPC)

- It is a global forum for governments and commercial entities involved in the submarine cable industry
- It was founded in **1958.**
- **HQ- United Kingdom**
- **Aim:** Help its Members to improve the security of undersea cables by providing a forum in which relevant technical, legal and environmental information can be exchanged.

India's initiative: India is expanding its undersea cable network with the two news systems

Expansion of India's Undersea Cable Network

- India is enhancing its undersea cable network with two new systems, the **India Asia Xpress (IAX) and the India Europe Xpress (IEX)**, set to launch in the next three months.
- The IAX will connect **Chennai and Mumbai with Singapore, Thailand and Malaysia, while the IEX links these cities to France, Greece, Saudi Arabia, Egypt and Djibouti.**
- These cables, over 15,000 kilometers in total length, are owned by Reliance Jio with investment from China Mobile.
- **Significance of submarine cables:**
  - Submarine cables are vital for global communications, they carry over 99% of international internet traffic.

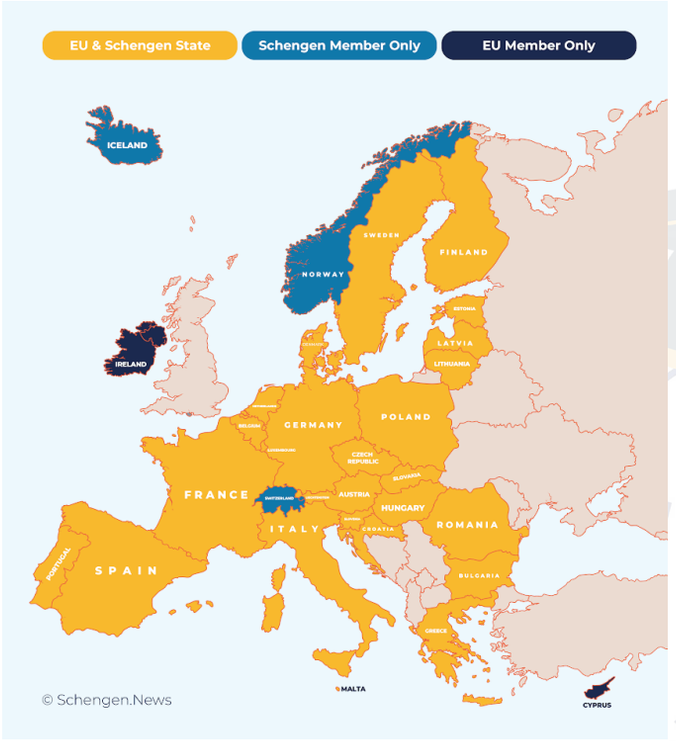
– They enable critical services such as commerce, financial transactions, government activities, digital health and education.

Schengen accession for Bulgaria, Romania

Syllabus Mapping: Regional Groupings

Context

EU states cleared **Bulgaria and Romania** to become full members of the borderless Schengen zone from the start of next year.



About Schengen Area

- It is a free travel area in Europe made up of **29 countries.**
- **History:** It was established in **1985 by 5 EU countries:** France, Germany, Belgium, Netherlands and Luxembourg. The name comes from the small Luxembourg village where the Schengen Agreement was signed.
- **Membership include EU and non-EU members:**
  - **Presently** out of the **27 EU member states, 25 participate in the Schengen Area. (After addition of Bulgaria & Romania). EU states not part of the Schengen Area:** Cyprus and Ireland
  - **Non-EU states part of the Schengen Area:** Iceland, Liechtenstein, Switzerland and Norway.
- **Features of Schengen Area:**
  - **No internal borders:** Countries in the Schengen Area don't perform checks at their internal borders, except in cases of specific threats.
  - **Common visa policy**: The Schengen Area has a common visa policy and rules for controls at external borders.
  - **EU citizens and non-EU residents can travel freely:** Citizens and many non-EU nationals staying legally in the EU can travel freely within the Schengen Area

White House reveals plan to tackle anti-Muslim and anti-Arab hate

Syllabus Mapping: International Developments

Context

Recently the White House has unveiled the first-ever national strategy to combat Islamophobia, outlining 100+ actions to curb hate, violence, bias and discrimination against Muslims and Arab Americans.

Islamophobia

Islamophobia is an extreme fear of and hostility toward Islam and Muslims which often leads to hate speech, hate crimes, as well as social and political discrimination.

International Day to Combat Islamophobia :

- **March 15, every Year**
- **It was designated by United Nation in 2022**

About National Strategy of White House

- **Key Objectives and Focus Areas:** The strategy focuses on 4 main pillars:
  - **Raising Awareness:** Enhancing public understanding of anti-Muslim and anti-Arab hate and recognising the contributions of these communities to American society.
  - **Ensuring Safety and Security:** Implementing targeted measures to protect vulnerable communities.
  - **Reducing Discrimination:** Promoting accommodation of religious practices and addressing biases in federally funded activities.
  - **Building Solidarity:** Encouraging cross-community collaboration to counter hate and discrimination.
- **Key Measures and Actions:**
  - **Data Collection and Education:** Enhanced data collection to monitor hate crimes. Launch of educational initiatives to promote awareness about Islamophobia and Arab discrimination.
  - **Hate Crime Reporting:** Dissemination of best practices for engaging communities in reporting hate crimes.

United Nations Internal Justice Council

Syllabus Mapping: International Organisation

Context

Former Supreme Court Judge Justice Madan B Lokur was recently appointed as the Chairperson of the United Nations Internal Justice Council.

About United Nations Internal Justice Council (IJC)

- IJC operates under the UN Secretary-General with oversight from the General Assembly.
- **Aim:** To strengthen the administration of justice within the UN by ensuring a fair and transparent system for dispute resolution among staff and management.
- **Powers and Functions:**
  - **Search for Judges:** Identifies and interviews candidates for vacancies in the **UN Dispute Tribunal (UNDT) and the UN Appeals Tribunal (UNAT).**
  - **Recommendations:** Recommends two or three candidates for each vacancy to the General Assembly, ensuring geographical diversity.
  - **Oversight:** Provides inputs on the implementation of the justice system to the General Assembly.
- **Appointment of Chairperson:**
  - **Procedure:** The Chairperson is selected by consensus from **4** other members of the Council & Appointed officially by the **UN Secretary-General.**
  - **Term: 4 years (Justice Lokur's tenure will end in November, 2028).**

Bangladesh anti-graft panel to probe Russia-backed Rooppur nuclear project

Syllabus Mapping: International Developments

Context

An anti-corruption outfit in Bangladesh has initiated an investigation into the $12.65 billion **Rooppur nuclear powerplant.**

About Rooppur Nuclear Power Plant

- **Location:** Pabna district, 160 km from Dhaka (on the eastern bank of **Padma (Ganga)** river)
- It is **Bangladesh's first nuclear power plant.** It consists of **twin 1,200-megawatt units.**
- Its construction started in **2017**. After completion it will become **Bangladesh's largest power station** in terms of generating capacity once fully operational.
- This project is supported by the **International Atomic Energy Agency**.
- **India's role in the project:**
  - The Rooppur project is the first initiative under an **Indo-Russian deal to undertake atomic energy projects in third countries.**
  - The **Nuclear Power Corporation of India (NPCIL)** is the project's lead authority from India.
  - India is not a member of the **Nuclear Suppliers Group (NSG)** and hence **cannot participate directly** in construction of atomic power reactors.
- **India has signed civil nuclear agreements with 14 countries:** USA, France, Russia, Canada, Argentina, Australia, Sri Lanka, UK, Japan, Vietnam, Bangladesh, Kazakhstan, South Korea and Czech Republic.

International Atomic Energy Agency (IAEA)

- It is an autonomous international organisation **(established in 1957)** within the **United Nations system.**
- It seeks to maximise the contribution of nuclear technology to society while verifying its peaceful use.
- **Member States: 175 (**India has been a founding member of The IAEA)
- **Headquarter**: Vienna, Austria.

Nuclear Suppliers Group (NSG)

- NSG is a **group of nuclear supplier countries** established in **1974.**
- **Members: 48 (Including 5 nuclear weapon states US, UK, France, China, and Russia)**.
- Decisions, including on membership, are made by **consensus.**
- **India is not a member.** (China objects India's membership citing India is not a signatory to NPT)
- It is an **informal organization, and its guidelines are not binding.**
- It aims to contribute to the **non-proliferation of nuclear weapons** through the implementation of two sets of Guidelines for nuclear exports and nuclear-related exports.
- NSG guidelines are design**ed to prevent nuclear trade for peaceful purposes from contributing to the proliferation of nuclear weapo**ns.

Air independent propulsion (AIP) systems in submarines

Syllabus Mapping: Armed Forces, Defence Technology

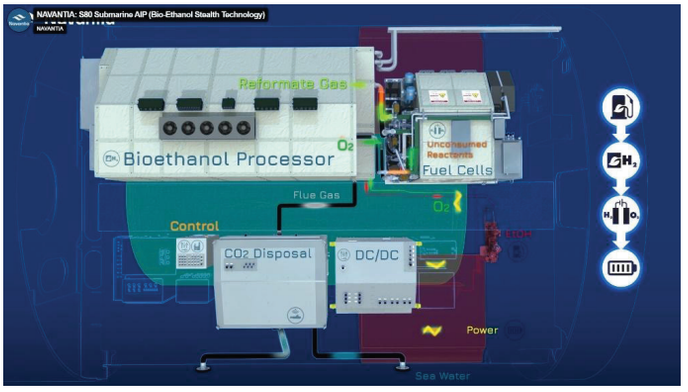
Context

Larsen and Toubro (L&T) and its Spanish partner Navantia have showcased the integration of a hydrogen-based air-independent propulsion (AIP) into an S-80 class diesel-electric submarine. This AIP system is also known as Bio-Ethanol Stealth Technology (BEST)

About Air-independent propulsion (AIP) developed by Navantia

- It is a technology that allows non-nuclear submarines to operate under the sea for longer period of time without the need of the coming to surface.

- This plant is based on a bioethanol reforming process – a renewable fuel obtained from organic feedstock – to produce a Hydrogen-rich stream that is fed, together with pure Oxygen, to a fuel cell to generate electrical power stealthy.



- Navantia's AIP is a third-generation system that does not require stored hydrogen on board.
- **Advantages:**
  - **Increase underwater endurance:** AIP allows submarines to stay submerged longer than conventionally powered submarines.
  - **Augment or replace diesel-electric propulsion:** AIP can be used in addition to or instead of a submarine's diesel-electric propulsion system.
  - **Can be installed in existing submarines:** AIP systems can be added to existing submarines by inserting a new hull section.
  - **Enhanced Stealth**: Since AIP submarines do not need to surface as often, they are less detectable, providing a strategic advantage.
- **Limitations:**
  - **Complexity and Cost:** AIP systems can be more complex and expensive to maintain than traditional diesel-electric systems.
  - **Limited Power Output:** Some AIP technologies may not provide enough power for high-speed maneuvers or extensive combat operations.
  - **Fuel Supply:** Systems like fuel cells require a reliable supply of hydrogen, which can be logistically challenging.

MH-60R multi role Helicopters

Syllabus Mapping: Armed Forces, Defence Deal

Context

The United States has approved a possible $1.17-billion deal to sell India support equipment for MH-60R multi-role helicopters under its Foreign Military Sales programme.

About MH-60 R - Sea Hawk Helicopter

- It is the world's most advanced maritime helicopter manufactured by **Lockheed Martin (USA).**
- It is an all-weather helicopter designed with state-of-the-art avionics and sensors.
- **Features:**
  - It is equipped with sensors such as a multi-mode radar, electronic support measures system, electro-optical or infrared camera, datalinks, aircraft survivability systems, dipping sonar and sonobuoys.
  - It is designed for various missions such as;
    - Anti-submarine warfare (ASW)
    - anti-surface warfare (ASuW)
    - search and rescue (SAR)
    - Medical evacuation (MEDEVAC) and vertical replenishment (VERTREP).
  - **Weapons:** It is armed with torpedoes, air-to-ground missiles, rockets and crew-served guns including Hellfire air-to-surface missiles and Mark 54 anti-submarine torpedoes.

Anti Drone Unit

Syllabus Mapping: Armed Forces, Defence Technology

Context

The Union Home Minister and Minister has announced that India will soon establish a **comprehensive anti-drone unit** to protect the nation against drone-related threats.

Development of Anti-Drone Technology - Laser-Equipped Anti-Drone Gun Mount System

- It is developed through a "whole government approach" involving border forces, the Ministry of Defence, DRDO and research departments.
- It has resulted in **55% interception of drone intrusions** along the Punjab International Border, a marked improvement **from 3% earlier.**

- **Need of Anti-Drone Measures:**
  - The threat of drone-based intrusions is increasing and is expected to pose greater challenges in the future.
  - Drones are being used for smuggling weapons, narcotics, and counterfeit currency across borders.

Dronaam

- India's defence capabilities have been significantly enhanced with the deployment of the Dronaam counter-drone system.
- It is developed by **Bharat Electronics Limited (BEL)** in collaboration with **Gurutvaa Systems Pvt Ltd.**
- This system is designed to detect, track, and neutralize rogue drones, which have become a growing threat, particularly along India's borders.

Key Features of Dronaam:

- **Detection:** Equipped with radar that can identify drones from several kilometers away.
- **Tracking:** Utilizes electro-optical and infrared sensors for real-time monitoring of drone activity.
- **Neutralization:** Employs RF (radio frequency) jammers to disrupt drones' communication and GPS, effectively rendering them non-operational.

Minority Groups of Sweden

- The Norwegian Parliament has issued a formal apology to Sami, Oven and Forest Finn people and outlined several resolutions to address discrimination they still face in the country.

– **Sami:** They are an **indigenous group** who have been living in northern Norway for centuries.

- Sami culture includes **traditional clothing** called **"kofte", song and a deep relationship with nature.** They also have a rich song tradition called **"joik".**

– **Kvens:** Descendants of migrants from the Torne River Valley (present-day Sweden and Finland) who settled in Norway. They historically practiced slash-and-burn farming, fishing and blacksmithing.

– **Forest Finns**: Descendants of immigrants from eastern Finland who settled in Sweden and then moved to Norway in the 1600s. They have a distinct cultural identity and language.

Organisation for the Prohibition of Chemical Weapons (OPCW)

Context: The 2024 OPCW The Hague Award was conferred upon the Indian Chemical Council (ICC)

OPCW:

- OPCW is an **intergovernmental organisation** and the implementing body for the **Chemical Weapons Convention (CWC)**.
- It works to eliminate chemical weapons and the threat of their use. **(HQ- The Hague, Netherlands)**
- **Membership: 193 Countries.**
- **In 2013,** OPCW was awarded the **Nobel Peace Prize** for its efforts in chemical weapons elimination.

Chemical Weapons Convention (CWC)

- It is a multilateral treaty that bans chemical weapons and requires their destruction within a specified period of time. It entered into force in 1997.
- CWC currently has **193 state parties. (India ratified CWC in 1996)**

INDIAN CHEMICAL COUNCIL (ICC)

- It was established in 1938 by Acharya P. C. Ray & Rajmitra B. D. Amin
- It is dedicated to the growth and promotion of the Chemical Industry in India.
- It represents the ~ USD 187 Billion chemical industry in India.

U.S. Foreign Corrupt Practices Act (FCPA)

- FCPA is an anti-corruption law enacted in 1977 to curb bribery and corruption involving U.S. individuals and entities in foreign countries.
- It is enforced by the **Department of Justice (DOJ) and the Securities and Exchange Commission (SEC).**

Key Features of the FCPA

- **Prohibition of Bribery:** Prohibits offering, paying, promising, or authorizing anything of value to foreign officials to gain or retain business or secure an improper advantage.
- **Scope of Application - Who is Covered?**
  - **U.S. Individuals and Companies:** Includes citizens, residents, and corporations operating in or from the U.S.
  - **Foreign Companies and Nationals:** If their activities have a connection to the U.S., such as using U.S. banking systems.
  - **Publicly Listed Companies:** All companies listed on U.S. stock exchanges are subject to the FCPA's accounting provisions.
- **Jurisdiction:** Applies to actions conducted anywhere in the world if they involve U.S. entities or their agents.

D-8 Organization for Economic Cooperation

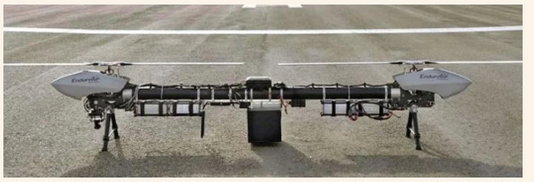
- D-8 is an organization for economic cooperation among **Bangladesh, Egypt, Indonesia, Iran, Malaysia, Nigeria, Pakistan and Turkey.**
  - In its latest summit held in Cairo, Egypt, **Azerbaijan** has joined as the newest member of D-8.
  - Azerbaijan, will now move forward to complete the accession process by ratifying the D-8 Charter.
- It was established in **1997 through the Istanbul Declaration.**
- Its secretariat is based in **Istanbul, Turkey.**
- **Objectives:**
  - To improve member states' position in the global economy
  - Enhance participation in decision-making at international level
  - Improve standards of living.

INS Tushil

- **Context:** INS Tushil, the latest multi-role stealth-guided missile frigate, was commissioned into the Indian Navy.
- Part of the Krivak III class (Project 1135.6).
  - 7th in the series of Krivak III frigates (3 Talwar-class frigates and 3 Teg-class ships).
  - Built at Yantar Shipyard in Kaliningrad, Russia.
  - Speed of over **30 knots**
- It will join the Indian Navy's '**Sword Arm**', the Western Fleet under the Western Naval Command.

Sabal-20 logistics drones

- The Sabal-20 logistics drones have been delivered to the Indian Army for operations in the eastern sector. They are procured from **EndureAir Systems.**
- **Key Features:**
  - Electric unmanned helicopter with a payload capacity of up to 20 kg.
  - Supports long-range deliveries and high-altitude operations.
  - Suitable for precision logistics in rugged terrains.
- **Technology:**
  - **Vertical Take-Off and Landing (VTOL)** for confined and rugged terrains.
  - Low RPM Design: Reduces noise, enhancing stealth for sensitive missions.



Exercise CINBAX

- The 1st edition of Joint Table Top Exercise, **CINBAX between India and Cambodia** commenced at Foreign Training Node, Pune.
- The exercise is aimed at wargaming **Counter Terrorism (CT)** operations under **Chapter VII of the United Nations Charter**.
- **Focus Areas:** Information operations, Cyber and Hybrid warfare, Logistics and casualty management, Humanitarian Assistance and Disaster Relief (HADR) operations.

Exercise AGNI WARRIOR

- The **13th edition** of Joint Military Exercise **AGNI WARRIOR (XAW-2024)**- A bilateral exercise between the **Indian Army and Singapore Armed Forces**, concluded at Field Firing Ranges, Devlali (Maharashtra).
- The first edition of the exercise was conducted in **2004.**

India-Malaysia joint military exercise - Harimau Shakti

- The 4th edition of **HARIMAU SHAKTI** started at **Bentong camp, Pahang district, Malaysia.**
- It is an annual training event conducted alternatively in India and Malaysia.
  - In 2023 it was conducted at **Umroi Cantonment in Meghalaya, India.**
- **Aim:** To enhance joint military capability of both sides to undertake counter insurgency operations in jungle terrain.

Exercise Desert Knight

- It is a trilateral air combat exercise between **India, France and the UAE.**
- This exercise is a part of the **trilateral framework established in 2022** by the foreign ministers India, France & UAE. It includes collaboration in defence, technology, energy and environment.
- It was conducted in **Arabian Sea,** approx. 350-400 km southwest of Karachi.
- **Past similar exercises:** Last year, the navies of India, France and the UAE also conducted their **first-ever trilateral maritime partnership exercise.**
- **Other Defence Exercises between India & France:** Shakti (Army), Varuna (Navy) and Garuda (Air Force).

SRI LANKA–INDIA EXERCISE - 24 (SLINEX-24)

- It is a **Bilateral Naval Exercise between India & Sri Lanka.**
- It was established in **2005.** This year it was held in **Vishakhapatnam** under the aegis of the **Eastern Naval Command.**
- The exercise was held in two phases —the Harbour Phase (from December 17 to 18) and the Sea Phase (December 19 to 20).
- It will strengthen the ties between the two maritime neighbours and contributed towards creating a safe and rule-based Maritime domain domain**.**

Note: Joint Military exercise between both countries: Mitra Shakti

Khalistan Zindabad Force (KZF)

- Recently Three pro-Khalistan operatives (KZF members) linked to a recent grenade attack in Punjab were killed in an encounter in Pilibhit district of Uttar Pradesh.
- KZF is a militant group which was established by **Ranjeet Singh Neeta in 1993.**
- It is a part of the Khalistan movement to create a separate country Sikh homeland called Khalistan by carving Punjab and some parts of neighbouring states of Haryana, Rajasthan and Himachal Pradesh out of Indian union.
- KZF is listed as a terrorist organisation under the **Unlawful Activities (Prevention) Act.** It is also banned in **European Union nations.**

POLITY & GOVERNANCE

TOPICS FOR MAINS

One Nation One Election (Simultaneous Election)

Syllabus Mapping: GS Paper 2, Elections

Context

Two Constitution Amendment bills aimed at establishing a mechanism for simultaneous elections were formally introduced in Lok Sabha: the **Constitution (129th Amendment) Bill, 2024 and the Union Territories Laws (Amendment) Bill, 2024.**

Quote

"We must go back to the situation where the elections to Lok Sabha and all the Legislative Assemblies are held at once" – Justice B P Jeevan Reddy

Simultaneous Elections

- Simultaneous elections, also known as **synchronised elections** or **one-nation-one-election,** refer to the practice of holding **multiple elections** for various levels of government (such as national and state) at the **same time** or on a **synchronised schedule.**
- This would mean that the **voters will cast their vote** for electing members of the Lok Sabha and the state assemblies on a **single day, at the same time** (or in a phased manner as the case may be).
- India experienced simultaneous elections for Lok Sabha and State Legislative Assemblies till 1967 elections. Since then the disruption of the cycle of simultaneous elections means that India faces 5 to 6 elections every year. If we include local bodies, the number of elections increases manifolds.

Need for 'Simultaneous Elections'

- **Financial burden of conducting multiple elections:** Frequent elections burden the government exchequer with additional expenditure. If the expenditure incurred by political parties is also added, these figures will be even higher.
- **Asynchronous elections cause uncertainty and instability,** thwarting supply chains, business investments, economic growth, quality of public expenditure, educational and other outcomes besides upsetting social harmony.
- **Disruption of government machinery** due to asynchronous elections causes hardship to citizens.
- **Frequent use of government officials and security forces** adversely affect discharge of their regular duties.
- **Frequent imposition of the Model Code of Conduct (MCC) causes policy paralysis** and slows down the pace of the developmental programmes.
- **Staggered elections induce 'voters' fatigue'** and present a significant challenge in ensuring their participation in public life in general and elections in particular.

Ramnath Kovind Committee (2024)

Constituted by the Central Government to explore and make recommendations on conducting simultaneous elections to Lok Sabha, State Legislative Assemblies and Local Bodies.

Headed by former President of India Shri. Ramnath Kovind.

The committee suggested Constitutional Amendments for paving way for simultaneous elections at Lok Sabha, Legislative Assemblies and Local Bodies. This will be achieved in two phases:

- **Phase I:** Simultaneous Elections will be held for Lok Sabha and State Legislative Assemblies. For this, no ratification by the States will be required for the Constitutional Amendment.
- **Phase II:** Elections for local bodies (rural and urban) will be synchronized with Lok Sabha and Legislative Assembly elections, ensuring they are conducted within 100 days of the latter. This step will require a constitutional amendment with ratifications of more than half the states.
- **Single Electoral List:** Constitutional Amendment to enable Election Commission of India to prepare a single Electoral List and EPIC card for all elections to local bodies, Legislative Assemblies and Lok Sabha. Currently, State Election prepares a separate voter list for elections to local bodies. This step will require a constitutional amendment with ratifications of more than half the states.
- **Fresh elections for 'unexpired term' of the house** in case of no-confidence motion, hung house or similar events.
- **Planning by Election Commission along with State Election Commissions** for planning to meet logistical requirements for conducting free and fair 'simultaneous elections'.

Proposed Amendments Align With the Recommendations of Ramnath Kovind Panel on Simultaneous Election

Constitution (One Hundred and Twenty-Ninth Amendment) Bill, 2024

It aims to amend 3 articles of the Constitution and introduce a new article, Article 82A(1-6).

Article 82A: Provisions for Simultaneous Elections

- **Clause (1)**: The President will determine the date when the proposed amendments come into effect, aligning with the date of the first sitting of the newly elected Lok Sabha.
- **Clause (2)**: The terms of all state Assemblies elected after the appointed date, and before the current Lok Sabha's term ends, will conclude at the end of the Lok Sabha's five-year term.
- **Clause (3)**: The Election Commission of India (ECI) will be responsible for conducting simultaneous elections for the Lok Sabha and all state Legislative Assemblies.
- **Clause (4)**: Simultaneous elections are defined as general elections held concurrently for both the Lok Sabha and all state Legislative Assemblies.
- **Clause (5)**: The ECI may decide that specific Assembly elections cannot be held concurrently with the Lok Sabha election. In such cases, the ECI can recommend to the President that those Assembly elections be held at a later date.
- **Clause (6)**: If an Assembly election is postponed, the term of that Assembly will still end when the term of the newly elected Lok Sabha concludes.

The Union Territories Laws (Amendment) Bill, 2024

- The Bill seeks to amend three Acts:
  - Government of Union Territories Act, 1963
  - Government of the National Capital Territory of Delhi Act, 1991
  - Jammu and Kashmir Reorganisation Act, 2019
- These changes aim to align Union Territories' legislative processes with the provisions for simultaneous elections.

What is Hung Parliament?

When no party or pre-poll alliance is able to secure a majority in the election, this leads to a hung Parliament.

- The total number of seats in the Lok Sabha is 543.
- A party or coalition needs to win one seat above the 50% mark, or 272 seats, in order to form the government.
- If it is unable to do so, the President may invite the leader of the single largest party/alliance in the House to try to secure the confidence of the House.
- In the alternative, the President may invite a combination of parties who, in his opinion, might be in a position to command a majority in the House.

Advantages of Simultaneous Elections

- **Cost effective:** Reduced financial burden on the government exchequer by avoiding duplication of expenditure on intermittent elections. Simultaneous elections would result in large financial savings in terms of poll workers, security personnel, and other administrative costs.
  - Optimised use of scarce resources and result in increased capital investment and asset creation.
  - Avoidance of duplication of efforts and saving of time and energy of government officials, political workers and security forces.
- **Enhanced voter participation**: Frequent elections can lead to voter fatigue. Simultaneous elections ensure ease and convenience to voters, avoids voters' fatigue and facilitates greater voter turnout.
- **Time efficiency**: Improvement for political parties, individual candidates and the Election commission of India due to increased political stability.
- **Model Code of Conduct (MCC)**: Enforced during election periods, MCC restricts the government from announcing new policies or making significant decisions. Simultaneous elections can provide a continuity in governance.
- **Robust governance**:
  - Simultaneous elections would provide the elected administration more time to concentrate on important policy matters and long term governance.

  - Result in higher economic growth and stability as it would enable businesses to take decisions without fear of adverse policy changes.
  - Avoid disruption of supply chains and production cycles due to migrant workers seeking leave of absence to cast their vote.
  - Enhanced focus on governance and prevent policy paralysis and lead to certainty in policy making.
  - Synchronising electoral calendars would ensure availability of more time for governance and unhindered delivery of public services to citizens.
- **Reduced burden on courts:** Reduce the number of election related offences and disputes and reduce burden on courts.
- **Improved social fabric:** Holding of elections once every five years would result in mitigation of social disharmony and conflict, which is often observed during elections.

Associated challenges with the One-Nation-One Election principle

- **Dilution of local issues**: National issues overpowering local concerns can lead to **marginalisation of various sections** of the society with their neglected demands for rights on resources.
- **Imbalance of power**: A **national party** dominating the Lok Sabha elections could also sweep the state assembly elections, which can result in lack of checks and balances on the powers of the ruling regime.
- **Undermining federalism**: Simultaneous elections could undermine the federal structure of India by **concentration of power** at the centre. States may lose their autonomy as well as limited regional representation.
- **Less political stability:** In the era of coalition governments and coalitions, there can be increased instances of **horse trading** and disqualifications of MPs/MLAs.

International Perspective on Simultaneous Elections

South Africa	• In South Africa, elections are held for the National **Assembly, Provincial Legislature and Municipal Councils in a five-year cycle.** • The electoral system for National and Provincial Assemblies is based on **"party-list proportional representation",** which means that parties are represented in the proportion of electoral support to them.
Sweden	• Elections to Sweden's **County Councils and Municipal Councils** occur simultaneously with the general elections (elections to Riksdag every four years). • Whereas, the elections of the **Municipal Assemblies** occur generally on the second Sunday of September after every five years.
Belgium	• In Belgium, **one can vote in five different types of elections.** • **Elections for the Federal Parliament** are normally held every five years, coinciding with the European (and consequently also regional) elections.

Should legislatures in India have fixed tenures?

Context

The debate surrounding the Constitution (One Hundred and Twenty-Ninth Amendment) Bill, 2024, which proposes fixed five-year terms for the Lok Sabha and aligns State Legislature elections with this cycle, presents various arguments both in favor of and against fixed legislative tenures in India

Arguments in Favor of Fixed Legislative Tenures

- **Reduced Electoral Disruptions:** Fixed tenures and simultaneous elections could minimize frequent election cycles, allowing governments to focus on governance rather than continuous campaigning.
  - **Eg**: Frequent elections at different levels often disrupt policymaking due to the imposition of the Model Code of Conduct.
- **Lower Electoral Costs:** A uniform election schedule could reduce the expenditure incurred by the Election Commission and state machinery.
- **Political Stability:** Fixed tenures could provide stability, as governments would have a predetermined term, and might deter practices like defections, resignations, or horse-trading, as mid-term elections would result in shorter legislative terms.
  - **Global Eg:** Systems like the U.S. and Germany demonstrate the potential benefits of fixed tenures in providing political continuity and reducing frequent disruptions.

- **Accountability During Tenure:** Fixed tenures might compel elected representatives to focus on governance and deliver results within their limited term, enhancing accountability.

Arguments Against Fixed Legislative Tenures

- **Threat to Federalism:** Aligning the tenures of State Assemblies with Parliament undermines the autonomy of state legislatures, violating the federal structure of India.
  - **Eg**: Premature dissolution of State Assemblies to align with Lok Sabha elections weakens state-level decision-making.
- **Historical Precedents of Flexibility:** India's current system allows dissolving a legislature to resolve political crises or seek a fresh mandate.
  - Fixed tenures might take away this flexibility, leaving governments stuck in situations where they cannot function effectively.
- **Questionable Cost Savings:** The claim that simultaneous elections reduce costs may not hold, as a significant portion of election spending is incurred by political parties, not state machinery.
- **Potential Policy Paralysis:** Fixed tenures might lead to policy paralysis, especially if governments lose majority support but cannot be replaced due to the fixed term.
  - **Eg**: The U.K.'s Fixed-term Parliaments Act (2011–2022) faced criticism for triggering constitutional crises.
- **Voter Behavior and Federal Representation:** Concerns that simultaneous polls may influence voters to favor the same party for both State and Central elections, potentially undermining political plurality.
  - **Counter-Eg**: Delhi's 2014 elections, where voters distinguished between Central and State elections, demonstrate that voters are capable of making independent choices.
- **Potential for Shortened Tenures:** Fixed tenures might lead to truncated terms for newly elected governments after mid-term polls, limiting their ability to implement long-term policies.

High Pendency in Courts

Syllabus Mapping: GS Paper 2, Judiciary

Context

The issue of pending cases in Indian courts is a significant concern, with various factors contributing to the backlog.

Data of Judicial Pendency

- According to **William Gladstone**, "Justice delayed is justice denied"
- Supreme court in the **Kartar Singh Vs. State of Punjab case:** 'Speedy justice is a part of Fundamental Rights'
- Supreme court in the **Babu Singh Vs. State of UP**: 'Speedy trial is a part of social justice'
- As per **National Judicial data grid:** There are -
  - 5 Crore pending cases in the courts
  - 80,000 pending in Supreme Court
  - 61 Lakhs in High Courts
  - 4.4 Crore in Subordinate Courts (About 85% of total pending cases)

Reasons for increase in pendency of cases

- **Vacancies**: High court vacancies are about 30%. (327 vacancies out of 1114)
- **Judge-population ratio**: According to the Law commission, we need 50 judges /Million population judges, but in India we have 21judges /Million population.
- **Budget for justice:** Ministry of Law & Justice budget is about 0.1% of total budget.
- **Poor functioning of police & public prosecutors:** No differentiation between investigation & law and order. (same person involved)
- **High procedural delays:** In order to secure the presence of witnesses.
  - **Eg**: About 50% of cases are pending due to inability to secure the presence of witnesses.
- **Frequent adjournments:** Approximately half of the 90 cases listed daily in district and subordinate courts get adjourned.
  - It often leads to misuse of the judicial process by advocates and public prosecutors.

- **Lack of digital infrastructure:** Only 27% judges are digitally empowered.
- **Rising PILs**: In Supreme Court and High Courts.
  - **Eg**: Former CJI Dr. DY Chandrachud said, "Even doubling court strength won't end pendency of cases"
- **Unclear laws:** Lack of adequate deliberation on law making leads to enhanced litigation over contention legal provisions.
- **Sectoral challenges:** Pendency of cases is high in cases related to land disputes, government contracts etc. these sectors need special attention.
- **Lack of finality of intermediate stages:** The integrated nature of Indian judiciary that even small legal disputes end up to be challenged at the Supreme Court. This lack of finality at the intermediate stages leads to over litigation and pendency.
- **Lack of mainstreaming of alternative dispute resolution mechanisms:** Despite efforts to mainstream arbitration, conciliation and mediation in recent years, these mechanisms have not become the mainstream.

Government measures to address the issue

- **Increased digitization:** With the introduction of projects such as E-courts, E-prisons, E-FIR. These mechanisms are expected to increase the efficiency of court operations.
- **LIMBS**: Legal information management briefing system developed by the government of India. (GOI)
  - In most cases, GOI is the major litigant which involves various departments.
  - Under LIMBS, the case is uploaded on a platform that is accessible to all departments.
- **Alternate dispute redressal:** Mediation Act, 2021, Lok Adalat, Arbitration & Conciliation Act, Established Fast track courts.
- **Use of AI:** SUPACE, or Supreme Court Portal for Assistance in Courts Efficiency, is an AI-based portal developed by the Supreme Court.
  - **Others**: Tele law and Nyaya-mitras

Way Forward

- **Establishment of All India Judicial services** (As proposed by the President on Constitution Day, 2023)
- **Filling up judicial vacancies and increasing strength of judges** in various high courts.
- **Increase in the budget of Ministry of Justice** to improve judicial infrastructure.
- **Structural Reforms**: Identify and address delays at critical stages like evidence collection, summons issuance, and documentation accuracy.
  - Improve case records (roznama) to ensure accurate tracking of case stages.
- **Improve Legal Aid Access:** Allocate more resources to strengthen free legal aid systems.
  - Raise awareness about legal aid among underprivileged undertrials.
- **Balanced Approach to Adjournments**: Avoid rigid limits on adjournments; evaluate the justification based on case-specific needs.
- **Responsible Use of Technology**: Enhance video conferencing facilities while safeguarding the rights of undertrials.
  - Address issues of intimidation and ensure confidentiality during proceedings.
- **Mainstreaming of ADR mechanisms:** Mechanisms such as arbitration, mediation and conciliation if mainstreamed have a potential to reduce judicial pendency particularly for commercial and business cases, improving ease of doing business.

In conclusion, Fundamental right is not just fair trial but also clubbed with speedy trial that could lead to a just society.

Electronic Monitoring Of Prisoners

Syllabus Mapping: GS Paper 2, Prison Reforms

Context

The report "Prisons in India: Mapping Prison Manuals and Measures for Reformation and Decongestion", released by President Droupadi Murmu highlights overcrowding in Indian prisons and proposes measures for decongestion, including electronic tracking of prisoners.

Benefits of Electronic Tracking

- **Cost-Effectiveness:** The implementation of electronic monitoring could significantly reduce costs associated with incarceration.
  - **E.g.,** Maintaining a single undertrial prisoner in Odisha costs approximately Rs 1 lakh annually, while the cost of an electronic tracker is estimated to be between Rs 10,000 to Rs 15,000.
- **Reduction in Overcrowding:** Indian prisons had an occupancy rate of 131.4% as of December 2022, with 573,220 inmates compared to a capacity of 436,266 (**NCRB**)
  - Electronic tracking could allow low and moderate-risk undertrials to remain in the community while being monitored, thereby alleviating prison overcrowding.
- **Improved Rehabilitation**: By allowing undertrials to stay in their communities, electronic tracking facilitates continued education and employment opportunities.
  - This support is crucial for maintaining family connections and aiding reintegration into society.
- **Enhanced Monitoring:** Electronic tracking provides a reliable means to ensure compliance with release conditions.
  - This can help reduce the risk of absconding or re-offending while maintaining oversight without the need for constant physical incarceration.
- **Administrative Efficiency:** The use of electronic trackers could reduce the administrative burden on law enforcement agencies by minimizing the resources needed to monitor individuals on bail or parole.

Challenges Associated with Electronic Tracking

- **Privacy Concerns**: The use of electronic monitoring raises significant privacy issues.
  - **Eg: Supreme Court in July 2023** struck down a Delhi HC bail condition requiring location tracking on Google Maps, citing violations of privacy under Article 21.
- **Technical Reliability:** Effectiveness of electronic tracking systems is contingent upon the reliability of technology.
  - **Eg**: Issues such as device malfunctions or signal loss can undermine monitoring efforts and lead to potential failures in compliance enforcement.
- **Stigmatization:** Visible devices such as ankle monitors lead to social isolation.
  - **Prisons in India report** highlighted that these devices lead to psychological distress, including anxiety and depression
- **Cost Implications**: While initial costs may be lower than incarceration, establishing a comprehensive electronic tracking system requires significant investment in technology and training for law enforcement personnel.
- **Potential for E-Carceration**: Critics argue that electronic monitoring could simply extend incarceration into the community, creating an environment of constant surveillance akin to "e-carceration."

Key Recommendations: Prisons in India Report

- **Limited Application**: Suggested for **grave and heinous crimes** where the accused has prior convictions.
  - Aligns with the **268th Law Commission Report**, which advocates legislative amendments for proper regulation.
- **Safeguards and Guardrails**: Ensure privacy protection and obtain informed consent from inmates.
  - Devices should not exacerbate inequalities or stigmatization.
- **Government Responsibility for Costs**: Avoid passing financial burdens onto monitored individuals to prevent penalizing economically vulnerable populations.
- **Balanced Use**: Tracking should complement judicial processes, not replace or undermine them.

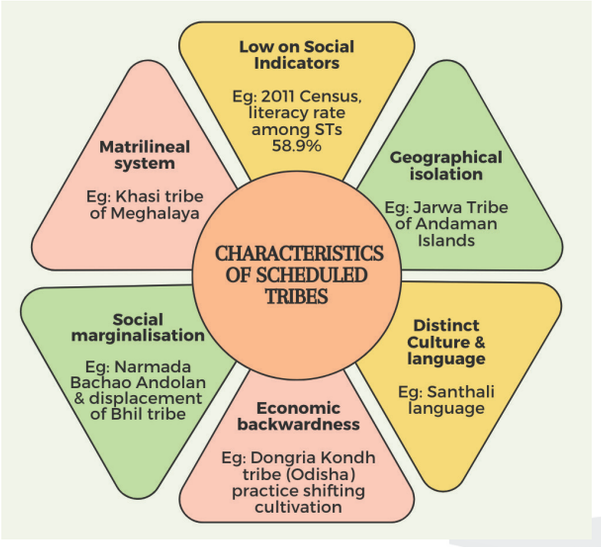
Scheduled Castes and the Scheduled Tribes (Prevention of Atrocities) Act, 1989 (SC/ST Act)

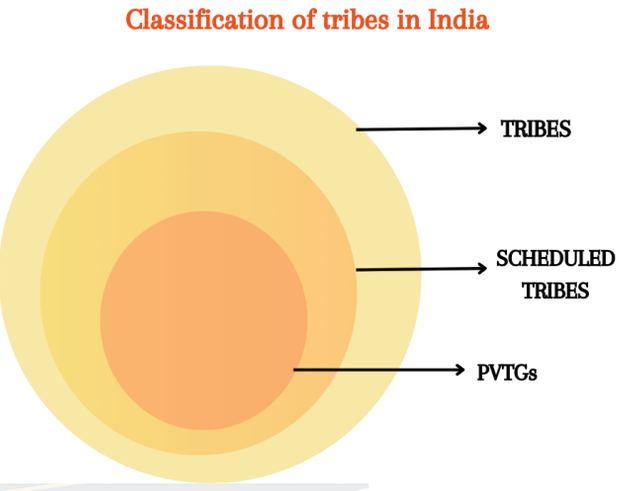
Syllabus Mapping: GS Paper 2, Social Justice, Vulnerable Sections

Context

The Union government said that "growing awareness, wider publicity, and capacity building of police personnel" were among the reasons for the increasing number of cases being registered across the country under the Scheduled Castes and Scheduled Tribes (Prevention of Atrocities) Act.

Constitutional mechanisms to promote Social Justice for Scheduled Tribes





ARTICLE	PROVISION
Article 46	Mandates the promotion of their educational and economic interests.
Article 330 & 332	Reservation of seats for STs in Lok Sabha and State Legislative Assemblies
Article 244	Allows for special administration of Scheduled Areas and Tribal Areas through provisions of Fifth and Sixth Schedule.
Article 338A	National Commission for Scheduled Tribes (NCST) established through the 89th Amendment Act, 2003.
Article 342	The President, after consultation with the Governor, specified tribes deemed to be STs in the State/UT.
Article 366	Defines STs as tribes or tribal communities which are deemed under Article 342 of the Constitution

Constitutional mechanisms to promote Social Justice for Scheduled Caste

ARTICLE	PROVISIONs
Article 15	State to create provision for socially & economically backward classes in educational institutions
Article 16	State to create provision for socially & economically backward classes in public employment
Article 17	Abolishes the practice of untouchability
Article 46	State to promote interests of SC/ST population
Article 330	Reservation of seats in the Lok Sabha
Article 332	Reservation of seats in State legislative assemblies
Article 335	Responsibility of State to safeguard the interests of SC/ST people in public employment
Article 338	National commission for Scheduled Caste set up by President
Article 341	Empowers President of India to notify the list of Scheduled Castes
Article 342	Empowers President of India to notify the list of Scheduled Tribes

Quotes on Caste

DR. B.R. Ambedkar	**In the Annihilation of Caste:** 'Caste is not just the division of labour, but it is the division of labourer's'.
Bhagat Singh, 1928	Article - **The problem of untouchability**, "The so-called untouchables are the real sustainers of life".
Rajni Kothari	'Usually people cast their vote, but in India people vote their caste'
Jyotirao Phule	'Caste has no sanction from reason or morality. It is a tool for the privileged to exploit and oppress the lower castes'

Former CJI, Justice P.B. Gajendragadkar	"The caste system is one of the most disgraceful remnants of India's past and must be completely eradicated if we are to build a modern, equitable society."
CJI DY Chandrachud	'True Solution Lies Not In Making Society Casteless, But In Finding Justice For Victims Of Caste Discrimination'

About SC/ST Act

- Enacted to prevent caste-based discrimination and violence against Scheduled Castes (SCs) and Scheduled Tribes (STs).
- Rooted in **Articles 15 and 17** of the Indian Constitution, ensuring protection for marginalized communities.
- Aims to address gaps in earlier laws like the **Untouchability (Offenses) Act, 1955**, and the **Protection of Civil Rights Act, 1955**.
- The **Central Government** frames rules for implementation.
- Administered by **State Governments** and **Union Territories** with central assistance.

Key Provisions

- **Definition of Atrocities**: Includes offenses like physical violence, harassment, social discrimination, and other caste-based violations.
  - Recognizes these acts as "atrocities" and prescribes stringent penalties.
- **Stringent Punishments**: Higher penalties than those under the **Indian Penal Code, 1860** (now **Bharatiya Nyaya Sanhita, 2023**).
- **Anticipatory Bail Exclusion**: **Section 18** excludes anticipatory bail provisions under **Section 438 of CrPC** (now **Bharatiya Nagrik Suraksha Sanhita, 2023**).
- **Special Courts and Protection Cells**: Special courts for speedy trials and **SC/ST Protection Cells** at the state level, led by senior police officers, ensure enforcement.
- **Investigation Protocols**: Investigations must be conducted by officers of rank **DSP or higher**.
- **Victim Support**: Relief and rehabilitation measures include financial compensation, legal aid, and other support services.
- **Exclusions:** The Act does not cover offenses committed between members of SCs and STs.
  - Cannot be invoked against another SC/ST member.

Recent Amendments

- **Scheduled Castes and Scheduled Tribes (Prevention of Atrocities) Amendment Act, 2015**:
  - Expanded the scope of atrocities to include offenses like:
    - Garlanding with footwear.
    - Forcing manual scavenging.
    - Imposing social or economic boycotts.
  - Outlawed specific practices such as:
    - Sexual exploitation and intentional non-consensual touching of SC/ST women.
    - Dedicating SC/ST women as **devadasis**.
  - Public servants neglecting duties related to SCs and STs face imprisonment.
- **Scheduled Castes and Scheduled Tribes (Prevention of Atrocities) Amendment Act, 2018**:
  - Removed the requirement for **Senior Superintendent of Police (SSP)** approval for arrests.
  - Allowed **immediate arrests** without prior approval.

Drawbacks of the SC and ST Act, 1989

- **Functioning of Special Courts: Many Special Courts are designated only for specific purposes and not fully functional resulting in backlogs of atrocity related cases. Also, there is often a delay in the constitution of special SC/ST courts. Also, the constitution of special courts diverts the limited judicial bandwidth away from the vast majority of cases increasing judicial pendency.**
- **Provisions Regarding Rehabilitation:**
  - No specific provisions address the broader physical, psychological, or social challenges faced by victims.

  - Victims often deal with feelings of insecurity, social avoidance & financial struggles.
- **Lack of Awareness: Some police officers, prosecutors, and judicial officials are also unaware or misapply the provisions of the Act.**
- **Few Crimes Not Covered: Certain offenses, like blackmailing, are not classified as atrocities under the Act.**
- **Issues with FIR Registration: In** Subhash Kashinath Mahajan vs. The State of Maharashtra (2018)**, A two-judge bench ruled that preliminary inquiry was required before registering an FIR under the Act.**
  - **Approval from a superior officer was needed before arresting a public servant.**
- **Misuse of Act: There are reports of increasing misuse of this act by certain members of the SC/ST community against other members.**

Way Forward

- **Strengthen Special Courts**: Enhancing recruitment and training of judicial officers to expedite case resolution.
- **Expand Rehabilitation Measures**: Introduce comprehensive rehabilitation programs addressing physical, psychological, and economic needs.
- **Awareness Campaigns**: Incorporate training on the SC/ST Act into police and judicial curricula.
- **Safeguards Against Misuse**: Introduce checks and balances to minimize false accusations while ensuring genuine cases are not ignored.
- **Broaden the Definition of Atrocities**: Amend the Act to include crimes like blackmail, psychological harassment, and other forms of abuse not currently covered.

U.K. Assisted Dying Bill

Syllabus Mapping: GS Paper 2, Rights Issues

Context

The House of Commons voted in favour of the Terminally Ill Adults (End of Life) Bill.

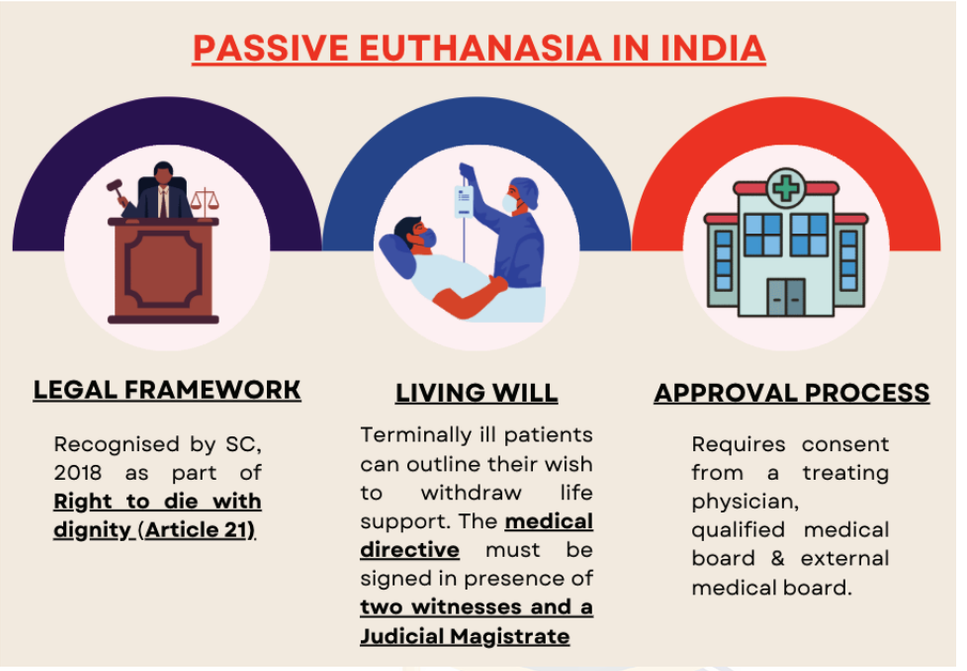
Current position on assisted dying: UK

- **Legal Status**: Assisted dying and euthanasia are currently illegal in the U.K. Assisting suicide is an offense punishable by up to 14 years in prison under the **Suicide Act 1961**.
- **Previous Attempts**: Since 2013, at least three bills addressing assisted dying have been introduced in Parliament but failed to pass.
- **Public Debate over Assisted Dying:**
  - **Proponents** argue that the law would allow terminally ill patients to end their suffering humanely and reduce the risk of individuals resorting to unregulated methods.
  - **Detractors** express concerns about potential misuse, especially among vulnerable groups, and emphasize the need to improve palliative care instead.

Provisions of the Terminally Ill Adults (End of Life) Bill

- **Eligibility for Assisted Dying**:
  - Terminally ill adults over 18 years with a prognosis of less than six months to live.
  - Applicants must have the mental capacity to make the decision.
  - Excludes individuals with disabilities or mental disorders.
- **Residency**: Applicants must have been registered residents in England or Wales for at least 12 months before making the request.
- **Procedure**:
  - **First Declaration**: Signed by the patient in the presence of a coordinating doctor and a witness.
  - **Assessments**:
    - A coordinating doctor confirms the patient's eligibility and voluntary decision.
    - An independent doctor conducts a second assessment after a seven-day reflection period.
    - Disagreements between doctors are referred to a third independent doctor (only once)

- **Judicial Review**:
  - The High Court ensures compliance with all legal requirements, and decisions can be appealed.



Comparison

- **UK Bill**: Actively allows patients to end their life through self-administered substances under strict safeguards.
- **India**: **Recognizes only passive euthanasia**, enabling patients to decline life support but not actively end their life.

In conclusion, both approaches aim to respect patient autonomy while balancing ethical concerns, but the UK Bill introduces a more active role for patients in end-of-life decisions.

POSH Act Applies to Political Parties

Syllabus Mapping: GS Paper 2, Social Issues

Context

The Supreme Court of India recently addressed a Public Interest Litigation (PIL) concerning the applicability of the Sexual Harassment of Women at Workplace (Prevention, Prohibition and Redressal) Act, 2013 (POSH Act) to political parties. The court directed to first approach the Election Commission of India (ECI) as they were the competent authority.

Role of Election Commission of India

- **Article 324:** Grants ECI the power of superintendence, direction, and control over elections to the Parliament, State Legislatures, the Office of the President, and the Vice-President.
- **Compliance with Laws:** The ECI has the authority to issue advisories and guidelines to political parties to ensure adherence to laws during elections.
  - **Eg**: Instructing parties to comply with **Child Labour (Prohibition and Regulation) Act, 1986** during campaigns.
- **Transparency and Accountability:** The ECI ensures political parties disclose contributions and audited accounts, aligning with the **Right to Information Act, 2005**.
  - **Eg**: Publishing financial information of parties based on the 2013 **Central Information Commission (CIC)** ruling.

CIC Ruling 2013

In **2013**, **CIC** issued a landmark ruling declaring that **political parties** would be considered **public authorities** under the **Right to Information Act, 2005 (RTI Act)**.

Kerala High Court (2022) Case

- **Case**: Centre for Constitutional Rights Research and Advocacy v. State of Kerala & Ors.
- **Verdict**:
  - Political parties do not have a formal employer-employee structure.
  - Parties do not constitute a workplace as defined under the POSH Act.
  - Therefore, they are not mandated to establish ICCs.

Existing Rules or Mandates for Protection

- **POSH Act, 2013**:
  - **Purpose**: Protects women from sexual harassment in workplaces (public and private).
  - **Requirement**: Mandates the formation of an **Internal Complaints Committee (ICC)** in workplaces.
  - **Definition of Workplace**:
    - Public sector bodies
    - Private sector companies
    - Hospitals, nursing homes, sports venues
    - Locations visited by employees during employment

Associated challenges

- **Ambiguous Authority Over Internal Party Affairs:** The ECI's powers are largely related to elections. Its role in enforcing internal governance within parties, such as creating mechanisms for addressing sexual harassment, is unclear and limited.
- **Workplace Definition:** The POSH Act applies to workplaces, but political parties lack a conventional employer-employee structure.
- **Lack of Enforcement Mechanisms:** The ECI can issue advisories, but it does not have punitive powers to enforce compliance with laws like the POSH Act within political parties.
- **Resistance from Political Parties:** Parties often resist external regulation in internal matters, as seen in their non-compliance with the RTI Act, despite the CIC's ruling.

Way Forward

- **Internal Complaints Committees (ICCs)**: Political parties should be encouraged with women and external members to establish ICCs to address sexual harassment complaints.
- **Revamping definition of "Workplace"**: The definition of "workplace" should be revisited in the context of political parties, taking into account the mobile and varied nature of their operations.
- **Employer-Employee Relationship**: There needs to be a legal framework that clarifies the concept of "employer" within political parties.
- **Collaboration with ECI**: Given its role in overseeing political party functioning, ECI should collaborate with parties to issue guidelines that align their internal processes with the POSH Act.

Reservation and Religion

Syllabus Mapping: GS Paper 2, Reservations, Affirmative Action

Context

Recently, the Supreme Court of India stated that **"reservation cannot be on the basis of religion."** This remark came during the hearing of appeals challenging the Calcutta High Court's decision to **invalidate reservations granted to 77 communities**, primarily from the **Muslim community, under the Other Backward Classes (OBC) category.**

Calcutta High Court Decision (2024)

- On **May 22, 2024**, **Calcutta High Court** struck down OBC reservations for **77 classes**, of which **75 were Muslim**. The court ruled that the reservations were granted **without objective criteria** to establish backwardness.
- It observed that **religion** appeared to be the **sole basis** for identifying these communities as OBCs, violating the principles set forth in the **Indra Sawhney case**.

Religion as a Criterion for OBC Reservations

Constitutional Framework for Religious Groups in Reservations

- The Constitution **does not explicitly prohibit** identifying **religious groups** as **beneficiaries of reservations**. However, such inclusions have primarily occurred within the **OBC category**.
- **Article 16(4)** of the Constitution empowers states to provide reservations for "any backward class of citizens" that is inadequately represented in state services.
- **Instances of Inclusion:**
  - **Kerala** included Muslims within the OBC quota in **1956**.
  - **Karnataka** followed in **1995**.
  - **Tamil Nadu** extended similar provisions in **2007**.

Karnataka and the Role of Backward Classes Commissions

- In Karnataka, OBC reservations for Muslims were introduced based on the **Third Backward Classes Commission** report (1990), chaired by **Justice O. Chinnappa Reddy**. The report identified **Muslims** "as a whole" as **socially and economically backward**.
- **Justice Rajender Sachar Committee** report (2006) also highlighted the **low representation** of Muslim OBCs in **Central Government departments**. It emphasized that the benefits of backward class entitlements had yet to **reach Muslim communities**.

Indra Sawhney Judgment

- In the landmark case of **Indra Sawhney v. Union of India (1992)**, the **Supreme Court** clarified the purpose of OBC reservations as addressing **historical discrimination**.
- **Key observations:** While factors like **religion, race, caste**, and other group identities could be considered, they **cannot be the sole criterion** for granting reservations. The determination of **backwardness** must be **objective** and evidence-based.

Religious Restriction in SC Status

Constitutional Basis for Scheduled Caste (SC) Reservations

- **Article 341(1)** of the Constitution empowers the **President** to specify castes, races, or tribes that are to be recognized as **Scheduled Castes (SCs)**.
- Based on this, **The Constitution (Scheduled Castes) Order, 1950** was issued, listing SC communities on a **state-wise basis**.

Religion as a Barrier in SC Reservations

- **Clause 3** of the 1950 order restricts SC status to individuals **professing Hinduism, Sikhism, or Buddhism**.
- Timeline of inclusions:
  - Initially, SC benefits were limited to **Hindus**.
  - In **1956**, the order was expanded to include **Sikh converts**.
  - In **1990**, it was further extended to include **Buddhist converts**.

Ranganath Mishra Commission Recommendations (2007)

- The **Ranganath Mishra Commission** (constituted in 2004) found that the **caste system** transcends religious boundaries and affects **all Indian communities**, regardless of religion.
- **Key Recommendation**: A **change of religion** should **not disqualify** a person from retaining SC status if they were previously included in the SC list.
- **Response**: However, the **Central Government** has **rejected these findings** in recent years, resulting in periodic halts to efforts aimed at including converts from **Christianity** and **Isla**m under SC reservations.

Bureaucratic Reforms

Syllabus Mapping: GS Paper 2, Governance, Civil Services

Context

Ongoing challenges within the Indian Administrative Service and the broader bureaucracy have underscored the pressing necessity for administrative reforms.

Max Weber argued that bureaucracy, as a rational and efficient organisational structure, has the potential to become an **"iron cage"** that traps individuals in a rigid and inflexible system.

Background of IAS Services in India

Pre-Independence Era

- **Origin in British Administration:** Civil services in British India came with the implementation of **Macaulay's Report 1835.**
  - Later in 1858, **Imperial Civil Service (ICS)** was established by the British in India.
  - Designed to consolidate British rule in India and administer the country through a small, elite cadre of bureaucrats.
- **Competitive Examination:** Recruitment to the ICS was based on highly competitive examinations **held in London**. This created a barrier for Indians, as few could afford to study or travel abroad.
- **Indians in ICS:** Despite the obstacles, early Indian pioneers like **Satyendranath Tagore (1863)** and **R.C. Dutt** joined the ICS. By the early 20th century, reforms such as the **Montagu-Chelmsford Reforms (1919)** increased Indian representation in the service.

Post-Independence Era

- **Continuity of Services:** After independence in 1947, the ICS was renamed the **IAS** in 1950, becoming a key part of the **All India Services.**
- **Democratic Recruitment:** UPSC was tasked with conducting open, merit-based examinations to ensure accessibility and fairness.
  - This enabled a wider section of society, including marginalized communities, to join the IAS.
- **Role in Nation-Building:** The IAS became central to the **planned development approach** of independent India, implementing Five-Year Plans, industrial policies, and socio-economic reforms.
  - Over time, emphasis was placed on improving transparency, inclusivity, and accountability in governance.

What are the Current Challenges?

- **Politicisation:** Political loyalty influencing transfers, suspensions, and promotions. It undermines morale, professionalism, and meritocracy.
- **Lack of Domain Specialisation:** Frequent department transfers hinder officers from developing domain expertise.
- **Corruption and Inefficiency:** Bureaucratic corruption erodes trust and hampers policy implementation. **E.g.,** India's percentile rank in controlling corruption has improved by a smaller margin, rising from 39.9 in 2014 to 44.3 in 2022, according to the World Bank collection of development indicators reflecting systemic inefficiencies.

- **Centralised Decision-Making**: Decision-making within the IAS is highly centralized, which can stifle innovation and limit the involvement of lower-level administrators and local stakeholders in governance processes.
- **Structural Weaknesses:** Outdated personnel practices, lack of accountability, and performance monitoring.
- **Lack of safety of tenure:** Frequent transfers of civil servants expose civil servants to undue strain and also lack of accountability in delivering citizen services.
- **Inadequate citizen centricity:** Public servants are meant to serve citizens ethically under the constitutional scheme. However, often the power imbalance, politicisation and inadequate mechanisms of accountability lead to civil servants thinking themselves elites far removed from ideals of service.
- **Lack of adequate training at cutting edge levels:** The elite higher bureaucracy gets a lot more attention, training and resources as compared to the lakhs of lower bureaucrats who serve and interact with citizens on an everyday basis. Without training and aligning the lower level bureaucracy not much improvement can be brought in the lives of ordinary citizens.

Lateral entry as a tool for reform

Lateral entry as a catalyst for transforming India's governance

- **Diverse Expertise:** Lateral entry allows professionals from various fields like technology, finance, and management to bring their expertise into policymaking
  - **E.g.: K.Vijay Raghavan,** a renowned scientist, as the Principal Scientific Advisor to the Government of India, has facilitated evidence-based policy formulation in science and technology.
- **Efficiency and effectiveness:** External hires can bring innovative ideas and best practices from their respective industries, enhancing the efficiency of government operations
  - **E.g.:** Appointment of **former Google executive Arvind Gupta as CEO of MyGov India** has led to the modernization of citizen engagement platforms and digital governance initiatives.
- **Responsive Governance:** With specialists onboard, the government can respond better to evolving challenges.
  - **E.g.: Appointing environmental scientists** can aid in crafting sustainable policies to combat climate change.
- **Transparency and Accountability:** Outsiders may bring a fresh perspective on accountability mechanisms, fostering transparency in decision-making processes. This can lead to greater public trust in government actions.

Loopholes in the initiative of lateral entry

- **Limited scope:** Lateral entry appointments typically target only a small fraction of bureaucratic positions, limiting their overall impact on governance
  - **E.g.:** Central Government's **lateral entry scheme in 2018** aimed to fill just 10 positions, which is a minuscule portion of the entire bureaucracy.
- **Institutional resistance:** Existing bureaucratic structures may resist the integration of lateral entrants, hindering their ability to influence systemic change.
- **Resource constraints:** Lateral entry schemes require significant resources for recruitment, training, and integration, which may not always be readily available.
- **Revolving door policies:** Lack of reasonable basis for onboarding lateral entrants can lead to favouritism and political class filling in their favourites in the permanent bureaucracy. Thus, without adequate safeguards lateral entry can lead to politicisation of bureaucracy.
- **Lack of constitutional protection:** The independence of civil servants is assured by constitutional guarantees (**Article 311**). Often lateral entrants lack such protection leading to them aligned to the political masters and not to the constitutional values and rule of law.

Pathway for Bureaucratic reform

- **Digitalization and simplification of processes:** Implement online portals and applications for various bureaucratic processes, reducing the need for physical visits and paperwork. **E.g.: Use of Digital India Campaign**
- **Clear communication:** Provide clear and easily accessible information about procedures, requirements, and timelines for citizens and develop user-friendly interfaces and provide multilingual support to cater to diverse populations. **E.g.: National e-Governance Plan (NeGP)** can be utilised in ensuring this.

- **Streamlining decision-making:** Implement mechanisms to expedite decision-making processes within bureaucratic structures, reducing delays and bottlenecks. **E.g.:** Utilise technology such as data analytics and automation to streamline workflows and optimise resource allocation.
- **Jan Bhagidari:** Foster greater community engagement by involving citizens in decision-making processes through consultations, town hall meetings, and citizen feedback mechanisms.
- **Depoliticization of Civil Services:** There is a need to safeguard the political neutrality and impartiality of the civil services. The onus for this lies equally on the political executive and the civil services.
- **Focus on mid-career training and domain expertise:** Focus should be on mid-career training and development of domain expertise in civil servants so that they are able to take up the complex challenges of modern technologically advanced globalised world.
- **Entrepreneurial bureaucracy:** There is a need for a paradigm change from the status-quoist nature of bureaucracy to one which is entrepreneurial, focussed on innovation and act as change agents for addressing the concerns of citizens.

Conclusion

In essence, the bureaucracy has contributed positively to the functioning of our vibrant democracy, our plural society and polity and our growing economy. Therefore, it is imperative to combine the above strategies so that India can humanise its bureaucracy while maintaining efficiency and accountability.

TOPICS FOR PRELIMS

MP/MLA Court

Syllabus Mapping: Parliament

Context

The National Investigation Agency (NIA) is planning to request the Delhi High Court to designate the NIA court as an MP/MLA court to hear a terror funding case involving a Member of Parliament from J&K.

About MP/MLA Courts

- They are special courts established in India to expedite the trial of cases involving sitting and former MPs and MLAs.
- They deal with criminal cases, including corruption, bribery, electoral offenses and other criminal charges, filed against MPs and MLAs
- **Formation:** In 2017, the Supreme Court ordered that special courts be set up across the country to fast-track the long-pending trials of lawmakers.
  - 12 special courts were set up across 11 States.

Representation of the People Act, 1951 (RPA) - Relevant Provisions

- **Section 8(1):** Disqualification upon conviction for specific offenses, such as corruption, bribery or promoting enmity.
- **Section 8(3):** Automatic disqualification if sentenced to imprisonment for 2 years or more. Disqualification continues for 6 years after the release.
- **Section 123:** Defines corrupt practices such as bribery, undue influence, and appeals on religious or caste grounds.
- **Section 125:** Penalizes hate speech during elections.
- **Section 125A:** Prescribes punishment for submitting false information in election affidavits, up to 6 months imprisonment or a fine.

Supreme Court Interventions on MP/MLA Cases

- **2013 (Lily Thomas v. Union of India):** Struck down Section 8(4) of the RPA, which previously allowed MPs/MLAs to continue in office if they appealed a conviction within 3 months. Immediate disqualification upon conviction.
- **2017 (Lok Prahari v. Union of India):** Directed setting up of special courts for MP/MLA cases to reduce pendency.

Safe Harbour Rules

Syllabus Mapping: Digital Rights, e-governance

Context

Recently, the Delhi High Court directed Wikimedia to disclose the details of three administrators involved in its ongoing defamation case with ANI.

About Wikipedia

- It is a community-driven platform, with content created and edited by volunteers.
- **Editorial Process:** Anyone can edit articles, provided edits are backed by reliable and verifiable sources.
- **Wikimedia Foundation,** a non-profit based in the U.S., is not responsible for the content on Wikipedia. It provides the technical infrastructure to run the platform.
- ANI argued that Wikimedia violated **safe-harbour provisions and the IT (Intermediary Guidelines and Digital Media Ethics Code) Rules, 2021.**

Safe Harbour in India: Legal Framework

- **Safe-Harbour Protection:** It is a legal framework that shields intermediaries (such as social media platforms, online marketplaces or hosting services) from being held liable for the content uploaded by their users.
  - **E.g.** Wikipedia, Google, Facebook etc.
- **Section 79** of the **Information Technology (IT) Act, 2000** provides safe harbour protection to intermediaries if they adhere to:
  - **Due Diligence Requirements:** Regularly updating policies, user agreements, and moderation mechanisms.
  - **Timely Action:** Removing unlawful content upon notice or court orders.
- **Exclusions:** Platforms that fail to comply with these obligations lose their safe harbour status. Loss of status could result in legal liability for all user-generated content.

Prior Sanction to prosecute public servants Under PMLA

Syllabus Mapping: Governance, Corruption

Context

Delhi's former Chief Minister Arvind Kejriwal and Congress MP P. Chidambaram have sought relief from their respective trials, citing a recent Supreme Court ruling as a precedent.

Recent Supreme Court Ruling

- SC has ruled that prior government sanction is mandatory for prosecuting public servants under the Prevention of Money Laundering Act if the alleged offenses are linked to their official duties.
- This is based on **Section 197 of Criminal Procedure Code (CrPC).**
- **Section 65 of the PMLA aligns with CrPC Section 197**, requiring prior sanction for public servants.

Prior Sanction Provision under Section-197 of CrPC

- **Bars prosecution of public servants** (including judges, magistrates, or government officials) without **prior sanction** from the government for acts done in the **discharge of their official duties**.
- **Exceptions**: No prior sanction is needed for crimes like sexual harassment, rape, human trafficking, and similar serious offenses.
- **Application to Public Servants**: Only acts **related to their official duties** are protected; acts outside their duties do not receive this shield.
- **Case law:** In the **Devinder Singh v. State of Punjab (2016)** case, the Supreme Court held that public servants cannot hide behind official duties if they are committing crimes.

Impact of Prior Sanction Requirement

- **Implications for ED Cases:**
  - Investigations under the PMLA will remain valid, but trial courts cannot take cognizance of chargesheets against public servants without prior sanction.
  - Public servants facing charges may use the absence of prior sanction as a defense, resulting in **stay orders** or **dismissals** of cases.
  - Public servants can raise this argument at any stage of the trial, even post-conviction **(P K Pradhan v. State of Sikkim, 2001)**
- **Challenges to Prosecution:** Prosecution agencies may face delays as they are required to secure government approval before proceeding with cases.

PRAGATI Platform

Syllabus Mapping: E-governance

Context

A study by Oxford University›s Saïd Business School has lauded the PRAGATI infrastructure monitoring system for accelerating 340 projects worth $205 billion across the country and bringing economic transformation.

About PRAGATI (Pro-Active Governance And Timely Implementation)

- It is a multi-purpose and multi-modal platform launched in 2015.
- It is aimed at **addressing common man's grievances** and simultaneously monitoring and reviewing important programmes and projects of the Government (Centre & States).
- The PRAGATI platform uniquely bundles three latest technologies: **Digital data management, video-conferencing and geo-spatial technology.**

Key Features of Pragati Platform

- It is a three-tier system **(PMO, Union Government Secretaries and Chief Secretaries of the States)**

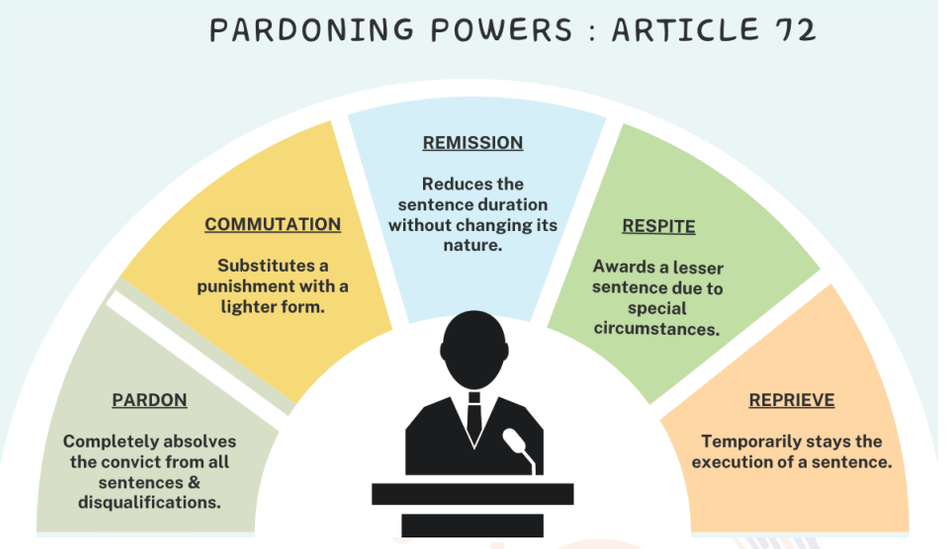
- Monthly video-conferences led by the Prime Minister are held on the 4th Wednesday of each month (PRAGATI Day) to discuss flagged issues.
- Issues are sourced from public grievances, ongoing programs and pending projects and are uploaded 7 days prior to PRAGATI Day.
- The design is such that when PM reviews the issue, he should have on his screen the issue as well as the latest updates and visuals regarding the same.

Pardoning Powers of Indian & US President

Syllabus Mapping: Union Executive

Context

U.S. President Joe Biden has granted an unconditional pardon to his son Hunter Biden who faced sentencing for federal tax and gun convictions.



Comparison between Pardoning Powers of Indian Vs. American President

Feature	President of India	President of USA
Constitutional Provision	**Article 72** of the Indian Constitution	**Article II, Section 2** of the U.S. Constitution.
Jurisdiction	Laws enacted by the Indian Parliament; Death sentences under State Laws; Punishments by courts-martial (military courts)	Limited to federal laws; cannot pardon state offenses or intervene in state criminal matters.
Binding Advice	Must act on the advice of the Council of Ministers **(not discretionary)**	**Fully discretionary;** the President decides unilaterally**.**
Exceptions	None explicitly mentioned; subject to judicial review for arbitrariness (as per Supreme Court rulings)	Cannot pardon in cases of **impeachment.**
Judicial Review	Pardoning power is subject to judicial review for arbitrariness or mala fides.**(Epuru Sudhakar case, 2006)**	Generally not subject to judicial review; **very limited exceptions apply (e.g., if used to obstruct justice)**
Effect of Pardon	Completely absolves the individual from conviction, punishment, and all disqualifications.	Relieves punishment and associated disqualifications **but does not erase the conviction record**.

Dual Citizenship

Syllabus Mapping: Citizenship

Context

The Delhi High Court has directed the Centre to clarify its position regarding BJP leader Subramanian Swamy's petition concerning Congress leader Rahul Gandhi's citizenship.

Constitutional provisions

Article 5	Citizenship at the commencement of the constitution.
Article 6	Rights of citizenship of certain persons who have migrated to India from Pakistan.
Article 7	Rights of citizenship of migrants to Pakistan who returned to India for resettlement

Article 8	Rights of citizenship of certain persons of Indian origin residing outside India.
Article 9	Persons voluntarily acquiring citizenship of a foreign State not to be citizens.
Article 10	Continuance of rights of citizenship.
Article 11	Parliament to regulate the right of citizenship by law.

Dual citizenship

- **Dual citizenship**: Grants an individual legal status as a citizen of two or more countries.
- The Indian Constitution does not permit a citizen of India to simultaneously be a citizen of any other country.
- **Countries offering dual citizenship**: Cambodia, Bangladesh, Sri Lanka, US, Finland, Albania, Israel, Pakistan etc.
- **Alternatives**: India offers OCI program to Persons of Indian Origin, excluding ones who migrated to Pakistan and Bangladesh

Citizenship Act of 1955

The Citizenship Act of 1955, enacted by Parliament under Article 11, outlines the methods for acquiring and terminating citizenship in India.

Modes of Acquiring Citizenship:

- **By Birth**: Born in India on or after **26th January 1950** but before **1st July 1987** – automatically a citizen.
  - Born between **1st July 1987 and 2nd December 2004** – a citizen if one parent is an Indian citizen.
  - Born on or after **3rd December 2004** – a citizen if one parent is an Indian citizen and the other is not an illegal migrant.
- **By Descent**: Born outside India to an Indian citizen parent, subject to registration with an Indian consulate within one year.
- **By Registration**: Granted to persons of Indian origin or those married to Indian citizens after fulfilling residence requirements.
- **By Naturalization**: Granted to a foreigner who has resided in India for at least **12 years** and meets other conditions.
- **By Incorporation of Territory**: If a foreign territory becomes part of India, the government specifies the people who shall be citizens.

SOME COUNTRIES WITH DUAL CITIZENSHIP


COMBODIA


BANGLADESH


SRI LANKA


THAILAND


TAIWAN

Loss of citizenship

By Renunciation	Declaration renouncing his/her citizenship. Minor children also lose citizenship (can re – apply after age of 18).
By Termination	If a person consciously acquires citizenship of another country (does not apply during war).
By Deprivation	On grounds of 1) Fraud 2) Disloyalty to constitution 3) Connection with enemy 4) Imprisonment of naturalised citizen 5) Ordinary resident (out of Indian for 7 years)

Citizenship (Amendment) Act, 2019

The **2019** amendment made some significant changes to the **Citizenship Act of 1955**

- The specified class of illegal migrants from the 3 countries will not be treated as illegal migrants.
- Individuals should belong to 6 communities i.e. Hindu, Sikh, Buddhist, Jain, Parsi, or Christian + 3 countries i.e. Afghanistan, Pakistan and Bangladesh.
- Entered India before or on the cut off date of 31st December 2014.
- Citizenship through naturalisation. Requirement of residency has been decreased from 11 years to 5 years.
- Does not apply to two categories i.e. 6th schedule states + States under Inner line permit for example Arunachal Pradesh, Mizoram, Nagaland, and Manipur.
- The Central Government can cancel OCI membership if provisions of the Citizenship amendment act are violated or any other law so notified by the Central Government. Opportunity to be heard should be provided.

Citizenship (Amendment) Rules, 2024

- **Eligibility:** Applying for citizenship by naturalisation or registration a person must be-
  - A person of Indian origin
  - Person married to an Indian citizen
  - A minor child of an Indian citizen
  - Person whose parents are registered as an Indian citizen
  - Parents or the person was a citizen of Independent India
  - Person is registered as an OCI cardholder
- **Citizenship by naturalisation**: Applicants must have knowledge of one of the languages as listed in the 8th schedule of the Constitution.
- **Renouncing citizenship**: Application must have a declaration of renouncing citizenship irrevocably if the application of Indian citizenship has been approved.

Silence period

Syllabus Mapping: Elections

Context

The recently concluded Jharkhand assembly elections have once again highlighted the inability of social media platforms to effectively enforce electoral regulations.

About Silence Period

- It is a **restriction on political campaigning before voting begins.**
- The restriction **starts 48 hours prior to voting day and ends after polling concludes.**
- During this period, certain activities are prohibited under the **Representation of the People Act, 1951** (though the **Act does not explicitly mention the term "silence period").**
  - **Section 126(1)** forbids the display of election-related content via television or similar means, as well as the promotion of election matters through entertainment events (such as musical concerts).
  - **Section 126A bans the conduct of exit polls** and publication of their results in print or electronic media.
  - **Section 126(1)(b) prohibits the publication of opinion poll results through electronic media.**

Essential Services Maintenance Act

Syllabus Mapping: Bureaucracy, Important Laws

Context

Uttar Pradesh government has recently passed an order banning strikes by government employees under Essential Services Maintenance Act for **next 6 months.**

About Essential Services Maintenance Act (ESMA)

- ESMA was enacted by the Parliament in 1968.
- **Objective:** To maintain smooth movement of those things which are essential for the normal life of the common citizens.
- Can be imposed for a **maximum period of 6 months**, but the Central Government can extend it **for any period not exceeding 6 months** if it is satisfied that in the public interest it is necessary to do so.
- Can be invoked by the central government in case of a **national-scale disruption**, such as on the railways.
- **State governments also have their own state specific ESMA** which they can invoke in case of disruptions that only affect a state or states.
  - Before enforcing, the government must alert the employees through media or newspaper notification.
- **Services that fall under ESMA:**
  - Services related to public conservation, sanitation, water supply, hospitals and national defence.
  - Any establishment involved in producing, delivering or distributing petroleum, coal, electricity, steel or fertiliser.
  - It also applies to communication and transportation services and any government initiative relating to the acquisition and distribution of food grains.

Removal Of Vice President

Syllabus Mapping: Union Executive

Context

Opposition parties in the INDIA bloc have decided to move a notice to remove Chairman of the Rajya Sabha Jagdeep Dhankhar from his office.

VICE PRESIDENT OF INDIA

About Vice President	• 2nd Highest constitutional office in India • Order of Precedence: Second rank after President. Can caste vote in case of a deadlock in Rajya Sabha. • Ex – Officio Chairman of Rajya Sabha
Qualifications	• Constitutional requirement: 35 years + Indian citizen + Qualified to become Member of Rajya Sabha + No office of Profit • Other Requirements: Nomination needs to be subscribed by 20 electors (proposers) + 20 electors (seconders). • Security deposit: ₹15,000

VICE PRESIDENT OF INDIA

Election system	• Indirect election • Proportional representation by single transferable vote
Voters in election	• Elected by all the members of the Parliament (both elected and nominated). • State Legislature members don't participate.
Dispute related to election	• The decision lies with the Supreme court.
Term of Office	• 5 years, eligible for re-election any number of times
Oath or Affirmation:	• To bear true faith and allegiance to Indian constitution • To faithfully discharge duties of his office.
Emoluments	• Decided by the Parliament
Vacancy	• Tenure ends + Resignation + Removal + Death + Others (Election declared void). • Election must be held before tenure ends. • In other cases Newly elected Vice President enjoys full term • In case of vacancy **no substitution** is mentioned in the constitution. • The Deputy Chairman performs the duty of the Vice President in such cases.
Removal of Vice -President	• Can be removed by a resolution of RS with **effective majority** + Passed by Lok Sabha (by simple majority). • 14 days advance notice should be given. • Such **resolution cannot be introduced in the Lok Sabha**
Functions of Vice – President	• Acts as ex – Officio chairman of the Rajya Sabha. • Acts as President when vacancy occurs (due to resignation, impeachment, death or otherwise).
Comparison with American Vice President	• Similar to India VP American vice president also chairs the senate (Upper house). • Unlike Indian VP In case of death, illness of US President, Vice President takes office for the rest of the term.

Article 142 : Complete Justice

Syllabus Mapping: Judiciary, Supreme Court

Context

The Supreme Court exercised its extraordinary powers under **Article 142 of the Constitution** to grant permanent commission to a woman Army officer with a distinguished service record who was wrongly excluded from the consideration when other similarly placed officers were given the benefit.

Article 142 of Indian Constitution

- **Powers**: Article 142 authorizes the Supreme Court to issue any decree or order required to ensure **"complete justice"** in cases before it.
  - These decrees or orders are binding and enforceable across the entire territory of India.
- **Beyond Legal Constraints**: The provision allows the Court to transcend existing laws or statutes to deliver justice.
  - This enables the Court to perform roles that may overlap with **executive or legislative functions** when necessary.
- **Related Constitutional Provisions**: Article 142 is supported by other provisions such as:
  - **Article 32**: Provides the right to constitutional remedies.
  - **Article 141**: Mandates all courts in India to follow the Supreme Court's decisions.
  - **Article 136**: Allows for Special Leave Petitions (SLPs).
  - Together, these articles form the basis for judicial activism, allowing the Supreme Court to occasionally override legislation to achieve complete justice.
- **Role in Public Interest Cases:** Article 142 empowers the Court to take action in matters involving public interest, fundamental rights, human rights, and constitutional values.
  - This reinforces the Supreme Court's role as the guardian of the Constitution, ensuring protection against rights violations.

Other Instances Where SC Invoked Article 142

- **Overturning the Post of Mayor of the Chandigarh Municipal Corporation (2024)**: To uphold the integrity of the electoral process.
- **Ayodhya Ram Janmabhoomi-Babri Masjid Case (2019):** To allot the disputed land for the construction of a Ram Temple and ordered a separate 5-acre plot for the Muslim community to build a mosque.
- **Taj Mahal Conservation (1996):** For relocation of industries and implement measures to protect the monument.

- **Union Carbide Corporation vs Union of India (1991):** The Supreme Court ordered the Union Carbide Corporation to pay $470 million in compensation to the victims of **Bhopal Gas Tragedy (1984).**

Breach of Parliamentary Privileges

Syllabus Mapping: Parliament

Context

A Rajya Sabha MP of Trinamool Congress has submitted a notice of breach of privilege against Parliamentary Affairs Minister Kiren Rijiju.

About Parliamentary Privilege

- As elected representatives, the members of the House enjoy certain rights and immunities to effectively discharge their functions.
- Currently there is no law that defines a parliamentary privilege.
- **Article 105** explicitly mentions only two kinds of privileges:
  - Freedom of speech in the Parliament
  - Right to publish the house proceedings.
- **Code of Civil Procedure, 1908**
  - Grants freedom from arrest and detention of members under a civil process during house proceedings **(40 days before and after commencement of session of house)**

About Privilege Motion

- If a member believes that such a privilege has been breached or misused, a motion or complaint can be raised to the **house chairman or speaker.**
- The right to raise a question of privilege is based on satisfying two conditions -
  - The question shall be restricted to a specific matter of recent occurrence
  - The matter requires the intervention of the Council.

Committee of Privileges in Parliament

- This committee consists of **15 members in Lok Sabha and 10 members in case of Rajya Sabha nominated by the Speaker (Chairman in case of RS)** from time to time.
- In the RS, the deputy chairperson is appointed as the head of the committee of privileges.
- The Speaker/RS Chairman is the first level of scrutiny of a privilege motion.
  - The Speaker/Chairman can decide on the privilege motion himself or herself or refer it to the privileges committee of Parliament.

Places of Worship Act,1991

Syllabus Mapping: Secularism

Context

The Supreme Court has issued interim directions regarding disputes related to places of worship under the Places of Worship Act, 1991, while hearing petitions challenging the constitutional validity of the law.

Supreme Court directions

- **Restriction on New Suits:** Civil courts across India are barred from:
  - Registering new suits challenging the ownership or title of any place of worship.
  - Ordering surveys of disputed religious sites.
- **Impact on Pending Cases:**
  - Courts cannot pass any effective interim or final orders in pending suits.
  - Includes halting surveys or other investigative actions until further notice.
- **Other observations:**
  - The Court emphasized the need for a thorough examination of the constitutional validity, scope, and ambit of the Act.
  - It underscored that lower civil courts must adhere to the principles established in the Ayodhya judgment, remarking, "Civil courts cannot race with the Supreme Court."
- **Larger Constitutional Question:**
  - The Supreme Court observed that even in the absence of the Act, constitutional principles might prohibit suits aiming to alter the religious character of places of worship.
  - It acknowledged petitions raising concerns about whether the Act limits judicial review powers, introducing another dimension of constitutional scrutiny.

About Places of Worship (Special Provisions) Act, 1991

Enacted by the Government of India to maintain communal harmony by preserving the religious character of places of worship

Key Provisions

- **Status of Religious Places:**
  - The religious character of any place of worship existing on August 15, 1947, shall remain unchanged.
  - No legal proceedings can challenge the religious character of such places as it stood on that date.
  - **Exception:** The Act does not apply to the Ram Janmabhoomi-Babri Masjid dispute, which was ongoing at the time of its enactment.

- **Prohibition of Conversion:** Conversion of a place of worship or any part thereof from one religious denomination to another or from one religious group to another is prohibited.
- **Penalties for Violation:** Violators attempting to alter the status of a religious site can face imprisonment of up to 3 years and/or a fine.
- **Scope of Application:** The Act applies to all religious places in India, except those specifically exempted by the government or related to ongoing disputes as of 1991.

Prominent Disputed Sites

- Gyanvapi Mosque (Varanasi)
- Eidgah Masjid (Mathura)
- Kamal-Maula Masjid (Dhar)
- Atala Mosque (Jaunpur)
- Quwwat-ul-Islam Mosque (Delhi)
- Ajmer Sharif Dargah
- Shahi Jama Masjid (Sambhal)

Rights of Minority communities

Syllabus Mapping: Secularism

Context

The UN General Assembly adopted a declaration on the 'Rights of Persons Belonging to National or Ethnic, Religious and Linguistic Minorities' on December 18, 1992. Since then 18th December is **celebrated as Minority rights day** globally.

Historical background of Minority Rights

- **Austria (1867):** Recognized ethnic minorities' rights to protect their nationality and language.
- **Swiss Confederation Constitution (1874):** Equal rights for the country's three languages in civil services, courts and legislation.
- **Post-World War I Treaties:** Incorporated minority protection clauses in agreements with nations like Poland and Czechoslovakia.
- **Universal Declaration of Human Rights (1948): Article 27** recognizes individuals' right to their culture and participation in cultural forums.

Defining Minority

- The term "minority" means a group comprising **less than half of the population** and differing from others, especially the predominant section, in race, religion, traditions and culture, language, etc.
- The Constitution of India mentions linguistic and religious minorities under **Articles 29 and 30.** But the term minorities is **not defined** in the Constitution.
- Recently, the United Nations commission on international religious freedom (**UNCIRF**) designated India as a '**country of particular concern'** for engaging in religious freedom violation.

Case Laws related to minorities

CASE	PROVISION
Ahmedabad St. Xavier's College Society Case	This case reaffirmed the rights of minorities to establish and administer educational institutions under Article 30(1).
TMA Pai Case	Apex court held that for the purpose of Article 30, administration of educational institutions have to be considered state-wise.
Bal Patil Case	SC held that the unit for determining the status of linguistic and religious minorities would be the 'state'.

Constitutional mechanisms to promote Social Justice for Minorities

ARTICLE	PROVISION
Article 25	Freedom of conscience and free profession, practice, and propagation of religion.
Article 26	Freedom to manage religious affairs.
Article 27	No person shall be compelled to pay any taxes for the promotion or maintenance of any particular religion or religious denomination.
Article 28	No religious instruction shall be provided in any educational institution wholly maintained out of State funds.
Article 29(1)	Right to conserve distinct language, script, culture
Article 29(2)	No citizen be denied admission into educational institutions maintained by the State or receive aid out of state funds on grounds of religion, caste, race, language.
Article 30(1)	All minorities, whether based on religion or language, shall have the right to establish and administer educational institutions of their choice.

ARTICLE	PROVISION
Article 30(2)	The State shall not, in granting aid to educational institutions, discriminate against any educational institution on the ground that it is under the management of a minority, whether based on religion or language.
Article 347	The President of India recognizes a language spoken by a section of the population as an official language in a state to protect linguistic rights of minorities.
Article 350A	Ensures that instructions are provided in mother tongue at the primary stage of education for children from linguistic minorities.
Article 350B	Appointment of a Special Officer for Linguistic Minorities to investigate and report the implementation of safeguards for linguistic minorities.

Legal mechanisms for safeguarding minorities

- **National Commission of Minority Act, 1992:** Established a National commission for Minorities to evaluate the progress and working of the development of minorities. The act offers protection to 6 religious minority communities at national level to be notified by the Central Government. They are Muslims, Christians, Sikhs, Buddhists, Zoroastrians (Parsis) and Jains.
- **Protection of Civil Rights Act, 1955:** It is applicable across the board to all cases of untouchability related offences regardless of religion and the perpetrators of the offences may be proceeded against under the provisions of the Act.
- **Places of Worship (Special Provisions) Act, 1991:** Seeks to maintain the religious character of places of worship as they existed on August 15, 1947, and prohibits the conversion of any place of worship to maintain its religious character.

Institutional mechanism

- **The National Minorities Development & Finance Corporation (NMDFC), 1994:** It is a National Level Apex Body for the benefit of minorities to provide concessional finance to the Minorities for self employment/ income generation activities.
- **Haj Committee of India:** It is a statutory body under the Ministry of Minority Affairs. It is set up under the provisions of Haj Committee Act, 2002. It has the responsibility of making arrangements for the pilgrimage of Muslims for Hajj.
- **Commissioner for Linguistic Minorities:** Aims to investigate matters relating to the safeguards provided for the linguistic minorities and report to the President upon matters as the President may direct.
- **National Commission for Minorities (NCM):** Established under the NCM Act, 1992, the body monitors the development of religious minorities and addresses their grievances and makes recommendations to the government on matters affecting minorities.

Protected Area Regime (PAR) in Manipur & Nagaland

Syllabus Mapping: Citizenship

Context

The Union Home Ministry has reimposed the Protected Area Regime (PAR) in Manipur, Nagaland and Mizoram to monitor the movement of foreigners.

About Protected Area Regime (PAR)

- A **special permit required for non-Indian citizens** to visit certain protected areas near India's international borders.
- Foreigners visiting the three northeastern States would have to seek prior permission and special permits from the government.
- Issued under the **Foreigners (Protected Areas) Order, 1958.**

- The relaxation has been withdrawn after a gap of 14 years. It was initially relaxed for a year in **2010** to promote tourism.
- Protected areas are broader than the Inner Line areas.

Inner Line Permit (ILP)

- A document required by Indian citizens to enter certain states, introduced under the **Bengal Eastern Frontier Regulation Act, 1873.**
- **Regions Covered:** Arunachal Pradesh, Nagaland, Mizoram, and Manipur.
- Note: ILP regime was extended to Manipur and all districts of Nagaland by the Presidential Order in 2019.
- **Purpose of ILP:**
  - To protect indigenous communities and their land rights.
  - To regulate the movement of people into tribal areas.

Chairperson of National Human Rights Commission (NHRC)

Syllabus Mapping: Non-Constitutional Bodies, Human Rights

Context

Recently a high-power committee led by the Prime Minister selected the next former Supreme Court Judge **V Ramasubramanian** as the Chairperson of the National Human Rights Commission (NHRC).

About National Human Rights Commission (NHRC)

- Constituted under **Protection of Human Rights Act, 1993.** (Not a constitutional body).
- NHRC has been constituted in conformity with the **Paris Principles**, adopted at the first international workshop on national institutions for the promotion and protection of human rights held in Paris in 1991.
- **Human Rights:** Protection of Human Rights Act, 1993 defines human rights as rights relating to life, liberty, equality and dignity of the individual guaranteed by the Constitution or embodied in the International Covenants and enforceable by courts in India.
- **Composition of NHRC**: Chairperson & 5 Other Members + Ex-Officio Member (7) - Chairpersons of NCSC, NCST, NCBC, NCW, NCPCR, NCM and Chief Commissioner for PwD
- **Appointment of Chairperson and Members of NHRC**: by the President (On the recommendation of Committee consisting PM, Speaker of LS, Deputy Chairperson of RS, Leader of Opposition in Both Houses & Union Home Minister - 6 Member Committee)
- **Term**: Upto 3 years or 70 years of age (Conditions of service determined by Central government)
- **Qualifications**:
  - Chairman - Must be retired CJI or SC Judge
  - Members - 2 (Must be serving or retired SC Judge) + 3 (Having knowledge or practical experience with regards to Human Rights with at least 1 woman)
- **Removal**: Similar to members of UPSC
- **Resignation**: To President
- **Reappointment**: Allowed
- **Further employment**: Not allowed.
- **Nodal Ministry**: Ministry of Home Affairs
- **Miscellaneous**: Empowered to utilise the service of any officer or investigating agency of Central or State Government;
  - Possesses powers of a civil court during its proceedings;
  - It can only look into matters within one year of their occurrence.

Telecommunications (Lawful Interception of Messages) Rules, 2024

Syllabus Mapping: Privacy, Rights Issue

Context

The Union Government notified the **Telecommunications (Procedures and Safeguards for Lawful Interception of Messages) Rules, 2024 under the Telecommunication Act 2023.** These rules **supersede Rule 419A** of the Indian Telegraph Rules, 1951.

About Telecommunications (Lawful Interception of Messages) Rules, 2024

- **Competent authorities for interception:**
  - **Union Level**: Union Home Secretary.
  - **State Level**: Secretary to the State Government in charge of the Home Department.
  - In **'unavoidable circumstances'**: An officer not below the rank of Joint Secretary to the Union Government can issue interception orders. (Term unavoidable circumstances is not defined)
- **Authorisation of Interception:** The Central Government may also authorise any law enforcement or security agency to intercept messages for reasons specified **under Section 20(2) of the Telecommunications Act, 2023.**
- **Orders in Remote Areas or Operational Reasons:** Following officers can issue interception orders:
  - **Central Level**: Head or second senior-most officer of the authorised agency.
  - **State Level**: Head or second senior-most officer (not below the rank of Inspector General of Police).
  - **These orders must**:
    - Be submitted to the competent authority within **3 working days**.

    - Be confirmed by the competent authority within **7 working days**.
    - **If not confirmed, interception must cease,** and messages intercepted cannot be used for any purpose, including court evidence.
- **Record Maintenance and Destruction:**
  - Records related to interception must be destroyed every **6 months** by the authorised agency and the review committee.
  - **Exception:** Records may be retained if required for functional purposes or court directions.
- **Oversight Mechanisms:** To ensure compliance, a high-level review committee will be established
  - **Central Oversight Committee:** Chaired by the **Cabinet Secretary.**
    - **Members:** Secretary of Legal Affairs & Secretary of Telecommunications.
  - **State-Level Committees:** Chaired by the **Chief Secretary.**
    - **Members:** Secretary Legal Affairs & Secretary to the State Government, **other than the Home Secretary.**

Indian Telegraph Rules, 1951

- **The Indian Telegraph Rules, 1951** were framed under the provisions of the **Indian Telegraph Act, 1885** to regulate and govern telecommunication services in India.
- **Rule 419A**: Provisions regarding lawful interception and monitoring of communication for security, investigation and public interest reasons.

Key Differences from Rule 419A of the Indian Telegraph Rules, 1951

- **Relaxation of Conditions for Interception**:
  - Previous rules allowed interception only in **emergent cases**.
  - The new rules allow interception in **remote areas or operational reasons**, even if the competent authority cannot issue orders immediately.
- **Limitations on Officers Authorised for Interception**:
  - Under Rule 419A, there was **no limit** on the number of Inspector General of Police (IGP)-rank officers at the State level authorised to intercept.
  - The new rules restrict authorisation to **only the head or second senior-most officer** of the agency.
- **Safeguard Against Unconfirmed Interceptions**:
  - Interceptions not confirmed within **7 days** cannot be used for any purpose, including as evidence in court.

Concerns Regarding the New Rules

- **Relaxation of 'Emergent Cases' Clause**: The requirement for interception in emergent cases has been relaxed. It will increase the **scope for misuse.**
- **Lack of Accountability for Misuse**: The rules do not specify punitive measures for agencies that misuse interception powers. Agencies can potentially abuse interception powers for **up to 7 days** before confirmation is required.
- **Ambiguity in Terms**: Terms such as **'unavoidable circumstances'** and **'operational reasons'** are not defined, leaving room for subjective interpretation.
- **Insufficient Checks on Authorised Agencies**: Absence of stringent checks increases the risk of overreach and violations of privacy rights.

Govt. amends rule to restrict access to polling footage

Syllabus Mapping: Elections

Context

The Central Government recently **amended Rule 93 of the Conduct of Election Rules, 1961** to restrict public access to certain election-related documents.

About the Amendment

- **Modification in Rule - 93:**
  - **Previous Rule 93:** Allowed public access to all "papers" related to elections.
  - **Amended Rule 93:** Limits access to only those documents explicitly mentioned in the rules, excluding electronic records like CCTV footage, webcasting clips and video recordings.
  - **Nomination forms, results and election account statements remain accessible.**
- **Exceptions to the Amendment:**
  - **Candidates' Access to Documents:** The amendment **does not restrict access** for **candidates** in elections. Candidates still have the right to access all election-related documents, including **CCTV footage** and other electronic records, for their constituencies.
  - **Public Access to Documents:** For the general public, access to electronic records like CCTV footage is **limited** and can now only be obtained through **court intervention**.
- **EC's Justification for the Amendment:**
  - **Privacy and Security Concerns:** The ECI argued that sharing CCTV footage publicly could compromise the **secrecy of the vote**, especially in **sensitive areas** like **Jammu and Kashmir** or **naxal-affected regions**, where voter safety could be at risk.

– **Misuse of Data:** There were concerns that such footage could be manipulated using **artificial intelligence** to create misleading narratives, which could undermine the integrity of the election process.

Rule 267 of Rajya Sabha

- Allows a member to request the suspension of the day's listed business to discuss a matter of **urgent public importance**.
- A member submits a notice under Rule 267 to the Chairman of the Rajya Sabha. If the Chairman approves **(discretion)**, the normal business is suspended, and the urgent matter is taken up for discussion.
- The last time it was accepted was in November **2016,** when the Upper House invoked Rule 267 to discuss **demonetisation.**
- **Similar Rule in the Lok Sabha**
  - **Rule 184:** Allows for a debate on a matter of urgent public importance, with the provision for voting at the end.
  - **Rule 193:** Also permits discussion on urgent matters, but without a vote.

E-Dakhil Portal

- It is an innovative online platform for filing consumer complaints. It has been successfully implemented across all states and union territories of India.
- **Launched by: National Consumer Dispute Redressal Commission(NCDRC)** in 2020.
  - NCDRC is a **quasi judicial commission** set up under the Consumer Protection Act of 1986.
- It operates under the framework of the **Consumer Protection Act 2019.**
- **E-Jagriti Portal:** The government is working on the e-Jagriti portal, which will further streamline the case filing, tracking and management process.

ECONOMY AND AGRICULTURE

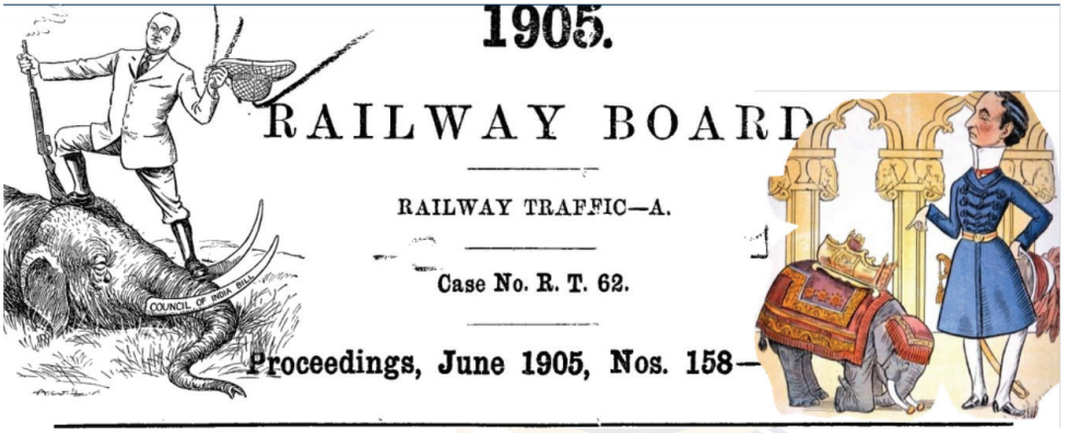
TOPICS FOR MAINS

Railways (Amendment) Bill 2024

Syllabus Mapping: GS-Paper 3, Economy, Infrastructure: Railways

Context

The Railways (Amendment) Bill, 2024, was introduced to repeal the Indian Railway Board Act, 1905.



Need for Railways (Amendment) Bill, 2024

- Establishment of the Railway network started as a branch of the Public Works department. Later, the British enacted the Indian Railways Act, 1890 to ensure proper functioning of different railway entities.
- Many Princely States and other entities also established and expanded railway networks leading to the need for ensuring uniform standards, independent policy making and flexibility.
- To ensure this, the Railway Board Act, 1905 which separated the railway organisation from the Public Works Department.
- Currently, Railways in India are regulated by the Railways Act, 1989 which repealed the Indian Railways Act, 1980. However, the Railways Board Act, 1905 continued to stay, leading to two laws for regulating the railways.
- **Efficiency and Modernization**: Merging these acts will result in a "paradigm shift" by enhancing efficiency and the development of the railway network by modernising and simplifying governance within the railways.
- **Reducing Bureaucratic Redundancy:** The amendment seeks to avoid duplication of roles and streamline the powers and functions of the Railway Board.

History of Railways in India

- Proposal for introduction of railways was made by Britishers in 1832 for transporting freight in Madras.
- **India's first train ran from Red Hills to Chintadripet bridge in Madras in 1837.** It was powered by a **rotary steam-engine locomotive** for transporting laterite stone for road building in Madras. It was piloted by Sir Arthur Cotton, a famous British engineer.
- Later in 1845, **Godavari Dam Construction Railway** was built to supply construction material for Dowleswaram dam on Godavari River in Rajahmundry, Andhra Pradesh.
- **Madras Railway Company was incorporated in 1845 in London**, followed by East India Railway. The Great Indian Peninsular Railway was incorporated by an act of the British parliament.
- **First Passenger Train:** Ran for 34 kms between **Bombay's Bori Bunder station and Thane** on 16th April 1853. It was a 14-carriage train to be hauled by three steam locomotives - Sahib, Sindh and Sultan.
- **Guarantee System:** The British Parliament created a system wherein any company that constructed railways in India was guaranteed free land, a certain rate of interest (typically 5% annually) on its capital investment and right of railway company to pull out of the venture and get compensation from the government. This guarantee was honoured by the East India Company.
- **Role of Lord Dalhousie:**
  - Governor General Lord Dalhousie strongly advocated for railway construction in India.

- During his time as Governor General the Guarantee System was introduced to motivate British capital to invest in Indian Railways.
- **First Passenger train India travels between Bombay's Bori Bunder and Thane in 1953.**
- **The Railway Minute of 1953 by Lord Dalhousie** laid down the policy that private enterprise would be allowed to build railways in India, but their operation would be supervised by the government.
- Construction commenced on the Madras-Arcot line and the first train ran in Bengal between Howrah to Pundooah.
- Construction of Railways started in Sindh and other parts of the country.

Key Points of the Railways (Amendment) Bill, 2024

- **Constitution of Railway Board:** Railway Board to be constituted as a statutory body under the Railways Act.
- **Powers of Railway Board:** Central Government to confer such powers with respect to all or any Railways.
- **Constitution of Railway Board:** Membership, qualification, terms and conditions of Chairmen and other members to be decided by the Central Government.
- **Secretary of Railway Board:** Railway Board to be provided by Secretary and other officers with terms and conditions as decided by the Central Government. All correspondence with the Railway Board shall be addressed to the Secretary of Railway Board.
- **Mode of signifying communications from Railway Board:** All communication in relation to any power of the board will be binding if it is in writing signed by the Secretary of Railway Board or any other person authorised by the Railway Board. However, the Railway Board will not be bound if some writing is not present.
- **Repeal of Acts:** Indian Railways Act, 1890 and Indian Railway Board Act, 1905 to be repealed.

Current Status of Railways Board

The current Railway Board is a statutory office constituted under the Indian Railway Board Act, 1905 by the notification of the Public Works Department in 1905. The Union Cabinet in 2019 reorganised the Railway Board on functional lines. Current composition of Railway Board is:

1. Chairman, Railway Board & CEO
2. Member (Infrastructure), Railway Board
3. Member (Traction & Rolling Stock), Railway Board
4. Member (Operations & Business Development), Railway Board
5. Member (Finance), Railway Board

Concerns of Governance of bill not addressed by Railways (Amendment) Bill, 2024

- **Lack of Decentralization:** The Bill does not address concerns about decentralizing power to zonal and divisional levels. Many MPs argue that greater autonomy at these levels is necessary for more efficient railway operations.
- **Concerns Over Independence:** Critics fear the Bill compromises the independent functioning of the Railway Board by keeping significant control with the Central Government. There are calls for making the Railway Board an autonomous body with decision-making powers.
- **Limited Deliberation:** The Bill was introduced without forming an all-party Parliamentary committee for broader consultation, which some believe would have improved the legislation's effectiveness.
- **Exclusion of Expert Recommendations:** The Bill fails to incorporate recommendations from several expert committees, such as the 2015 Committee on Restructuring of Railways, which suggested creating an independent regulatory body for railways.
- **Social Inclusion and Merit-Based Appointments:** Concerns have been raised regarding the need for representation of Scheduled Castes (SCs), Scheduled Tribes (STs), Other Backward Classes (OBCs), and women in the Railway Board.
- **Lack of statutorily defined qualifications and terms of employment**: Critics emphasize that appointments should be based on qualifications and domain expertise, not political affiliations. The bill says that the qualifications and terms of employment of members of Railway board will be decided by Central Government, which can compromise the independent functioning of Railway Board.
- **Safety and Operational Issues:** The Bill does not address critical challenges like:
  - Railway safety and accident prevention.
  - Filling vacancies within the railway workforce.
  - Technical upgrades and bureaucratic inefficiencies.

- **Centralized Control:** There are apprehensions that the Bill strengthens the Centre's control over railway operations, potentially bypassing parliamentary oversight.

DIrect Benefit Transfers

Syllabus Mapping: GS Paper 3, Economy, Inclusive Growth

Context

DBT and cash transfer schemes have gained significant traction in India. Around 15 states governed by various political parties have implemented versions of unconditional cash transfers, targeting women and marginalized sections of society.

Current Situation

- **Widespread Adoption**: Around 15 states, governed by different political parties, have implemented cash transfer schemes targeted at women. Sixty percent of India's women population now reside in these states.
- **Fiscal Magnitude**: Nearly 100 million women receive direct cash transfers annually, amounting to approximately **$25 billion (₹2 lakh crore)**, roughly **10% of the annual revenue of state governments combined**.
- **DBT Success**: The **DBT** program, initiated in 2013, has disbursed over **₹5.5 lakh crore** in subsidies and benefits to over 700 million individuals since inception, significantly reducing leakages.
- **Schemes Targeting Women**:
  - **Ladli Lakshmi Yojana (MP)**: Incentives for girl child education and marriage.
  - **KCR Kit Scheme (Telangana)**: Financial assistance for women post-pregnancy.
  - **Mukhya Mantri Kanya Sumangala Yojana (UP)**: Conditional cash transfers to girl children for education and health.

Arguments in Favour of Monetary Transfer Policies

- **Empowerment of Women**: Cash transfers to women enhance their financial independence and decision-making power, fostering gender equality.
- **Poverty Alleviation**: Direct cash injections help the poorest families meet basic needs, reducing abject poverty.
- **Boost to Consumption**: Unconditional cash transfers increase household consumption, stimulating demand in the economy.
  - **E.g.,** The **Economic Survey 2022** noted that rural consumption grew by **10%** in states implementing cash transfer schemes, as beneficiaries used funds for food, clothing, and education.
- **Flexibility in Spending**: Beneficiaries can prioritize spending according to their needs, ensuring better resource utilization.
- **Economic Multiplier Effect**: Cash transfers can indirectly contribute to local economic growth by increasing spending in rural and underserved areas.

Drawbacks

- **Fiscal Burden**: The Reserve Bank of India highlighted that too many centrally-sponsored schemes are straining state budgets, reducing flexibility in state spending.
  - **E.g.,** The disbursement under these schemes surged from Rs 11,000 crore in 2021 to Rs 1,09,554 crore in 2024.
- **Inflationary Pressures**: Injecting large sums of money into the economy can lead to inflation, disproportionately affecting the poor.
- **Short-Term Focus**: Immediate fiscal costs are tangible, whereas benefits like empowerment and poverty reduction are long-term and intangible.
- **Dependency Risk**: Unconditional transfers might discourage work effort among certain beneficiaries, fostering dependency on government aid.
- **Inefficiency in Targeting**: Leakages, misidentification, and exclusion errors can result in benefits not reaching the truly needy.

Way Forward

- **Calibrated Implementation**: Limit annual increases in cash transfer budgets to **5%** while focusing on targeted expansions.
- **Better Targeting Mechanisms**: Leverage the **Aadhaar-PAN linkage** and recent census data for accurate identification of beneficiaries.

- **Focus on Complementary Policies**: Combine cash transfers with skill development programs like **PM Kaushal Vikas Yojana**, ensuring long-term income security.
- **Fiscal Discipline**: Dedicate revenue from additional cess (e.g., infrastructure cess) to fund cash transfers, maintaining fiscal deficit below the **3% target**.
- **Periodic Impact Assessment**: Initiate annual independent audits of schemes to measure their **social return on investment (SROI)**.
- **Encourage Women-Centric Initiatives**: Link cash transfers with self-help group activities like those under the **National Rural Livelihood Mission (NRLM)** to foster entrepreneurship among women.

India's Manufacturing Sector: Growth, Challenges, and Opportunities

Syllabus Mapping: GS Paper 3, Industrial Policy

Context

India's efforts to emerge as a global manufacturing hub have gained significant momentum, driven by strategic policy initiatives, particularly the Production Linked Incentive (PLI) scheme.

Growth and Performance: Insights from ASI 2022-23

- **Impressive Sectoral Growth:** Manufacturing output grew by **21.5%** in 2022-23, with GVA increasing by **7.3%**.
  - PLI-covered sectors like **basic metals**, **petroleum products**, **food products**, **chemicals**, and **motor vehicles** contributed **58% to total manufacturing output**, registering an output growth of **24.5%**.
  - The recovery from the COVID-19 pandemic disruptions is evident, with performance surpassing pre-pandemic levels.
- **PLI Scheme Impact:** The PLI scheme has enhanced productivity in sectors such as:
  - **Mobile manufacturing**
  - **Electronics**
  - **Automobiles**
  - **Pharmaceuticals**
  - **Textiles**
- This scheme underscores India's ability to align policy support with industrial growth.

Challenges in the Manufacturing Sector

- **Rising Input Costs:** Input prices surged by **24.4% in 2022-23**, leading to a notable gap between output growth (21.5%) and GVA growth (7.3%).
  - Import dependency for raw materials exacerbates the cost pressures.
- **Regional Imbalances**: Industrial activity is concentrated in **five states** — Maharashtra, Gujarat, Tamil Nadu, Karnataka, and Uttar Pradesh — which collectively account for:
  - **54% of total manufacturing GVA**
  - **55% of employment**
  - Other regions lag in development, limiting nationwide manufacturing growth.
- **Missing Middle Problem:** Much of India's manufacturing is concentrated in small sized MSME firms or very large companies. Middle sized firms which have been globally recognised as key drivers of the manufacturing sector are found missing in India. This is due to perverse incentives that keeps small sized firms from growing.
- **Poor infrastructure and high logistics cost:** Logistics cost accounts for 14% of India's output which is much higher when compared to 7-8% for advanced manufacturing economies. To add to this, India's infrastructure such as poor power availability, slow freight traffic adds to the vows of manufacturers.
- **Poor integration with Global Value Chains:** Much of global manufacturing is today done in one geography but is integrated in a global value chain, which requires smooth imports and exports regime, ease of mobility of goods and man-power. These factors are not as well developed when compared to advanced economies in India.
- **Factor market issues:** Rigidities of factor markets ie of land, labour and inefficiencies of bureaucratic red-tapism and corruption disincentivise large scale manufacturing from developing in India.

Opportunities for Growth and Expansion

- **Extending PLI Coverage:** Labour-intensive sectors such as **apparel**, **leather**, **footwear**, and **furniture** can benefit from PLI expansion.
  - Sunrise industries like **aerospace**, **space technology**, and **Maintenance, Repair, and Overhaul (MRO)** hold immense growth potential.
  - Focus on **capital goods** to reduce import dependency and promote domestic capabilities.
- **Boosting MSMEs**: **MSMEs** contribute **45% of India's manufacturing GDP** and employ **60 million people**.
  - Tailoring PLI incentives for MSMEs by lowering capital investment thresholds and production targets could enable better integration into value chains.
- **Increasing Women's Workforce Participation**: Women's participation in manufacturing could boost output by **9%** (World Bank estimate).
  - Infrastructure development near factories, such as **hostels**, **dormitories**, and **childcare facilities**, is essential to enhance inclusivity.
- **Promoting Green and Advanced Manufacturing:** Encouraging **green manufacturing** and **R&D in advanced technologies** can enhance sustainability and competitiveness.

Policy Recommendations for Overcoming Challenges

- **Addressing Input Costs:** Simplify import tariffs into a three-tier system:
  - 0-2.5% for raw materials
  - 2.5-5% for intermediates
  - 5-7.5% for finished goods
  - This strategy could reduce input costs, enhance competitiveness, and improve integration into global value chains.
- **Reducing Regional Imbalances:** Encourage state-level participation in implementing reforms related to **land**, **labour**, **power**, and **infrastructure**.
  - Invest in underdeveloped regions to balance industrial growth.
- **Improving Ease of Doing Business:** Streamline regulatory frameworks to attract domestic and foreign investments.
  - Reduce the cost of doing business to enhance global competitiveness.

Future Prospects: Towards a Developed Economy

- With sustained efforts, the manufacturing sector's share in GVA could rise:
  - From **17% currently to 25% by 2030-31**.
  - Further to **27% by 2047-48**, aligning with India's vision of becoming a developed economy.
- The sector's transformation will require leveraging policy initiatives like the PLI scheme, fostering inclusivity, and enhancing domestic capabilities.

RBI want a hedge against dollar reliance, but not push for de-dollarisation

Syllabus Mapping: GS Paper 3, Economy, RBI

Context

The Reserve Bank of India (RBI) Governor said that India is not pursuing "de-dollarisation", and that recent measures promoting transactions in domestic currencies are intended to de-risk Indian trade. The clarification came days after US President-elect Donald Trump threatened "100 per cent tariffs" against BRICS countries if they sought to reduce reliance on the US dollar in international trade.

- RBI decisions such as allowing **Vostro accounts and entering local currency trade agreements** are **aimed at diversifying risk rather than reducing dependence on the dollar.**
- RBI has been buying more gold and moving its gold reserves back to India from abroad. This move is partly due to growing global uncertainties, especially after the Ukraine war, and is also a response to fears of facing secondary sanctions.

- **Vostro Accounts**: A Vostro account is an account held by a foreign bank with a domestic bank in the domestic bank's currency.
  - **E.g.**, a Russian bank holding an account in an Indian bank denominated in rupees would be a Vostro account. This allows for trade settlements in **local currencies** (e.g., rupees and rubles) rather than having to rely on the U.S. dollar.
- **Local Currency Trade Agreements**: These agreements allow two countries to trade using their own currencies instead of using the dollar as an intermediary.
  - **E.g.,** if India enters a trade agreement with the UAE, transactions could be settled in **rupees and dirhams** directly.

Global Trends in Gold Purchases

- **Record Purchases by Central Banks:** Central banks bought **1,136 tonnes of gold in 2022** (highest annual demand on record) and **1,037 tonnes in 2023**.
  - The **World Gold Council** reported 60 tonnes of net gold purchases in October 2024:
    - RBI added **27 tonnes**.
    - Turkey and Poland added **17 tonnes** and **8 tonnes**, respectively.
- **China's Leadership in Gold Purchases:** The **People's Bank of China** has been the largest buyer of gold in the past two years.
  - China's gold buying supports sanctions-hit Russia and aligns with its trade war with the US.
- **Impact of Increased Gold Holdings:** Central banks reduce the need for US dollar reserves, freeing capital for growth projects.
  - The **IMF's Currency Composition of Official Foreign Exchange Reserves (COFER) data** shows a gradual decline in the dollar's share in global reserves, with gains in the yuan accounting for **a quarter of the dollar's decline**.

Fact

- After the West froze $300 billion of Russian foreign reserves, the yuan became the most traded currency in Russia last year.

Why is India not supporting de-dollarization?

- Growing use of the Chinese yuan as an alternative to the US dollar. India has chosen not to use the yuan for buying Russian oil, even though Russia is increasingly accepting the yuan due to Western sanctions.
- US and USA based firms are large importers of Indian exports, pursuing de-dollarisation can invite trade sanctions harming India's exports.
- USA companies possess critical technologies which are important for India's development. The policy of de-dollarisation may stop the US from sharing technologies with India.
- USA has emerged as a closely aligned partner in global affairs. India sees China as a larger threat. De-dollarisation aims to restrain the USA and will eventually boost China's economic might.
- Considering the dominance of the USA dollar on global trade, it is not prudential for India to pursue de-dollarisation.

Challenges of Dollar Dominance in India's Neighborhood

- **Regional Economic Strain:** Countries like **Sri Lanka, Bangladesh, Nepal, and Pakistan** experienced sharp declines in dollar reserves following the Ukraine war, causing trade disruptions and social unrest.
- **India's Dollar Concerns:** Surging oil prices and the dollar's high value have raised costs for India. Although India has robust dollar reserves, it aims to reduce reliance through domestic currency trade.
- USA's use of its dollar for pursuing national security aims. For ex. USA froze dollar denominated assets of Taliban and Russia during the conflicts in Afghanistan and Ukraine. Countries including India see this as a threat to their economic sovereignty.

India's Push for Domestic Currency Trade

Initiatives:

- **Trade in Domestic Currencies:** India is encouraging trade with Russia and the UAE in local currencies to reduce dependence on the US dollar.
- **Internationalization of the Rupee:** A potential boost could come if oil exporters begin accepting rupee payments.

- **Joining bilateral currency swap arrangements** such as India has entered into a series of currency swap agreements with bilateral partners like Sri Lanka, Japan etc. At the multilateral level, India has joined the **BRICS Contingent Reserve Agreement (CRA)** and IMF to offer protection in case of a currency crisis.

In energy-dependent world, the issue of food security

Syllabus Mapping: GS Paper 3, Food Security

Context

The World Bank's latest report on climate and development emphasizes the critical interconnection between food insecurity and energy poverty. The report asserts that addressing these intertwined crises is essential for achieving global stability.

Interconnected Crises: Food and Energy

- **Strain on Systems**:
  - **Food production** faces challenges from **climate change, population growth, and inequality**.
  - **Energy systems** struggle with **geopolitical tensions**, **outdated infrastructure**, and a **slow transition** from fossil fuels.
- **Agriculture's Dual Role**:
  - Agriculture is both a **major energy consumer** and a **significant emitter** of greenhouse gases, contributing over **20%** of emissions.
  - Nearly **70% of global freshwater resources** are consumed by agriculture.
  - Dependency on fossil fuels for mechanization, irrigation, fertilizer production, and transportation creates a **vicious cycle of degradation**.
  - **Food vs. Energy Needs**: Agriculture is expected to support **biofuel production**, creating competition for **land and water resources**.
    - In a world where **12%** face hunger, prioritizing energy over food raises ethical concerns.
  - **Financial Requirements**:
    - Ensuring basic caloric needs for vulnerable populations requires **$90 billion annually** until 2030.
    - Tackling malnutrition among women and children needs an additional **$11 billion per year**.
    - Transforming food systems could cost **$300–$400 billion annually** (about **0.5% of global GDP**).
    - For low-income nations, food insecurity costs can surpass **95% of GDP**.
- **Renewable Energy Challenges**:
  - High-income countries accounted for **83%** of new renewable capacity in 2022.
  - Low-income nations remain reliant on **carbon-intensive systems**.
  - Innovations like **solar-powered irrigation** and **biomass energy** offer promise but are hindered by **high costs** and **infrastructure deficits**.

Dependency on Carbon-Intensive Energy

- **Vulnerability of Food Systems**:
  - Fossil fuel reliance exposes agriculture to **energy price shocks**.
  - Rising temperatures and erratic weather patterns disrupt output, endangering the livelihoods of **2.5 billion people**.
  - Between **2020 and 2023**, **11.8%** of the global population faced severe food insecurity, projected to increase to **956 million** by **2028**.
- **Energy Investments**:
  - In **2022**, renewable energy investments reached **$500 billion**, but fossil fuel consumption persists due to economic and geopolitical pressures.
  - Countries like the **United States, Brazil**, and **Guyana** continue expanding **oil and gas production**.
- **Global Inequities**:
  - Low-income countries suffer disproportionately from **energy supply disruptions** and **infrastructure damage** due to extreme weather.

  - In **sub-Saharan Africa**, fertilizer use per hectare remains low despite spending **$1.9 billion** on fertilizer imports in 2021 (a doubling since 2016).
- **Impact of Natural Gas Prices**:
  - **80%** of natural gas is used for ammonia synthesis (fertilizer), and **20%** powers the process.
  - Price volatility affects global food costs.
  - **China's 2021 ban** on phosphate fertilizer exports caused delays for countries like **India**, which imports **60%** of its **DAP fertilizers**.

Consequences of Inaction

- **Economic and Social Costs**: Food insecurity could cost the global economy **trillions** in lost productivity and poor health outcomes.
  - **Climate-induced energy disruptions** may lead to regional instability, social unrest, and **mass migration**.
- **Africa's Resource Paradox**: Despite Africa's **mineral wealth** essential for renewables, local economies often don't benefit, perpetuating poverty.

Need for Inclusive Solutions

- **Urgent Action**:
  - Despite record investments in renewables, fossil fuel use continues.
  - Delays increase **human, environmental, and economic costs**.
  - Clean energy must address **structural barriers** to ensure vulnerable communities benefit.
- **Reimagining Agriculture**:
  - Agriculture must be viewed as a driver of **sustenance and sustainable development**.
  - Failure to act risks worsening hunger and derailing **global climate goals**.

How to make self-employment count

Syllabus Mapping: GS Paper 3, Employment

Context

The dominance of the agricultural sector, coupled with a shift towards the services sector while neglecting manufacturing, significantly contributes to the persistently high levels of self-employment.

Key Characteristics of India's Labour Force

- **Low Participation and Stagnant Structure:** India has a **low rate of workforce participation** among the working-age population.
  - The structure of labour force participation has remained **largely unchanged for decades**.
- **High Self-Employment Rates:** India has a **higher proportion of self-employed workers** and a **smaller share of wage and salaried workers** compared to other middle-income economies.
  - **Over 50%** of the working population is self-employed:
    - **Rural Areas:** Approximately **60%** self-employed.
    - **Urban Areas:** About **40%** self-employed.
  - There has been an **increase in self-employment** between **2017-18** and **2023-24**, particularly in rural areas and among women.
- **Gender Disparity in Self-Employment:**
  - **Men:** Predominantly **own-account workers** (running their enterprises).
  - **Women:** Largely **"helpers in household enterprises"**.
  - While the gender gap in own-account workers has narrowed between 2017-18 and 2023-24, the proportion of women working as **"helpers"** has increased.

Implications of High Self-Employment

- **Work Quality and Productivity Issues:** High self-employment levels indicate **poor work quality** and low productivity, especially in rural areas.
  - Self-employment is often a **fall-back option** due to the lack of better opportunities.
- **Informality and Lack of Security:** Self-employed workers lack **formal job benefits** such as:
    - Social security coverage
    - Paid annual or sick leave
    - Written employment contracts
  - This results in increased **informality of work**.
- **Low Earnings and Underemployment**
  - **Self-employed earnings** are barely above casual labour levels.
  - The **gender earnings gap** has widened between 2017-18 and 2023-24, particularly in rural areas.
  - **Zero earnings:** Almost all self-employed helpers report zero earnings, regardless of gender.
  - Self-employed women often work **less than 40 hours per week**, leading to **underemployment**.

Constraints to Improving Self-Employment Quality

- **Education and Skills Deficiency**
  - **Low Education Levels:** In 2017-18, only **17%** of self-employed workers had completed Grade XII or higher, which marginally increased to **20.6%** in 2023-24.
    - **For self-employed women:**
- **2017-18**: **9%** completed high school or beyond.
- **2023-24**: Increased to only **11.4%**.
  - **Vocational Training:**
    - **Abysmally low:** Only **3%** of all self-employed had any formal or vocational training.
- This gap limits their ability to enhance their skills and improve their work quality.
- **Limited Access to Formal Credit**
  - **Limited Credit Access:** Many self-employed workers lack access to formal credit markets, which restricts their ability to expand their businesses.
    - Approximately 41% of unincorporated non-agricultural establishments operate on a small scale within household premises.
    - Limited credit increases borrowing costs and reduces loan size, constraining the growth of enterprises.
  - **Impact on Productivity:** Own Account Establishments (OAEs) have significantly lower productivity (₹1 lakh per worker) compared to Hired Worker Establishments (HWEs) (₹2 lakhs per worker).
- **Administrative and Legal Challenges**
  - **Complex Legal Processes:** Starting formal enterprises remains challenging due to **bureaucratic hurdles**.
    - Entrepreneurs are often forced to rely on **family-managed firms**, inhibiting growth.
  - **Impact of Poor Court Efficiency:** Court inefficiency hampers contract enforcement and lowers productivity.
    - Disproportionate negative effects on **SC-ST entrepreneurs**.
    - Affects the ability of enterprises to expand and generate employment.
  - **Example of Impact:** The difference in professional management accounts for **11%** of the per capita income gap between India and the US.

Solutions for Enhancing Self-Employment Quality

- **Vocational Training and Education:** Expanding vocational training and linking it with **entrepreneurship opportunities**.
  - Facilitating **credit access** for ITI graduates under schemes like **PM Mudra Yojana**.
- **Access to Formal Credit:** Improving access to **formal credit markets** to expand self-employment and enterprise size.
- **Administrative and Legal Reforms:** Simplifying the process of starting and managing formal enterprises.

- Enhancing the **efficiency of courts** to improve contract enforcement and reduce friction in business operations.

Stagnant Wages and Slowing Growth: Addressing India's Economic Imbalance

Syllabus Mapping: GS Paper 3, Employment

Context

Corporate profits in India reached a **15-year high** in March 2024, with profit after tax hitting **4.8% of GDP**. Despite these profits, **wage growth in the private sector has stagnated**, sparking concerns over reduced demand and broader economic recovery post-COVID-19.

Key Stats

- **Stagnant Wage Growth:** Wages in key sectors have grown very slowly over the last five years (2019–2023):
  - **Engineering, Manufacturing, Process, Infrastructure (EMPI):** 0.8% annual growth.
  - **Fast-Moving Consumer Goods (FMCG):** 5.4% annual growth (highest among sectors).
  - **Banking, Financial Services, and Insurance (BFSI):** 2.8% annual growth.
  - **Retail:** 3.7% annual growth.
  - **Information Technology (IT):** 4% annual growth.
  - **Logistics:** 4.2% annual growth.
- **Impact of Inflation on Wages:**
  - Inflation during the same period eroded real wages:
  - Inflation rates were **4.8% (2019–20)**, peaking at **6.7% (2022–23)**, and slightly moderated to **5.4% (2023–24)**.
  - For many workers, **real income** (wages adjusted for inflation) either stagnated or declined, making their **purchasing power weaker.**
- **Average Wages Across Sectors:**
  - FMCG workers earned the lowest average wage of ₹**19,023/month** in 2023.
  - IT professionals had the highest average wage of ₹**49,076/month** in 2023.

Reasons Behind Stagnant Wages

- **Labour Surplus:** Post-pandemic, India's economic growth is behind by **7%** compared to pre-COVID projections.
  - A larger workforce is competing for limited opportunities, reducing employees' bargaining power for higher wages.
- **Global Trends:** A declining share of wages in GDP is a worldwide phenomenon, driven by weaker organized labour since the 1990s.
- **Low Productivity:** Indian labour productivity remains poor compared to global standards.
  - Without productivity improvements, wage increases become unsustainable for businesses.
- **Corporate Cost Optimization:** Many companies have reduced staff costs to maintain profit margins.
  - Managerial compensation often remains high, but the decline in wages is sharper for non-managerial roles.

Way Forward

- **Productivity Enhancement:** Investment in skill development and technology can improve labour productivity, enabling sustainable wage increases.
- **Formalization of Workforce:** Expanding formal employment opportunities can help bridge income gaps, especially in labour-intensive sectors.
- **Balancing Profits and Wages:** Businesses must share their profits more equitably with workers to ensure demand remains robust.
- **Sector-Specific Interventions:** Boost employment in industries like textiles, tourism, and manufacturing to create more quality jobs.

Suggestions for boosting agriculture sector in the upcoming budget

Syllabus Mapping: GS Paper 3, Government Budgeting and Agriculture

Context

The upcoming Union Budget for 2025-26 presents an opportunity to address critical challenges in the agricultural sector, particularly in light of climate change and the need for sustainable practices.

Challenges in Indian Agriculture

- **Impact of Climate Change:** Temperatures in India have risen by 0.7°C since 1951.
  - July-September precipitation has declined by 6%, increasing risks to agricultural productivity.
- **Soil Health Issues:** Low organic carbon content and inadequate moisture retention in soils.
  - Current farming practices and imbalanced fertiliser usage exacerbate the problem.
- **Skewed Fertiliser Subsidy Policy:** Urea is heavily subsidised compared to other nutrients like phosphate (P) and potash (K), leading to overuse of nitrogen (N).
  - Micronutrients like iron, zinc, and boron are underutilized.
- **Pro-Consumer Bias in Food Policy:** Frequent export bans (on onions, wheat, sugar, and rice) and below-cost domestic market dumping by FCI harm farmers.
  - Economic cost of rice to FCI: ₹39/kg; sold in the open market at ₹29/kg.
- **Negative Producer Support Estimate (PSE):** India's PSE is -15.5%, indicating an "implicit tax" on farmers, compared to 14% support in China and OECD countries.

Suggestions for Agriculture Sector

- **Increase Agri-R&D Spending**:
  - **Current allocation**: <0.5% of agri-GDP.
  - **Proposed**: Double to at least 1% of agri-GDP.
- **Promote Soil Health**:
  - Support practices that enhance organic carbon and moisture retention.
  - Emphasize balanced fertilisation (macronutrients and micronutrients).
- **Introduce a Direct Income Transfer Scheme:**
  - Based on per-hectare basis, using existing data (fertiliser sales, soil health cards, PM-KISAN).
  - Free fertiliser prices from controls to restore balance in N, P, K usage.
  - Promote technological innovations like nano-urea and nano-DAP.
  - **Benefits:**
    - Improve nutrient use efficiency.
    - Reduce environmental damage and plug leakages in subsidies.
    - Restore farmer trust through effective communication.
- **Learn from Milk Revolution:**
  - Milk: India's largest agri-commodity with 239 million tonnes production, surpassing the US (103 million tonnes).
  - Farmers receive 75-80% of consumer price in the milk value chain.
- **Revolutionise Fruits and Vegetables**:
  - Currently, farmers receive only ~33% of consumer price.
  - Establish a dedicated board like NDDB (National Dairy Development Board) for fruits and vegetables.
  - Appoint a visionary leader akin to Verghese Kurien to drive reforms.
- **End Anti-Market Practices**:
  - Stop export controls, private stock limits, and futures bans.
  - Ensure market-driven pricing without excessive government intervention.
- **Encourage Long-Term Market Reforms**:

  - Move from pro-consumer bias to balanced farmer-consumer policy.
  - Facilitate open markets to enhance farmer incomes and stabilize supply.
- **Promote Sustainable Agriculture:**
  - Strengthen initiatives like the Natural Farming Mission.
  - Recognize that natural farming alone cannot feed a growing population (1.67 billion by 2050).
  - Combine biofertilisers with appropriate chemical fertilisers for sustainable productivity.

Demand For New Seeds Bill

Syllabus Mapping: Agriculture, Inputs, Seeds

Context

On the 2nd day of the National Seed Congress (NSC), experts, scientists and industry representatives urged the government to modernize the Seeds Bill of 2004 and the Seeds Policy of 2002.

About 13th National Seed Congress

- It is a 3 day conclave of policymakers, scientists, and farmers seeking transformative solutions, in the wake of climate change and increasing diseases in various crops.
- **Organisers of the conclave:** Union Agriculture Ministry, UP Agriculture Ministry, International Rice Research Institute, National Seed Research and Training Centre and Federation of Seed Industries of India.
- **International Rice Research Institute (IRRI):** It is a non-profit organization that conducts research and training on rice to improve the quality of life for communities that rely on rice as a subsistence food. **(Established in 1960, HQ-Manila, Philippines)**
- The seed industry has demanded **"one nation, one licence"** to promote research and development and use of hybrid seeds introduced by the private sector.

Challenges in Seed Sector

- **Outdated Legislation & Policies:**
  - Existing legislation like the Seeds Act (1966) lacks relevance to modern agricultural needs.
  - A new bill was introduced in **Parliament in 2004** but has not been passed due to **opposition from farmers**.
  - Currently, we are following **the National Seeds Policy of 2002,** which needs to be updated to meet the evolving requirements of the seed industry.
- **Low Quality Assurance:**
  - India's seed standards lag behind international levels, affecting competitiveness in global markets.
- **High Costs:**
  - For many **small and marginal farmers**, high-quality seeds are financially out of reach.
  - This limits their access to improved crop varieties and technologies.
- **Lack of Awareness:**
  - Many farmers are **unaware of the benefits** of using certified seeds or improved varieties. It results in continued reliance on traditional or low-quality seeds.

Way Forward

- **Policy Reforms:**
  - Modernize seed laws to reflect technological advancements and address farmer concerns.
  - Define **clear distinctions between farmer-saved seeds and commercial seeds** to ensure clarity and compliance.
- **Strengthening Quality Assurance Systems:**
  - Enhance seed testing and certification infrastructure to meet international standards.
- **Investment in Research and Development:**
  - Increase funding for R&D to develop climate-resilient and high-yielding seed varieties.
  - Encourage the use of biotechnological advancements to address pest resistance and nutritional challenges.

- **Promoting Public-Private Collaboration:**
  - Encourage partnerships between public research institutions and private companies to leverage their respective strengths in innovation and market access.
- **Capacity Building for Farmers:**
  - Educate farmers about modern seed technologies, quality standards, and efficient utilization practices through comprehensive extension services.
  - Promoting awareness campaigns to inform farmers about government policies, schemes, and subsidies in the seed sector.

TOPICS FOR PRELIMS

PAN 2.0 project

Syllabus Mapping: Economy, Government Budgeting

Context

The Union Cabinet has approved the PAN 2.0 Project with a financial outlay of ₹1,435 crore.

About Permanent Account Number (PAN) 2.0 Project

- The project aims to transform the PAN system into a robust identifier for businesses and individuals, enhancing its utility and integrating it further with financial and tax-related processes.
- **About PAN:**
  - It is a 10-digit alphanumeric identifier issued by the Income Tax Department. It links transactions like tax payments, TDS/TCS credits and returns of income & is mandatory for filing income tax returns.
- **Key Features of the project:**
  - **Enhanced QR Code:** A QR code will be incorporated into all new and old PAN cards, allowing for better integration with financial systems.
  - **Unified Portal:** A new, paperless, and online portal will replace the outdated software, improving accessibility and efficiency.
  - **PAN Data Vault:** Mandatory secure storage for PAN data for entities such as banks and insurance companies.
  - **Integration with Existing Identifiers:** PAN will become the common business identifier, merging other identification numbers like TAN (Tax Deduction and Collection Account Number) and TIN (Taxpayer Identification Number).
  - **Free Upgrade for Existing Users:** Around 78 crore PAN holders can upgrade to the new QR-code-enabled PAN card free of cost. The PAN number for existing users will remain unchanged.

Oilfields Amendment Bill, 2024

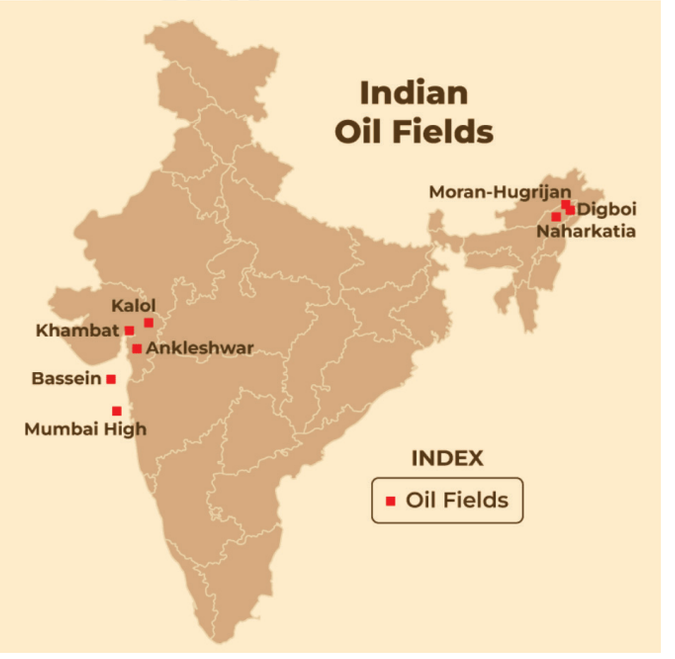
Syllabus Mapping: Economy, Infrastructure, Resources

Context

The Rajya Sabha recently passed the Oilfields (Regulation and Development) Amendment Bill, 2024, via a voice vote.

About Oilfields Amendment Bill, 2024

The Oilfields Bill amends the Oilfields (Regulation and Development) Act of 1948, which originally governed both oil and mineral operations.



Key Amendments

- **Expanding Definition of Mineral Oil**
  - In the present act, petroleum and natural gas are the only two that have been defined as mineral oil.
  - The amendment expands the definition to include any naturally occurring **hydrocarbon, coal bed methane, and shale gas/oil.**

  - It also clarifies that the **definition will not include "coal, lignite and helium** occurring in association with petroleum or coal or shale."
- **Petroleum Lease:**
  - The Bill introduces **"petroleum leases" as a replacement for "mining leases."** These leases cover activities like prospecting, exploration, development, production and disposal of mineral oils.
- **Expanding Centre's Regulatory Powers:**
  - The Act empowers the Centre to make rules on matters such as the grant of leases, deciding the terms and conditions of the lease, conservation and development of mineral oils, methods for producing oil, etc.
  - In addition to making rules for leases to reduce greenhouse gas emissions, sharing of oil production and processing units.

SBI raises ₹50,000 crore via bonds in FY25

Syllabus Mapping: Economy, Banking System

Context

The State Bank of India (SBI) has raised ₹50,000 crore through domestic bonds so far during FY25.

Types of Bonds

Types of Bond	Description
Fixed-rate Bonds	Pay a fixed interest rate over the life of the bond, ensuring a fixed amount of income for the bondholder.
Floating-rate Bonds	Interest rate is adjusted periodically according to market conditions, fluctuating with changes in the market rate.
Zero-coupon Bonds	Do not pay interest; offered at a discount to their face value, with investors receiving the full face value at maturity. Also known as **deep discounted bonds.**
Convertible Bonds	Hybrid securities offering fixed interest payments and an option to convert into equity shares at a predetermined price within a specific timeframe.
Perpetual Bonds/ AT-1 Bonds	**Do not have a maturity date** and provide fixed interest payments indefinitely, popular for their steady income stream.
Inflation-linked Bonds	Offer returns indexed to the inflation rate, ensuring that returns keep pace with inflation as rates rise.
Municipal Bonds	Issued by local and state governments to finance projects like schools and highways; often offer tax exemptions and can have short-term or long-term maturities.
High-yield Bonds	Also known as **junk bonds**, issued by companies with lower credit ratings; riskier due to a higher chance of default, but offer higher yields to attract investors.
Green Bonds	Debt instruments that are issued to finance projects that have a positive environmental impact. The money raised from investors is used to finance projects like - Renewable energy, Electric vehicles, Energy efficient buildings, Pollution prevention and control, Clean transportation etc.
Masala Bonds	Debt instruments issued by **Indian companies outside of India in Indian rupees.** Kerala was the **first Indian state** to issue masala bonds in 2019.

Vizhinjam International Seaport

Syllabus Mapping: Economy, Infrastructure: Ports

Context

The Vizhinjam International Seaport is expected to be commissioned in December 2024.

About Vizhinjam International Seaport

- It is **India's first deepwater transshipment port** located in Vizhinjam (near Thiruvananthapuram), Kerala.
  - **Deepwater Port:** Manmade structures that are used as ports or terminals to transport, store or handle oil and natural gas.
  - **Transhipment Port:** It is a transit hub where cargo is transferred from one ship to another while in transit to its final destination.
- It is built on a **design, build, finance, operate and transfer (DBFOT) model.**
  - **DBFOT** model is a **Public-Private Partnership (PPP)** model under which a private partner is responsible for:
    - Designing the project
    - Building the project
    - Financing the project
    - Operating the project during the contracted period.
  - **Transferring the project back to the public sector** after the end of contract period.
- There are **12 Major Ports in India:** Chennai, Cochin, Deendayal (Kandla), Jawaharlal Nehru (Nhava Sheva), Kolkata, Mormugao, Mumbai, New Mangalore, Paradip, V. O. Chidambaranar (Tuticorin), Visakhapatnam and Kamarajar Port Limited.

– Major Port at **Vadhavan,Palghar District, Maharashtra is under construction.**

Vadhavan Port

Syllabus Mapping: Economy, Infrastructure: Ports

Context

After completion of both phases by 2034, Vadhavan port will be among world's top 10 ports.

About Vadhavan Port

- It is developed as **an all-weather Greenfield deep draft major port.**
- **Location:** Near Dahanu town in Palghar (Maharashtra).
- It will be the **country's largest container port** (expected to handle 254 million tonnes of cargo annually).
- With a natural draft of **approximately 20 meters,** It will accommodate large container ships that are currently unable to dock at most Indian ports.
- It is constructed by **Vadhavan Port Project Limited (VPPL),** a Special Purpose Vehicle (SPV) formed by Jawaharlal Nehru Port Authority (JNPA) and Maharashtra Maritime Board (MMB) with a shareholding of 74% and 26%, respectively.

India's Port Sector

- India is the **16th largest maritime country in the world.**
- The Indian maritime sector contributes to **95% of India's trade by volume and 70% by value.**
- **Major Port:** Controlled by the **Ministry of Ports, Shipping & Waterways** controls major ports in India.
- **Minor Port:** Controlled by State Maritime Boards/Governments. There are 200 non-major ports.
- There are **12 Major Ports in India:** Chennai, Cochin, Deendayal (Kandla), Jawaharlal Nehru (Nhava Sheva), Kolkata, Mormugao, Mumbai, New Mangalore, Paradip, V. O. Chidambaranar (Tuticorin), Visakhapatnam and Kamarajar Port Limited.
  - **13th -Vadhavn Port (under construction).**
- India owns over **30% global market share in the ship breaking industry** and is home to the **largest ship-breaking facility in the world at Alang (Gujarat)**.

Govt. scraps windfall tax on domestic crude oil, export of fuels

Syllabus Mapping: Economy, Taxation

Context

The Union government has scrapped windfall tax on domestically-produced crude oil and export of jet fuel (ATF), diesel and petrol. It has also withdrawn road and infrastructure cess on petrol and diesel exports.

About Windfall Tax

- It refers to higher tax levied by the government on specific industries when the industry experiences unexpected and above-average profits.
- These could be due to various global and geopolitical events which are outside the control of the industry.
- **Windfall** refers to a dramatic and unanticipated increase in profits. On the other hand, **Tax** implies an imposition levied on this dramatic income growth.
- In India it is Imposed as a **Special Additional Excise Duty (SAED)** on crude oil production and exports of diesel, petrol and aviation turbine fuel (ATF).

Facts

- India is the **3rd largest** consumer of oil in the world, after the **United States and China.**
- **Top Crude Oil Import Destinations:** Russia > Iraq > Saudi Arabia > UAE

Banking Laws (Amendment) Bill, 2024

Syllabus Mapping: Economy, Banking and Monetary Policy

Context

The Lok Sabha has passed the Banking Laws (Amendment) Bill, 2024.

The Banking Laws (Amendment) Bill, 2024 aims to amend multiple banking-related laws:

- Reserve Bank of India (RBI) Act, 1934
- Banking Regulation Act, 1949
- State Bank of India Act, 1955
- Banking Companies (Acquisition and Transfer of Undertakings) Acts, 1970 and 1980.

Key Provisions of Banking Laws (Amendment) Bill, 2024

- **Definition of Fortnight for Cash Reserves:** Changes the definition of fortnight for calculating average daily balance for cash reserves.
  - **Current Definition:** A fortnight is defined as Saturday to the second following Friday (14 days).
  - **New Definition:**
    - From the 1st to the 15th of each month, or
    - From the 16th to the last day of the month.
- **Tenure of Directors of Co-operative Banks:** Increases the maximum consecutive tenure of a director (except chairman or whole-time director) of a co-operative bank from 8 to 10 years.
- **Prohibition on Common Directors in Co-operative Banks:** A director of one bank cannot serve on the board of another bank, except for RBI-appointed directors.

  - **Amendment:** Allows directors of central co-operative banks to also serve on the board of a state co-operative bank where they are a member
- **Nomination:** Currently a single or joint deposit holder can appoint one nominee.
  - **Amendment:**
    - Allows up to **4 nominees.**
    - **For Deposits:** Nominees can be named simultaneously or successively. In simultaneous nominations, the share is divided proportionally.
    - **For Lockers and Articles in Custody:** Successive nominations can be made, with priority based on the order of nomination.
- **Settlement of Unclaimed Amounts: Presently** unpaid or unclaimed dividends are transferred to the **Investor Education and Protection Fund (IEPF)** after **7 years**.
  - **Amendment:** Expanded the scope including
    - Shares with unclaimed dividends for 7 consecutive years.
    - Unpaid interest or redemption amounts for bonds for 7 years.
    - **Allows claimants to retrieve shares or funds transferred to the IEPF.**

Anna Chakra

Syllabus Mapping: Economy, Food Security

Context

The Union Food and Public Distribution Minister unveiled two transformative tools aimed at modernizing India's Public Distribution System (PDS) and subsidy mechanisms: **Anna Chakra & SCAN.**

About Anna Chakra

- **Developed by:** Department of Food and Public Distribution in partnership with the World Food Programme (WFP) and IIT-Delhi's FITT (Foundation for Innovation and Technology Transfer).
- **Objective:** To improve the efficiency of the Public Distribution System (PDS) by **optimizing the logistics network, ensuring timely delivery of essential commodities and reducing costs.**
- **Key Features:**
  - It is integrated with the PM Gati Shakti platform, which includes geo-locations of 4.37 lakh Fair Price Shops (FPS) and 6,700 warehouse
  - It is also integrated with the **Freight Operations Information System (FOIS) of Indian Railways** via the **Unified Logistics Interface Platform (ULIP)** for interstate PDS movement.
  - It uses advanced algorithms for route optimization to identify the most efficient delivery routes.

About Subsidy Claim Application for NFSA(SCAN)

- **Objective:** To modernize and expedite the settlement of food subsidy claims under the National Food Security Act (NFSA) through end-to-end automation.
- **Key Features:**
  - It will provide for a **single window submission of subsidy claims by states,** claim scrutiny and approval by Department of Food Public Distribution facilitating expeditious settlement process.
  - The portal will ensure **end-to-end workflow automation** of all the processes for release and settlement of food subsidy using rule-based processing.

Repo Rate

Syllabus Mapping: Economy, Banking and Monetary Policy

Context

The Monetary Policy Committee (MPC) of Reserve Bank of India (RBI) decided to keep policy repo rate unchanged at 6.50% for the 11th bi-monthly review in a row.

What is Repo Rate (Repurchase Rate)?

It is the interest rate at which the Reserve Bank of India (RBI) lends money to commercial banks against government securities as collateral for short-term needs.

How is the Repo Rate Used by the MPC?

- **Inflation Control**: The MPC adjusts the repo rate to manage inflation.
  - A higher repo rate makes borrowing costlier for banks, reducing the money supply in the economy and thereby controlling inflation.
  - Conversely, a lower repo rate boosts lending and stimulates economic activity.
- **Liquidity Management**: By altering the repo rate, the MPC influences liquidity in the financial system.
  - A higher rate tightens liquidity, while a lower rate eases liquidity conditions.
- **Economic Growth**: The repo rate affects overall interest rates in the economy.
  - Lowering the repo rate promotes borrowing and investment, supporting economic growth.
  - Raising it can slow growth to manage overheating or inflationary pressures.
- **Exchange Rate Stability**: Changes in the repo rate can impact the value of the rupee by affecting capital flows and investor sentiment.

Reasons for Keeping the Repo Rate Unchanged

- **Persistently High Inflation**: Inflation spiked to a **14-month high of 6.2%** in October, exceeding the RBI's comfort level of 4%.
  - The MPC's focus remains on a **durable alignment of inflation with the 4% target**.
- **Growth Concerns**: **Real GDP growth** for the July-September quarter fell to a **seven-quarter low of 5.4%**, below the RBI's projection of 7%.
  - The MPC revised the growth forecast for 2024-25 to **6.6%** from **7.2%**, reflecting weakening growth momentum.
- **Uncertain Economic Environment**: Factors like **adverse weather events, geopolitical uncertainties, and financial market volatility** pose risks to inflation and growth.
  - The MPC is maintaining a **'neutral' stance** to carefully balance inflation control with supporting growth.
- **Tight Liquidity Conditions**: Despite growth challenges, liquidity has been tight in the system.
  - To address this, the **Cash Reserve Ratio (CRR)** was cut by **50 basis points to 4%** to inject **₹1.16 lakh crore** into the banking system.

Cash Reserve Ratio (CRR)

- It is the **percentage of a bank's public deposits** that must be maintained as cash reserves **with the Reserve Bank of India (RBI)**.
- This ensures that banks have sufficient funds to meet customer withdrawal demands and manage liquidity effectively.
- The CRR is a critical instrument in the RBI's monetary policy, influencing the money supply in the economy.
- During periods of high inflation, the RBI increases the CRR, limiting the funds available for lending, which helps reduce excess liquidity and control rising prices.
- Conversely, in times of slow economic growth, lowering the CRR allows banks to lend more freely, thereby stimulating investment and boosting economic activity.

Employees' Provident Fund Organisation (EPFO)

Syllabus Mapping: Economy, Employment and Social Security

Context

India has won the **International Social Security Association's (ISSA) Good Practice Award** for the Asia-Pacific region this year for five services offered by the **Employees' Provident Fund Organisation (EPFO)**.

About EPFO

- **Body**: It is a statutory body under the **Ministry of Labour and Employment, Government of India**.
- **Establishment**: Formed on **1st November 1951**.
- **Governed by**: the **Employees' Provident Funds and Miscellaneous Provisions Act, 1952**.
- **Objective**:To provide financial security and social welfare to employees through a contributory provident fund, pension scheme, and insurance scheme.
- **Administration**: Managed by the **Central Board of Trustees (CBT)**, which consists of representatives from the government, employers, and employees.
  - The **Union Minister of Labour and Employment** serves as the Chairperson of the CBT.

Major Schemes Managed by EPFO

- **Employees' Provident Fund (EPF) Scheme, 1952**:
  - A retirement savings plan where both employer and employee contribute 12% of the employee's basic salary and dearness allowance.
  - The accumulated fund is available upon retirement, resignation, or can be partially withdrawn for specified purposes.
- **Employees' Pension Scheme (EPS), 1995**:
  - Provides monthly pensions to employees after retirement (minimum service of 10 years).
  - Benefits include pensions for widow(er)s, children, and dependent parents in case of the employee's demise.
- **Employees' Deposit Linked Insurance (EDLI) Scheme, 1976**:
  - Offers life insurance coverage to EPF members.
  - The insurance amount is linked to the employee's salary, with a maximum benefit of ₹7 lakh.

Recent Initiatives

- **E-Proceedings:** Transitioned from physical to **online judicial proceedings** for determining dues from defaulting employers.
  - Outcomes:
    - **Transparency and Fairness** in inquiries.
    - **Reduced Inquiry Time** and delays.
- **Nidhi Aapke Nikat 2.0:** Ensures **last-mile delivery** of services in districts lacking EPFO presence.
  - Grievances are resolved efficiently without extensive travel.
- **Multilingual Call Centres:** Offers information and grievance redressal in **12 major regional languages**.
  - Promotes inclusivity and member satisfaction by resolving issues in members' preferred languages.
- **Prayaas Initiative:** Provides **Pension Payment Orders (PPOs)** to retiring members on their **retirement day**.
  - Demonstrates a commitment to prompt service delivery.

- **Digital Life Certificate (Jeevan Pramaan Patra):** Facilitates Aadhaar-based **biometric authentication** for pensioners to submit Life Certificates digitally.
  - Recognized for improving ease and convenience for pensioners.

MuleHunter.AI

Syllabus Mapping: Economy, Banking and Cyber threat

Context

Reserve Bank of India has developed a new **artificial intelligence (AI)-powered tool MuleHunter.AI**, to address the growing issue of mule bank accounts involved in online financial fraud.

About MuleHunter.AI

- It is the Artificial Intelligence/ Machine Learning-based model.
- **Developed by:** Reserve Bank Innovation Hub (RBIH).
  - RBIH is a **wholly-owned subsidiary** of the Reserve Bank of India (RBI).
  - It was set up to promote and facilitate an environment that accelerates innovation across the financial sector.
- Advantages
  - **Identification of Mule Accounts:**
    - It focuses on identifying and tracking mule accounts, which are often used to facilitate fraudulent transactions. MuleHunter analyzes transaction patterns, and flags suspicious accounts that are being used to transfer illegally obtained funds.
  - **Real-time Monitoring:**
    - It enables real-time monitoring of transactions, allowing banks and financial institutions to detect and respond to suspicious activities promptly.
  - **Data Analytics:**
    - MuleHunter uses advanced data analytics and machine learning algorithms to assess large volumes of transaction data. This helps in recognizing trends and patterns associated with fraudulent activities, making it easier to preemptively shut down potential scams.
  - **Collaboration Among different institutions:**
    - It encourages collaboration among banks, payment service providers and law enforcement agencies and helps to create a strong defense against **digital fraud.**

What is a mule bank account?

- Mule accounts are bank accounts misused by criminals for illegal activities, such as laundering illicit funds.
- Accounts are purchased from individuals, often from **lower-income groups** or with **low technical literacy**.
- The term "money mule" refers to innocent account holders exploited for such activities.
- When such incidents are reported, the money mule becomes the target of police investigations, because it is their accounts that are involved, while the actual criminals remain undetectable.

Appointment of RBI Governor

Syllabus Mapping: Economy, RBI

Context

The Centre announced the appointment of Revenue Secretary Sanjay Malhotra as the 26th Governor of the Reserve Bank of India.

Process of Appointment Of RBI Governor

- The governor is appointed as per **Section 8 (1) (a) of the RBI Act, 1934**.
  - The section states that a Governor and not more than four Deputy Governors to be appointed by the Central Government.
- **Appointment Process:**
  - **Recommendation by the Financial Sector Regulatory Appointments Search Committee (FSRASC)**: The committee reviews potential candidates and recommends a name for appointment.
    - It consists of Cabinet Secretary, current RBI Governor, Financial Services Secretary and two independent members.
  - **Approval**: The shortlist is submitted to the **Appointments Committee of the Cabinet (ACC), chaired by the Prime Minister.**
    - The ACC selects and approves the final candidate.

Tenure of the RBI Governor

- The **RBI Act, 1934**, under **Section 8(4)**, specifies that the term of office for the Governor and Deputy Governors is up to **5 years**.
- The Central Government has the discretion to:
  - **Appoint** the Governor for a term not exceeding 5 years.
  - **Renew or extend** the term based on performance and other considerations.
- **Recent Trend:** Although the maximum term is 5 years, recent RBI Governors have typically been appointed for an **initial term of 3 years** with the possibility of extension.
  - **Examples:**
    - **Shaktikanta Das** was appointed in December 2018 for 3 years, and his tenure was extended for another 3 years in 2021, bringing his total term to 6 years.
    - **Raghuram Rajan** served a full 3-year term from 2013 to 2016.

Difference between Cess & Surcharge

Syllabus Mapping: Economy, Taxation

Context

The Chairman of the 16th Finance Commission, addressed the contentious issue of the Centre's increasing reliance on cesses and surcharges.

About Cess & Surcharge

Aspect	Cess	Surcharge
Definition	A tax levied for a specific purpose or objective, such as education or health.	An additional tax on taxpayers whose income exceeds a certain threshold.
Objective	Collected to fund specific government programs or projects.	Collected to generate extra revenue from high-income individuals or entities.
Applicability	Imposed on all taxpayers within the category for which it is levied.	Imposed only on taxpayers whose income or profits exceed a certain limit.
Scope of Usage	Can only be used for the specific purpose for which it is collected.	Can be used for general purposes by the government.
Examples	Education Cess (2%), Health Cess (1%).	Surcharge on individuals earning above ₹50 lakh or corporations with high profits.
Mention in Constitution	Article 270	Article 271

A common feature of both surcharge and cess is that the centre need not share it with states.

India Skills Report, 2025

Syllabus Mapping: Important Reports

Context

India skills Report 2025 was launched recently.

About India Skills Report, 2025

- **Prepared by:** Confederation of Indian Industries (CII) in collaboration with Wheebox and the All-India Council for Technical Education (AICTE).
- Nearly 55% of Indian graduates are projected to be globally employable by 2025, an increase from 51.2% in 2024.
- Management graduates lead in employability at 78%, followed by engineering (71.5%), MCA (71%) and science graduates (58%).
- Key states like Maharashtra, Karnataka, and Delhi are emerging as talent hubs, with cities such as Pune, Bengaluru, and Mumbai providing a skilled workforce.
- The report also reveals a gender disparity in employability rates, with men's employability expected to rise to 53.5% in 2025 from 51.8% in 2024, while women's employability is projected to decline from 50.9% to 47.5%.

Switzerland suspends MFN clause in tax avoidance pact with India

Syllabus Mapping: Trade Policies

Context

Switzerland has suspended the **Most-Favoured-Nation (MFN)** clause under the **Double Taxation Avoidance Agreement (DTAA)** with India, effective from **January 1, 2025**.

About Most-Favoured-Nation (MFN)

- MFN is a principle of trade that requires countries to treat all other World Trade Organization (WTO) members equally.
- Countries cannot discriminate between their trading partners, and must extend any favorable treatment given to one country to all other WTO members.
- **Exemptions:** The WTO provides the following exemptions from MFN provisions -
  - **Trade blocs:** Trade blocs like the European Union and the USMCA can discriminate against imports from outside the bloc.
  - **Trade barriers:** Countries can raise barriers against products from specific countries that are considered to be traded unfairly.
  - **Trade preferences:** Countries can extend trade preferences to developing countries.

- **Free trade agreements:** Countries can set up free trade agreements that only apply to goods traded within the group.

- **Removal of MFN status:**
  - There is **no formal procedure** for suspending MFN treatment and it is not clear whether members are obliged to inform the WTO if they do so.
  - **E.g.** India revoked Pakistan's MFN status following the Pulwama attack in 2019. Pakistan has never granted India MFN status.

India-Switzerland Tax Treaty

The **Double Taxation Avoidance Agreement (DTAA)** between India and Switzerland was signed in 1994 and amended in **2010 to prevent double taxation of income.**

- **Supreme Court ruling:**
  - In 2023, SC ruled that the DTAA's provisions require explicit notification under the Income-Tax Act to be enforceable.
  - This overturned a Delhi High Court decision that protected entities from double taxation.
- **Implications of the Suspension of the MFN Clause:**
  - **Higher tax rates:**
    - Dividends paid after January 1, 2025, will be taxed at a higher rate of 10% in the source state.
    - This will affect Swiss companies like Nestlé and challenge India's attractiveness as an investment destination.
  - **Investment Risks:**
    - Swiss investment in India could decline due to the increased tax burden.
    - **EFTA's $100 billion investment commitment over a 15-year period** may be at risk.

DTAA is an international treaty between two or more countries designed **to prevent the same Income from being taxed twice.** India has signed such agreements with around 90 countries, benefiting individuals who reside in one country but earn Income in another.

European Free Trade Association (EFTA)

- It is a group of 4 countries - **Iceland, Liechtenstein, Norway and Switzerland.**
- **Establishment**: In 1960 through the Stockholm Convention.
- **Aim**: To promote free trade and economic integration among its members.
- **Relationship with EU:** EFTA operates alongside the European Union (EU), with all members participating in the European Single Market and the Schengen Area but not in the EU Customs Union.

Labour committee asks Centre to increase minimum PF pension

Syllabus Mapping: Economy, Employment

Context

The **Parliamentary Standing Committee on Labour** has urged the Centre to **revise the ₹1,000 minimum pension** provided by the Employees' Provident Fund Organisation (EPFO) under the Employees' Pension Scheme.

About Employees' Pension Scheme (EPS)

- EPS is a social security scheme of EPFO which provides pension benefits to employees in the organized sector. It was launched in **1995.**
- **Eligibility:** Employees who are members of the Employees' Provident Fund (EPF) are automatically enrolled in EPS.
- Under EPS, the **employer contributes 8.33% of the employee's salary** (subject to a wage ceiling - currently ₹15,000) towards the pension scheme.
- The Central Government contributes an additional **1.16%** of the employee's salary. Employees do not make direct contributions to EPS, their contributions are directed entirely to the **EPF.**

About EPFO

- It is a **statutory body** that came into existence under **the Employees' Provident Fund and Miscellaneous Provisions Act, of 1952.**
- The administration of this Act and its associated schemes falls under the purview of a **tripartite body** known as the **Central Board of Trustees, Employees' Provident Fund.**
  - The CBT comprises representatives from various sectors, including the government (both central and state), employers, and employees.
- It is one of the **World's largest Social Security Organisations** in terms of clientele and the volume of financial transactions undertaken.
- It is under the **administrative control of the Ministry of Labour and Employment, Government of India.**

Credit Guarantee Scheme for e-NWR based pledge Financing

Syllabus Mapping: Economy, Banking and Monetary Policy

Context

The Union Minister of Consumer Affairs, Food and Public Distribution recently launched the Credit Guarantee Scheme for e-NWR based Pledge Financing (CGS-NPF).

About the Scheme

- **Aim:** Providing credit facilities to small farmers & preventing them from **distress selling.**

- It provides a corpus of Rs **1,000-crore** for post-harvest finance availed by farmers against **electronic negotiable warehouse receipts (e-NWRs)** after depositing commodities in **Warehousing Development and Regulatory Authority (WDRA)** accredited warehouses.
- **Coverage:** Loans up to Rs. 75 lakhs for agricultural purpose and Loans up to Rs. 200 Lakhs for nonagricultural purpose.
- **Eligible Institutions and Borrowers**
  - **Institutions:** All scheduled and cooperative banks.
  - **Borrowers:**
    - Small and marginal farmers, women, SC/ST/PwD farmers.
    - MSMEs, Farmer Producer Organizations (FPOs), and traders.
- **Risks Covered:**
  - **Credit risk:** Default on repayment.
  - **Warehouseman risk:** Failure of warehouses to deliver stored goods.

Electronic Negotiable Warehouse Receipt (e-NWR)

- It is a digital receipt that allows the transfer of ownership of a commodity stored in a warehouse **without having to physically deliver it.** e-NWRs can be used for trading, settlement, financing and can be used as **collateral for loans.**
  - Presently, e-NWR lending is only **Rs 4000 Cr** against the **potential of Rs 5.5 lakh crore.**

Warehousing Development and Regulatory Authority (WDRA)

- It is a **Statutory body** WDRA constituted in **2010** under the Warehousing (Development and Regulation) Act, of 2007.
- **Nodal Ministry:** Department of Food and Public Distribution, Ministry of Consumer Affairs, Food and Public Distribution.
- **Functions:**
  - Developing and regulating warehouses
  - Negotiating warehouse receipts
  - Promoting the growth of the warehousing business

Bitcoin Strategic Reserve

Syllabus Mapping: Economy, Banking and Monetary Policy

Context

Bitcoin has hit a record high after President-elect Donald Trump reiterated plans to create a U.S. bitcoin strategic reserve.

About Strategic Reserve

- A strategic reserve is a **stock of a critical resource** which can be released at times of crisis or supply disruptions.
- **E.g. U.S. Strategic Petroleum Reserve,** the world's largest supply of emergency crude oil, which was created by an act of Congress in 1975 after a 1973-74 Arab oil embargo throttled the U.S. economy.
- **Functioning of the Bitcoin Reserve:**
  - **Establishment: Currently** unclear if it would require executive powers or Congress approval. Some suggest an executive order to manage bitcoin through the **U.S. Treasury's Exchange Stabilization Fund.**
  - **Composition of Reserve:** Could include bitcoin seized from criminal actors by the government. That stands at around 200,000 tokens, worth about $21 billion at the current price.
- **Benefits of such Reserve:**
  - **Global Market Dominance:** It will increase U.S. control over the global bitcoin market, especially against competitors like China.
  - **Economic Advantage:** Could reduce U.S. fiscal deficit and strengthen the U.S. dollar.
- **Risks:**
  - **Volatile Nature:** Bitcoin's value is uncertain due to volatility and lack of intrinsic use.
  - **Security:** Vulnerability to cyber-attacks and market fluctuations.

Strategic reserves of Other Countries

- **India's Strategic Petroleum Reserves (SPRs):** Collection of oil stockpiles which the government can use to respond to supply disruptions in the **global oil market.**
  - India's SPRs have a total capacity of **5.33 million** metric tonnes (MMT) of crude oil.
  - **Locations:** Visakhapatnam, Mangalore and Padur.
  - **Under Construction:** Chandikhol (Odisha) & Padur-II (Karnataka)
- **Canada:** It has the **world's only strategic reserve of maple syrup.**
- **China:** It also has strategic reserves of petroleum, metals, grains and even pork products.

Taxing Coconut Oil - Long pending dispute

Syllabus Mapping: Economy, taxation

Context

The Supreme Court in its recent judgement has ruled that coconut oil in small bottles should be taxed as **edible oil (5% GST) unless explicitly labeled and marketed as hair oil, which would attract an 18% GST.**

Coconut Oil Taxation in India

- **Background:** The dispute was on whether coconut oil, packaged in quantities from 5 ml to 2 litres, should be taxed as edible oil or hair oil
- **Prior to GST Regime:**
  - **Taxation Under the CET Act, 1985:** Prior to GST, coconut oil was taxed under the Central Excise Tariff Act, 1985 (CET Act).

- In 2005, the CET Act classified coconut oil under Section III as "Animal or Vegetable Fats and Oils" with an 8% excise duty, distinguishing it from haircare products under Section VI, which carried a 16% excise duty.
- These classifications followed international norms set by the **Harmonised System of Nomenclature (HSN) by the World Customs Organisation.**

World Customs Organisation (WCO)

- It is an Inter governmental organisation, it was established in **1952 as the Customs Co-operation Council (CCC).** It was **renamed in 1994. (HQ - Brussels, Belgium)**
- It represents **186 customs administrations across the globe that process approximately 98% of world trade.**
- India joined **WCO in 1971.** The **Central Board of Indirect Taxes and Customs (CBIC)** is India's nodal agency for WCO.
- **Functions:**
  - Simplify and harmonize customs systems and procedures
  - Improve customs operations
  - Promote cooperation between governments to facilitate international trade

Harmonized System of Nomenclature Code (HSN)

- It is a **six-digit identification code developed by WCO in 1988.** It helps in systematic classification of goods across the globe.

- **After introduction of GST:**
  - **Coconut oil** was categorized under edible oils, attracting a **5% tax.**
  - **Haircare products** under the category "Preparations for use on the hair" continued to attract a higher tax rate of **18%.**

Facts

- Coconut oil is extracted from the dried and crushed coconut endosperm, called **copra, by pressing and crushing.**
- **Copra has the highest Minimum Support Price (MSP) among all MSP crops.**
- **Major coconut producing states of India: (1) Kerala** (2) Karnataka (3) Tamil Nadu.
- **Major coconut producing countries:** (1) Indonesia (2) Philippines **(3) India** (4) Brazil

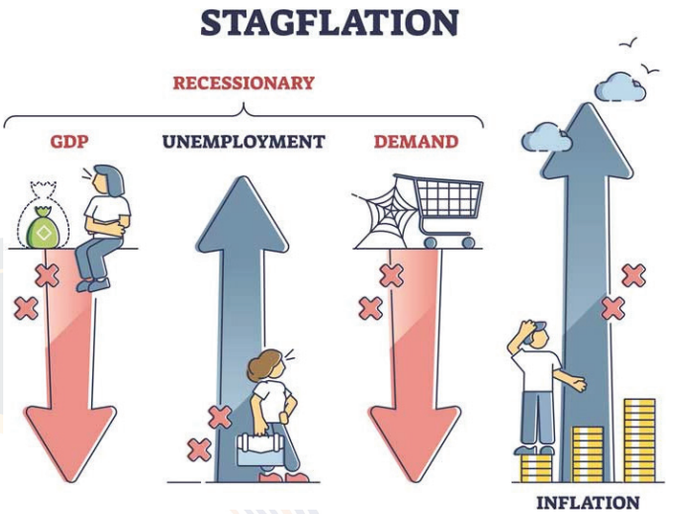
Stagflation

Syllabus Mapping: Economy, Inflation

Context

In a recent statement External member of the Monetary Policy Committee Nagesh Kumar said that,

India is in a **slow growth-high inflation scenario**, largely due to **food prices** with significant weight in the Consumer Price Index.



About Stagflation

- It is an economic situation characterised by **high inflation, slow economic growth, and high unemployment.**
- The term comes from the words "stagnation" and "inflation".
- **Economic impacts of Stagflation:** Diminished purchasing power, Increased unemployment, Reduced investment, Wage price spiral etc.
- **Causes of Stagflation:**
  - **Supply-Side Shocks:** A sudden increase in the cost of essential resources like oil can increase production costs across industries, leading to inflation without corresponding economic growth. **E.g.** 1970s oil crisis.
  - **Poor Economic Policies:** Misguided monetary or fiscal policies can also contribute to stagflation.
  - **Structural Rigidities in the Economy:** Stagflation can also result from structural problems in an economy, such as labor market rigidities (difficulty in hiring and firing workers), lack of technological advancements or inefficient resource allocation.
- **Policy measures to tackle Stagflation:**
  - **Supply side reforms:** Improving labor market flexibility, reducing regulation, investing in infrastructure, encouraging innovation etc.

- **Targeted Fiscal Policies:** Providing subsidies for essential goods, reducing taxes on lower-income households, incentivizing investment in key sectors.
- **Monetary Policies:** Central banks need to strike a balance between controlling inflation and supporting economic growth.

Related Terms

- **Inflation:** It refers to a sustained rise in general level of prices over a period of time in the economy.
- **Deflation:** Refers to a fall in the general level of prices over a period of time. (Negative rate of inflation)
- **Disinflation:** slowing down of rate of inflation

Clean Plant Programme

Syllabus Mapping: Agriculture, Schemes

Context

The Government of India and the Asian Development Bank (ADB) signed a $98 million loan to improve horticulture crop farmers' access to certified disease-free planting materials under Clean Plant Programme.

About Clean Plant Programme (CPP)

- CPP will have 3 components: **Clean Plant Centres, certification and legal framework and enhanced Infrastructure.**
- **Implementing Agency:** National Horticulture Board
- **Features:**
  - CPP will provide **access to virus-free, high-quality planting material**, leading to increased crop yields and improved income opportunities.
  - **Streamlined certification processes** and infrastructure support to nurseries.
  - Active engagement of women farmers in planning and implementation, ensuring their access to resources, training and decision-making opportunities.

Mission for Integrated Development of Horticulture (MIDH)

- It is a Centrally Sponsored Scheme for the holistic growth of the horticulture sector covering fruits, vegetables, root & tuber crops, mushrooms, spices, flowers, aromatic plants, coconut, cashew, cocoa and bamboo.
- The Ministry of Agriculture and Farmers Welfare is implementing MIDH with effect from 2014-15.
- MIDH is implemented under **Green Revolution - Krishonnati Yojana.**

Kisan Pehchan Patra: Farmer ID

Syllabus Mapping: Agriculture, Technology Missions

Context

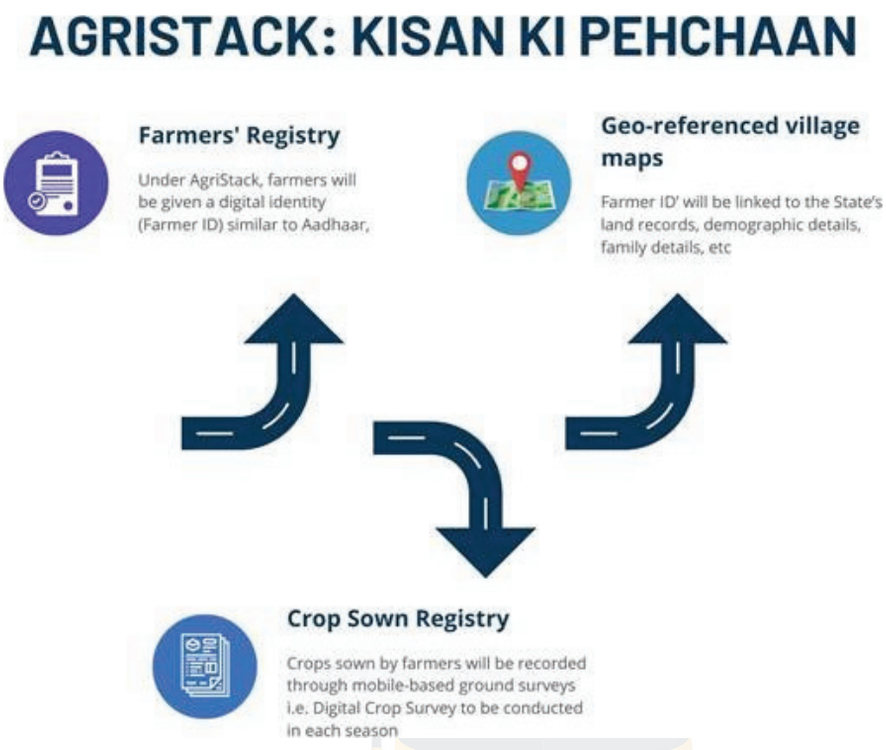
The Ministry of Agriculture and Farmers' Welfare has directed the states to organise camps to ensure a faster generation of Farmer ID.

About Farmer ID (Kisan Pehchaan Patra)

- It is an Aadhaar-linked unique digital identity for farmers, linked to the state's land records.
- It includes demographic details, crop sown information and ownership data.
- It forms the foundation of the Farmer Registry, a core component of the Agri Stack under the Digital Agriculture Mission approved by the Union Cabinet in 2024
- **Targets for Farmer ID Creation:** Create digital identities for **11 crore farmers by 2026-27.**

About Digital Agriculture Mission

- It is a government initiative aimed at developing **Digital Public Infrastructure (DPI)** for the agriculture sector.
- **Objective:**
  - Improve Farm Management & Enhance Productivity.
  - Provide services to farmers by integrating data and digital tools.
- **Foundational Pillars:**
  - **Agristack:**
    - It is a repository of all farmer information, including their identity, land records, coverage, income, insurance, loans, crop details, and revenue history.
    - **Consists of 3 databases:** Farmers' Registry, Geo-referenced Village Maps, and Crop Sown Registry.
  - **Krishi Decision Support System:**
    - It is a unique geospatial platform for Indian agriculture.
    - It provides detailed data on fields, soil, weather, water levels and crop conditions accessible anytime & anywhere.
- **Other Components:**
  - **Soil Profile Maps:**
    - Under this Mission, detailed Soil Profile Maps of about 142 million hectares of agricultural land will be prepared.
    - A detailed soil profile inventory of about 29 million ha has already been completed.
  - **Digital General Crop Estimation Survey (DGCES):**
    - It aims to enhance the accuracy of crop yield estimates.



Farmer outfits reject Centre's draft policy on agri marketing

Syllabus Mapping: Agriculture, Storage, Transport and Marketing of Agricultural Produce

Context

The Ministry of Agriculture and Farmers' Welfare has drafted the **National Policy Framework on Agricultural Marketing** to address the challenges in agricultural marketing and create a unified national market. It has been prepared by a committee under the chairmanship of **Faiz Ahmed Kidwai.**

About Key proposals of the draft policy

- **GST-Like Empowered Committee for Agricultural Marketing:** Formation of a panel of **state agriculture ministers**, on the lines of the **Empowered Committee of State Finance Ministers on GST**, to bring reforms in agricultural marketing and build consensus among states.
  - **Structure of the Committee:**
    - Chaired by a **state agriculture minister** on a rotational basis.
    - Other state agriculture ministers as members.
    - Registered under the **Societies Registration Act, 1860**.
- **Need for a Unified Market:** Create a unified national agricultural market with seamless trade across states. Also simplify agricultural marketing through **single licensing/ registration** and **uniform market fees.**
  - **Current Challenges:**
    - Fragmentation of markets due to **state-legislated APMC Acts.**
    - Resistance to adopting earlier reforms like the Model APMC Act, 2003.
- **Price Insurance Scheme:** Proposal to launch a price insurance scheme modeled after the **Pradhan Mantri Fasal Bima Yojana (PMFBY).**
  - **Objective:** Protect farmers from price crashes or drops below a threshold level.
  - **PMFBY's Framework:**
    - Covers production risk through insurance.
    - Stabilizes farmer income.
    - Encourages modern farming practices.
    - Ensures credit flow to the agriculture sector.
- **Other Reforms:**
  - Opening up agricultural markets for private investments to improve infrastructure and competitiveness.
  - Promotion of **Farmer Producer Organizations (FPOs)** and direct farmer-to-consumer sale channels.
  - Emphasis on agro-processing, storage and transportation infrastructure **to reduce post-harvest losses and improve market access.**

Why farmers are opposing this policy

- Farmers fear that opening up markets to private players could lead to **monopolistic practices by big corporations.**

- Farmers fear dependency on **private storage facilities** like warehouses and cold storage, which may come with high costs and limited accessibility for small farmers.
- While the draft suggests a **price insurance scheme** to protect farmers from price crashes, details about its implementation and effectiveness remain unclear.

Agricultural marketing a State subject under Entry 28 of List-II (State List) of VII Schedule under article 246 of the Constitution.

Kisan Kavach

- It is an **Anti-pesticide bodysuit** designed to protect farmers from the harmful effects of pesticide exposure.
- **Developed by:** Biotechnology Research and Innovation Council (BRIC-inStem) in collaboration with Sepio Health Pvt. Ltd.
- The kit consists of a trouser, pullover and a face-cover made of **'oxime fabric'** that can chemically breakdown any of the common pesticides that get sprayed onto cloth or body during spraying operations. This prevents chemicals from leaching into the skin.
- Kisan Kavach's fabric deactivates pesticides upon contact through **nucleophilic mediated hydrolysis,** preventing pesticide-induced toxicity and lethality.
  - **Nucleophilic mediated hydrolysis** is a type of nucleophilic substitution reaction where water acts as a nucleophile and attacks an organic bond

Digital Bharat Nidhi (DBN)

- Digital Bharat Nidhi is a pool of funds generated by charging a **5% Universal Service Levy on the Adjusted Gross Revenue (AGR) of all telecom operators.**
- It has replaced the **Universal Service Obligation Fund (USOF) which was established under the Indian Telegraph (Amendment) Act, 2003.**
- As per **'The Telecommunications Act, 2023'** the Universal Service Obligation Fund, has become the Digital Bharat Nidhi.
- **Mandate of DBN:** To promote access and delivery of telecommunication service in underserved rural, remote and urban areas.
- **Working of the Digital Bharat Nidhi:**
  - Contributions made by telecom companies towards the DBN will first be credited to the Consolidated Fund of India (CFI).
  - The Central government will deposit the collected funds to the DBN periodically.

SOCIETY, SOCIAL JUSTICE & SCHEMES

TOPICS FOR MAINS

Stuck in the classroom — students, teachers, NEP 2020

Syllabus Mapping: GS Paper 2, Social Issues, Education

Context

Indian higher education students spend significantly more time in class than their peers in the EU and North America, yet they risk receiving a comparatively weaker education. This is largely due to two factors introduced by the National Education Policy (NEP) 2020: a greater emphasis on teaching time within course credits and a heavier course load per semester.

National Education Policy (NEP) 2020: Higher Education

- Aims to nearly **double the Gross Enrolment Ratio (GER)** in higher education from **26.3% in 2018 to 50% by 2035**, while enhancing the quality of Higher Education Institutions (HEIs) and establishing India as a global education hub.
- **Establishment of the Higher Education Commission of India (HECI)**, which will serve as a single regulatory body overseeing the entire higher education sector.
- The HECI will manage various functions such as accreditation, funding, and setting academic standards through independent verticals, replacing existing regulatory bodies like the University Grants Commission (UGC) and the All India Council for Technical Education (AICTE).

Serial No	HECI Vertical	Function
1	National Higher Education Regulatory Council (NHERC)	Creating and Implementing Higher Education regulation
2	General Education Council (GEC)	Standard setting for academia
3	Higher Education Grants Council (HEGC)	For funding academic and research activities
4	National Accreditation Council (NAC)	Accreditation to academic institutions

- **Vocational Education Integration**: Ensure 50% of learners gain exposure to vocational education by 2025.
- **Equity and Inclusion**: Establish high-quality higher education institutions (HEIs) in underserved regions, including at least one multidisciplinary HEI in each district by 2030.
- **Multidisciplinary Teacher Education**: Transition to integrated teacher education programs, making the four-year B.Ed. the minimum qualification by 2030.
- **Institutional Autonomy**: Provide autonomy to institutions through independent Boards of Governors (BoGs); phase out the affiliating college system.
- **Professional Institution Conversion**: Convert standalone professional institutions into multidisciplinary HEIs with a student body exceeding 3,000 by 2030.
- **Three-Tier System**: Develop a three-tier system of research universities, teaching universities, and autonomous colleges, with accreditation and degree-awarding autonomy by 2035.
- **International Collaboration**: Encourage reputed international universities to establish campuses in India.
- **Flexible Curricular Structure**: Introduce multiple entry and exit points to enable lifelong learning opportunities.
- **Online and Distance Learning**: Emphasize online and distance learning (ODL) to enhance access, equity, and inclusion.
- **Research Funding**: Establish the National Research Foundation (NRF) to fund and support high-quality research.

What are the Different Issues?

- **Excessive Classroom Time**: Indian students under NEP 2020 spend 20 hours per week in the classroom compared to 12 hours for EU and North American students.
  - This **leaves little time** for self-study, reading, and assignments, **leading to exhaustion and reduced learning**.
- **Assessment Challenges:** Previously, under a three-year undergraduate program with four courses per semester, there was more room for continuous assessment.
  - With the new structure, students struggle to complete more than two assessments per course, often favoring simpler formats like multiple-choice questions over more comprehensive evaluations such as term papers or reflective essays.

Key differences between the US and Indian education systems

Features	India	United States
Structure of School Education	Follows a 5+3+3+4 system under NEP 2020	Follows a three-tier system: Elementary, Middle, High
Learning Methodology	Traditionally focused on rote learning, with shifts towards critical thinking under NEP 2020	Emphasises hands-on learning, creativity, and critical thinking
Subject Flexibility	Historically rigid, but becoming more flexible with NEP	Highly flexible, allowing students to explore various disciplines
Technology Integration	Developing, with initiatives like "Digital India" but facing unequal access, especially in rural areas	Well-equipped with advanced technology, seamlessly integrated into learning
Cost of Education	Generally affordable in public institutions, though private education can be costly	Significantly higher costs, with students often relying on financial aid and scholarships
Class Sizes and Dress Codes	Larger class sizes, with uniforms typically mandatory	Smaller class sizes, with flexible dress codes
Assessments and Exams	Exam-centric, with an emphasis on memorization, but NEP 2020 aims for experiential learning	Continuous assessment through projects and participation, with less emphasis on high-stakes exams
Higher Education	Theoretical and rigid, with limited international exposure	Broad-based and flexible, with a strong global perspective and international student presence
Technology and Infrastructure	Varies widely; some schools face significant infrastructure challenges	State-of-the-art facilities, extensive resources available in most schools and universities
International Exposure	Limited opportunities for international collaboration	Diverse student population and global partnerships offering international exposure

Table: TOI Education • Created with Datawrapper

- **Incentivizing Rote Learning**: Limited time for self-directed learning promotes rote learning, **replicating school-like dynamics** where students remain passive recipients of knowledge.
- **Continuous Assessment Challenges**: Continuous assessment requires diverse evaluation methods, which are difficult to implement due to time constraints.

- **Quality of teaching**: Indian faculty spend 14-16 hours per week in the classroom compared to 9 hours for their EU and North American counterparts.
- **Elite vs. Public Institutions**: Elite institutions (IITs, IIMs, and central universities) may have more flexible teaching loads and resources.
  - However, the majority of teaching happens in public universities and colleges, which are burdened by heavier teaching loads.

Data about Status of Higher Education in India

- Only 2 universities of India are in the top 200 universities in the world. (as per QS World University Rankings 2025)
  - **IIT Bombay:** 118th
  - **IIT Delhi**: 150th
- According to a report by AISHE (2018- 19), India has achieved a GER of 26.3% which is lower than the global average GER of 36.7%.

Way forward

- **Reconsideration of Course Load:** A reduction in the number of courses per semester could alleviate pressure on students and allow for deeper engagement with material.
- **Encouragement of Self-Learning:** Providing students with adequate time for reflection and independent study can foster ownership over their learning process.
- **Diverse Assessment Formats:** A broader range of assessment types should be integrated into curricula to promote critical thinking and creativity rather than rote memorization.
- **Increased use of flexible and online learning in higher education**: This will allow students the flexibility to choose their courses that they want to pursue and learn according to the pace they want to.
- **Increasing tie-ups with industry and research institutions:** Increasing academia, industry and research opportunities will allow students in HEIs to engage with cutting edge problems and find innovative solutions. This will reduce the need for rote learning and memorization based learning.

Higher GST rate on tobacco, sugared beverages

Syllabus Mapping: GS Paper 2, Social Issues, Health

Context

A Group of Ministers (GoM) proposed to increase the highest GST tier on tobacco and sugar-sweetened beverages from **28% to 35%**.

Status of Tobacco Consumption in India

- India is the Second-largest consumer of tobacco globally after China.
- 28.6% of adults above 15 years and 8.5% of students aged 13-15 use tobacco.
- Tobacco use has declined in all groups, except for women where tobacco use increased by 2.1% between 2015 and 2021

IMPACT OF TOBACCO USE (INDIA)




HUMAN HEALTH	ECONOMIC LOSS	GEOGRAPHICAL IMPACT	ENVIRONMENTAL IMPACT
LEADING CAUSE OF NON-COMMUNICATION DISEASES	IN 2017, THE ANNUAL ECONOMIC BURDEN OF TOBACCO WAS 1.4% OF GDP	MAJOR CONTRIBUTOR TO DEFORESTATION. (5.4 KG WOOD REQUIRED TO PROCESS 1 KG TOBACCO)	PRODUCTION & CONSUMPTION OF TOBACCO GENERATES 1.7 LAKH TONNE OF WASTE ANNUALLY IN INDIA

Impact of Proposed GST Rate Hike

- The proposed 35% GST rate hike is a positive step in revenue generation (**₹43 billion annually** with the proposed 35% GST rate.)
  - A potential 40% GST Rate could generate an additional **₹72 billion annually**.
- **Lead to reducing tobacco consumption** and lower treatment costs for tobacco-related diseases.

Steps Taken By Government to control Tobacco consumption

- **Cigarettes Act, 1975:** Mandates statutory warnings such as "Cigarette Smoking is Injurious to Health" on cigarette packs and advertisements.
- **Cigarettes and Other Tobacco Products Act (COTPA), 2003:** Regulates the production, advertisement, distribution, and consumption of tobacco through 33 sections.
- **WHO Framework Convention on Tobacco Control (FCTC), 2005:** India is a signatory to this global treaty aimed at reducing tobacco use.
  - This treaty helps countries develop strategies to reduce demand and supply of tobacco.
- **Food Safety and Standards Act, 2006:** Prohibits the use of tobacco or nicotine as ingredients in food products.
- **Cable Television Networks Amendment Act, 2000:** Bans advertisements promoting tobacco and liquor on television.
- **Prevention and Control of Pollution Act, 1981:** Recognizes smoking as a source of air pollution.
- **Motor Vehicles Act, 1988:** Prohibits smoking in public vehicles.
- **National Tobacco Control Programme (NTCP), 2008:** Aims to reduce tobacco consumption and related deaths.
  - **Key activities**: training, capacity building, information dissemination, surveys, surveillance, and cessation support.
- **Tobacco Cessation Programme:** Provides support to individuals trying to quit tobacco use.
  - Establishes cessation clinics across the country to aid in quitting efforts.

Hike of Taxes on Tobacco and Sugar-Sweetened Beverages (Argument and Counterpoint)

Concern	Argument	Counterpoint
Potential Increase in Illicit Trade	Higher taxes may drive consumers to purchase cheaper, unregulated products.	Evidence shows tax hikes have minimal impact on illicit trade; governance and regulation matter more.
Impact on Low-Income Consumers	Higher taxes disproportionately burden low-income groups consuming beedis/tobacco.	Reducing consumption improves long-term health and lowers medical expenses.
Industry Over-Shift of Tax Burden	Industry may pass on higher-than-required price hikes to increase profits.	India should consider raising excise taxes alongside the GST revision for a stronger and more comprehensive taxation framework.
Impact on Farmers and Small-Scale Producers	Tobacco farmers and beedi producers may suffer due to lower demand.	Diversification programs and alternative livelihoods can mitigate this impact.

Concern	Argument	Counterpoint
Revenue Stability	Declining consumption may reduce overall tax revenues in the long run.	Initial revenue increases can be reinvested in health and development programs.
Economic Impact on Beverage Industry	Declining sales may affect jobs and investments in the beverage industry.	Health benefits outweigh short-term economic concerns; industry can offer healthier alternatives.

Inclusion of Person with Disabilities

Syllabus Mapping: GS Paper 2, Social Issues, Disability

Context

International Day of Persons with Disabilities (IDPD) is observed annually on December 3rd.

About International Day of Persons with Disabilities (IDPD)

- **Origin**: The day was proclaimed by the **United Nations General Assembly** in 1992 (Resolution 47/3). It builds on decades of UN efforts to promote the rights and well-being of persons with disabilities.
- **Theme**:
  - **2023:** "Transformative solutions for inclusive development: The role of innovation in fueling an accessible and equitable world."
  - **2024:** "Amplifying the leadership of persons with disabilities for an inclusive and sustainable future."
- **Significance**:
  - Promotes **inclusive societies** that respect diversity and ensure equal opportunities.
  - Encourages action to implement the **United Nations Convention on the Rights of Persons with Disabilities (UNCRPD)**, adopted in 2006.
  - Highlights the importance of **accessibility** in physical environments, transportation, and information systems.
- **Global Context**:
  - Approximately **15% of the world's population**, or over **1 billion people**, live with some form of disability.
  - Disability inclusion is integral to achieving the **Sustainable Development Goals (SDGs)**, ensuring no one is left behind.

Note: India ratified the United Nations Convention on the Rights of Persons with Disabilities on October 1, 2007.

Quotes on Disability

President Droupadi Murmu	"Providing a dignified life to persons with disabilities is the responsibility of the entire society"
PM Modi	"Disability does not mean inability"
CJI D.Y. Chandrachud	"Stereotyping differently-abled persons in visual media and films perpetuate discrimination"
Franklin D. Roosevelt	"We must take a position of 'positive action' for those who are disabled, not one of sympathy."
Ban ki-moon	"Let us work together for a world where persons with disabilities can fully enjoy their rights, participate in the decisions that affect their lives, and be free from discrimination"
Deepa Malik (Paralympian)	"The only disability in life is a negative attitude. If you can change your mindset, nothing is impossible."
Supreme court (2024)	"The creative freedom of the filmmaker cannot include the freedom to lampoon, stereotype, misrepresent or disparage those already marginalised"

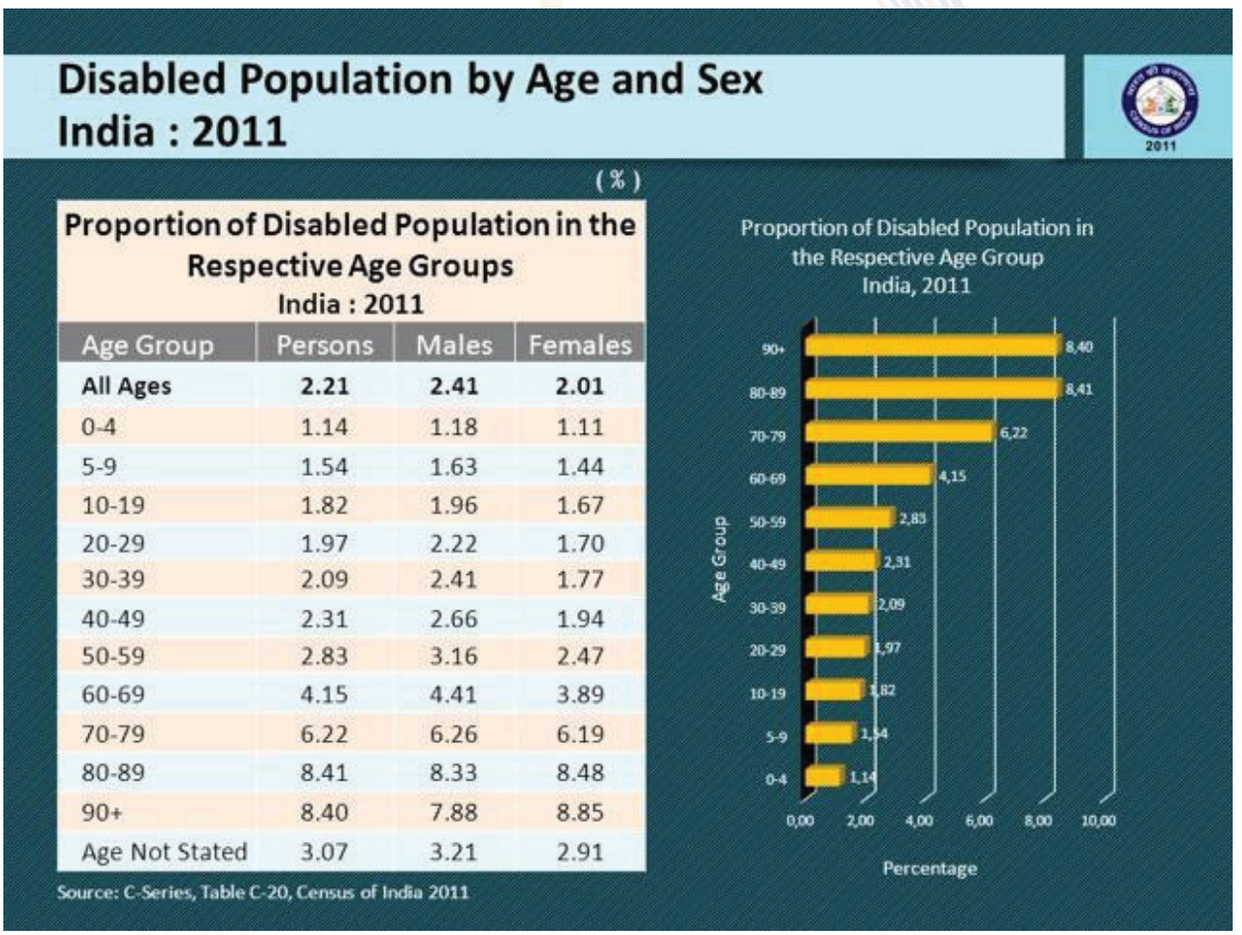
Data on differently abled

DIMENSIONS/ REPORT	KEY FINDINGS
2011 Census	About 26.7 million persons with disabilities (2.21%) constitute the Indian population.
Gender divide	14.9 million men and 11.9 million women
Rural-Urban divide	PWDs are more prevalent in rural areas with 18 million individuals
World Bank	Data suggests PWDs in India are between 40-80 million
Literacy rate	61% of PWDs aged 7 and above are literate as compared to 74% national literacy rate

DIMENSIONS/ REPORT	KEY FINDINGS
Regional disparity	Highest population of PWDs reside in Nagaland, Sikkim and Arunachal Pradesh
Enrollment ratio	Children with disabilities (6-13 years) have a 61.9% enrollment ratio
NSO Report, 2019	About 2.2 per cent of India's population lives with some physical or mental disability.

Challenges faced by Persons with Disabilities

- **Inhumane living conditions:** Institutionalisation of a person with a disability without their consent is a **form of arbitrary detention.**
  - **Eg: Human rights watch** found that residents were detained in wards with locked gates, limiting their opportunity to move around the **Shelter home for PWD in Delhi, Asha Kiran.**
- **Access to public services:** Public transport such as most buses are not accessible to wheelchair users. Similarly, trains have bogies for PWD but the process of booking under the quota remains challenging.
  - **Eg: 67.1% PWD faced difficulties in accessing public transport (76th NSS)**
- **Political participation:** Exclusion of disabled persons from the political space leads to their lack of representation and absence of a voice to put forward their demands.
  - **Eg: Braille electronic voting machines** have not been adapted by most constituencies in the voting process.
- **Poor access to education:** Educational institutions lack the infrastructure and trained staff to support inclusive education incorporating the needs of PWD.
  - **Eg:** Many schools **lack ramps, accessible toilets** required for PWD which leads to their low enrolment and high dropout rates. **(UNESCO report)**
- **Health inequities:** Persons with disabilities hold twice the risk of developing conditions such as depression, asthma, obesity and poor oral health. It leads to an increase in **out-of-pocket expenditure on health.**



Effectiveness of Persons with Disabilities Act, 2016

The **Rights of Persons with Disabilities Act, 2016** is a landmark legislation in India which recognizes that PWD are entitled to the same rights and opportunities as any other citizen, and seeks to ensure inclusive growth. The PWD constitutes **2.21%** of the total population. **(2011 census)**

Effectiveness of the Act

- **Broad range of disabilities:** The types of disabilities have been increased from 7 to 21 including physical, intellectual, and psychological disabilities as well as disabilities caused by chronic illnesses such as HIV/AIDS.
- **Accessibility**: The act mandated all public buildings, transportation, and information and communication technologies and spaces be made accessible to persons with disabilities.
  - **Eg: Building ramps, lifts, accessible toilets**
- **Affirmative actions**: The act also provides for reservations in education and employment for PWD.
  - **Eg: Quantum of reservations for PWD from 3% to 4% in government jobs**
- **Social security**: The act includes provisions related to social security,welfare schemes and benefits.
  - **Eg: Established a national fund for PWD**
- **Special courts:** Designation of special courts in the East district to handle cases of violation of the act.

Inefficiencies of the Act

- **Insufficient budget**: It leads to lesser allocation of funds and resources for a particular section of the society.
  - **Eg: 2023-24 budget estimates for PWD** is only **Rs 13 crore** more than 2022-23 budget estimates.
- **Exclusion error:** Scheme for PWD did not feature in the list of major schemes as released by the finance ministry. Hence it may not prioritise its implementation and allocation of resources.
  - **Eg: Accessible India Campaign (AIC)**
- **Implementation issues:** Implementation of provisions such as education, employment, health, and social security through a single scheme may not address the diverse needs of the population.
  - **Eg:** Scheme for Implementation of Persons with Disabilities Act **(SIPDA)**
- **Outdated data:** The government relies on **12-year-old data** for disabled people in the country. Any reliance on this data for determining financial allocation will be antithetical to the welfare mandate of the state.
- **Differential treatment**: Negative attitudes and stereotypes towards persons with disabilities can result in discrimination, exclusion, and marginalisation, which can limit their access to the benefits of the Act.

Mechanisms to promote Social Justice for differently abled

Constitutional mechanism

ARTICLE	PROVISION
Article 15 (1)	The State shall not discriminate against any citizen of India on the grounds of religion, race, caste, sex or place of birth.
Article 21	Right to life and personal liberty
Article 23	Prohibits trafficking of human beings and beggar and other forms of forced labour
Article 41	State to make provisions for securing right to work, education and public assistance in cases of unemployment, old age, sickness and disability.
Article 46	State to promote educational and economic interests of weaker sections (including differently abled individuals)
Article 253	Parliament can make laws to implement international conventions and agreements. **Eg**: UN convention on rights of persons with disabilities led to the enactment of Rights of persons with disabilities Act, 2016

Legal mechanism

- **Rights of PWD Act, 2016**: It expands the definition of disability from 7 to 21 categories including autism, Parkinson's disease, dwarfism, etc. The Act further provides 4% reservation in government jobs and 5% in higher educational institutions for PWDs.

- **Rehabilitation Council of India Act, 1992:** Regulates and standardised training programs for rehabilitation professionals, ensures quality services and ethical conduct while assisting PWDs.
- **Mental healthcare Act, 2017:** Provides the right to access mental health care services funded by GOI alongside protects the right to live with dignity and prohibits inhumane treatment of individuals with mental illness.
- **Juvenile Justice Act, 2015:** Provisions to protect children with disabilities who require care and protection such as education and rehabilitation.
- **Income Tax Act, 1961:** Provides tax deductions for individuals with disabilities **(Section 80U)**

Institutional mechanism

- **National institute for the empowerment of persons with visual disabilities (NIEPVD), Dehradun:** Ensures residential school up to 12th grade, rehabilitative services, cross-disability early intervention.
- **National institute for Locomotor disabilities (NLID), Kolkata:** Provides prosthetics and Orthotics, Physiotherapy, Occupational Therapy, and Vocational counselling services to persons with locomotor disabilities.
- **National institute of mental health and rehabilitation (NIHMR), Sehore:** Objective to promote mental health rehabilitation by providing clinical services, certificate course in care giving, diploma in community based rehabilitation, etc.

Conclusion

In Indian culture, disability has never been considered as a hindrance in acquiring knowledge and achieving excellence. Just like **Rishi Ashtavakra,** who had eight physical deformities, and **blind poet Surdas** was one of the most influential figures of the **Bhakti Movement.** It displays how **'Insight is more important than sight'.**

Mains PYQs

UPSC CSE 2022

Q. The Rights of Persons with Disabilities Act, 2016 remains only a legal document without intense sensitisation of government functionaries and citizens regarding disability. Comment.

UPSC CSE 2017

Q. Does the Rights of Persons with Disabilities Act, 2016 ensure an effective mechanism for empowerment and inclusion of the intended beneficiaries in society? Discuss.

Stone Crushing Industry Impact on Human Health and Agriculture Output

Syllabus Mapping: GS Paper 2, Social Issues, Health, Informal Sector

Context

The population, animals and plants near the stone crusher industries impacted by harmful dust originate from the Industries.

Stone Crushing Industry

- The **stone crushing industry** involves the extraction, processing, and production of crushed stone, gravel, and other aggregate materials used primarily in construction and infrastructure projects.
- This sector forms a **critical part of the construction industry** and contributes significantly to industrial and economic development.

Significance of Stone Cutting and Crushing Industries in India

- **Contribution to Infrastructure Development:** The industry plays a critical role in providing **raw materials** like aggregates, stones, and crushed rock essential for construction activities. Supports the construction of schools, hospitals, and public infrastructure.
- **Employment Generation:** Important source of employment in certain hilly and mountainous regions of India. The industry provides employment to low-skilled workers.
- **Boost to the Economy:** Generates revenue for the government through taxes, mining royalties, and export duties.
- **Support for Ancillary Industries:** Drives growth in allied industries such as cement, steel, and transportation.

  - Creates demand for heavy machinery and equipment like crushers, loaders, and excavators.
- **Export Potential:** India is a major exporter of natural stone, including granite, marble, and sandstone.
- **Encourages regional balance:** Stimulates local economies by creating small-scale industrial clusters in stone-rich regions.
- **Support for Traditional Art and Architecture:** Revives traditional skills in stone carving and cutting, preserving cultural heritage.

Impacts

Human Health	Agricultural Output	Animals
Respiratory issues: Increased concentration of particulate matter (PM2.5 and PM10) **Eg**: Leading to silicosis, asthma and chronic obstructive pulmonary disease (COPD)	**Soil degradation:** The dust generated by stone crushing not only pollutes the air but also settles on soil surfaces, altering its pH and reducing fertility. **Eg**: Reduced germination frequency in Rice.	**Habitat avoidance**: Noise pollution leads to decline in local biodiversity which can result in destabilised ecosystems and disrupted food webs.
Other complications: Long term exposure to silica dust leads to lung fibrosis and increased mortality rate among workers.	**Crop yield reduction:** Stone dust affects growth parameters for plants such as shoot length, chlorophyll content, etc.	**Hampered communication:** Many animal species rely on vocalizations for communication, mating calls, and warning signals. **Eg**: Noise pollution can increase vulnerability to predators.
Economic cost: Loss of productivity with increased medical expenses of workers.	**Water quality issue**: Runoff from stone crushing sites contaminates local water sources which hampers irrigation and compromises on food safety.	

Mitigation Measures

- Regular health checkups and use of **safety gear** like masks and earplugs for workers.
- Installing dust suppression mechanisms like **water sprays at crushing sites**.
- Creating **green buffer zones** around stone-cutting units to limit dust dispersion.
- Educating farmers about dust impacts and **encouraging organic soil rejuvenation techniques**.
- Enforcing **strict environmental regulations** for stone-cutting industries.

Challenge of universal health coverage

Syllabus Mapping: GS Paper 2, Social Issues, Health

Context

Universal Health Coverage (UHC) in India often overlooks the complexities of the country's diverse health systems and the unique challenges they present.

Universal Health Coverage

- Universal health coverage (UHC) means that all people have access to the full range of quality health services they need, when and where they need them, without financial hardship.
- It covers the full continuum of essential health services, from health promotion to prevention, treatment, rehabilitation, and palliative care across the life course.

Steps for ensuring Universal Health Coverage In India

- **Ayushman Bharat Yojana:** Promising Rs. 5 lakhs health insurance for over 10 lakhs poor and vulnerable families and also additional universal coverage for the old age population above 70 years of age.

- **Ayushman Bharat Health & Wellness Centres (ABHWCs):** Comprehensive Primary healthcare by strengthening Sub Health Centres (SHCs) and Primary Health Centres (PHCs) are to be facilitated. HWCs are to provide preventive, promotive, rehabilitative and curative care for an expanded range of services.
- **Ayushman Bharat Digital Health Mission:** Aims to make a digital health ecosystem in India which will eventually lay the path for universal health coverage. Digital ecosystem under the program rotates around ABHA digital unique IDs, Health registries for medical practitioners and facilities.

Challenges in Achieving Universal Health Coverage (UHC) in India

- **Disparity in Health Expenditure:** Government health expenditure varies widely, with states like **Kerala** and **Tamil Nadu** spending more than **Uttar Pradesh** and **Bihar**.
  - It creates a **two-tier health system** where people in resource-poor states face inadequate access to quality healthcare.
- **High Out-of-Pocket Expenditure (OOPE):** Despite increased government expenditure, OOPE remains high (67% in West Bengal, 64% in Andhra Pradesh).
  - OOPE leads to **financial hardship** and medical impoverishment for low-income populations.
- **Inadequate Primary Healthcare Infrastructure:** States like **West Bengal** face a **58% shortfall** in primary health centres (PHCs) and health and wellness centres (HWCs).
  - This hampers early diagnosis and management of diseases, increasing reliance on expensive tertiary care.
- **Diverse Health Profiles and Needs: Teenage pregnancy rates** differ significantly between states (16% in West Bengal vs. 2.4% in Kerala).
  - **Non-communicable diseases (NCDs)** like high blood sugar rates are prevalent in West Bengal, Bihar, and Gujarat, requiring tailored interventions.
- **Inefficient Health System Design:** Programs like **Swasthya Sathi** in West Bengal compensate for a perceived deficiency in public hospitals but are misaligned with actual needs.
  - High rates of **C-sections in public hospitals** suggest an adequate public sector capacity, making such insurance schemes less effective.

Way Forward

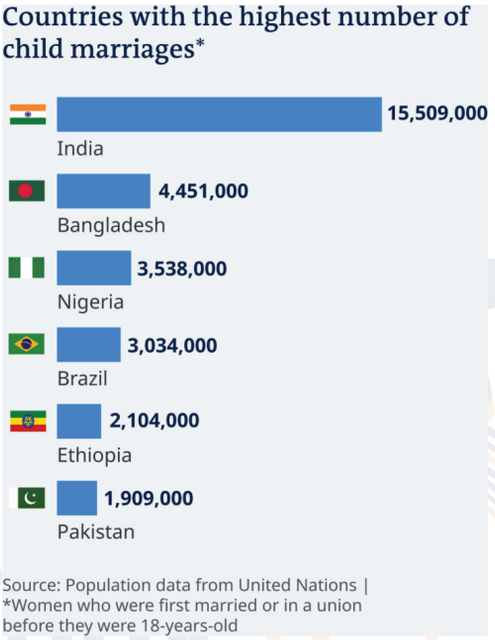
- **Strengthen Primary Healthcare Infrastructure:** Invest in building and staffing more **Primary Health Centres (PHCs)** and **Health and Wellness Centres (HWCs)**, especially in underserved rural areas, to address preventive and basic healthcare needs.
- **Reduce Out-of-Pocket Expenditure (OOPE):** Expand **free essential healthcare services** and medicines while aligning public insurance schemes with actual healthcare supply to minimize financial burdens on citizens.

- **Ensure Equitable Health Financing:** Increase government health expenditure in **low-resource states** like Uttar Pradesh and Bihar, ensuring **per capita spending** meets the estimated requirement for UHC (₹2,205).
- **State-Specific Health Strategies:** Develop tailored health plans considering each state's unique health profile (e.g., addressing high teenage pregnancy in West Bengal or diabetes management in Gujarat)

Bal Vivah Mukt Bharat Abhiyan

Context

Recently the **Ministry for Women and Child Development** launched the national campaign "Bal Vivah Mukt Bharat".



Facts

- **Decline in Child Marriages:** Child marriage rates in India **halved from 47.4% to 23.3% between 2006 and 2019-21**, following the enactment of the **Prevention of Child Marriage Act, 2006.**
  - Over **2 lakh child marriages** were prevented in the past year.
- **Prevalence of Child Marriage in India: One in five girls** in India is still married before turning 18.
- **Improvement in Sex Ratio at Birth:** 918 in 2014-15 to 930 in 2023-24.
- **States with High Burden of Child Marriages:**
  - **West Bengal (41.6%), Bihar (40.8%), Tripura (40.1%),** Rajasthan, Jharkhand, Assam, and Andhra Pradesh.

UNICEF Report (2023)

- **One in three** of the **world's child brides live in Ind**ia.
- Over half of the girls and women in India who married in childhood live in five states: Uttar Pradesh (highest), Bihar, West Bengal, Maharashtra and Madhya Pradesh.
- The majority of young women who married in childhood gave birth as adolescents.

About Prevention of Child Marriage Act, 2006

- The Act aims to prevent child marriages by making certain actions punishable and appointing authorities to enforce its provisions.
- It **replaced the Child Marriage Restraint Act of 1929.**
- **Key Definitions**
  - **Child**:
    - **Male**: Below 21 years.
    - **Female**: Below 18 years.

  - **Child Marriage**: A marriage where either party is a child.
  - **Minor**: Defined under the **Majority Act, 1875**, as a person who has not completed 18 years of age.
- **Punishments:**
  - Child marriage is punishable with:
    - Rigorous imprisonment up to **2 years**.
    - Fine up to ₹**1 lakh**.
    - Or both.
  - Offences are **cognisable** and **non-bailable**.
- **Persons Liable for Punishment:**
  - **Individuals Involved in the Marriage**: Anyone performing, conducting, directing, or abetting a child marriage.
  - **Male Adults (Above 18 years)**: If they marry a child (as per **Section 9**).
  - **Persons in Charge of the Child**: Includes parents, guardians, or any members of organizations promoting or permitting child marriage.

TOPICS FOR PRELIMS

Drive against Manual Scavenging

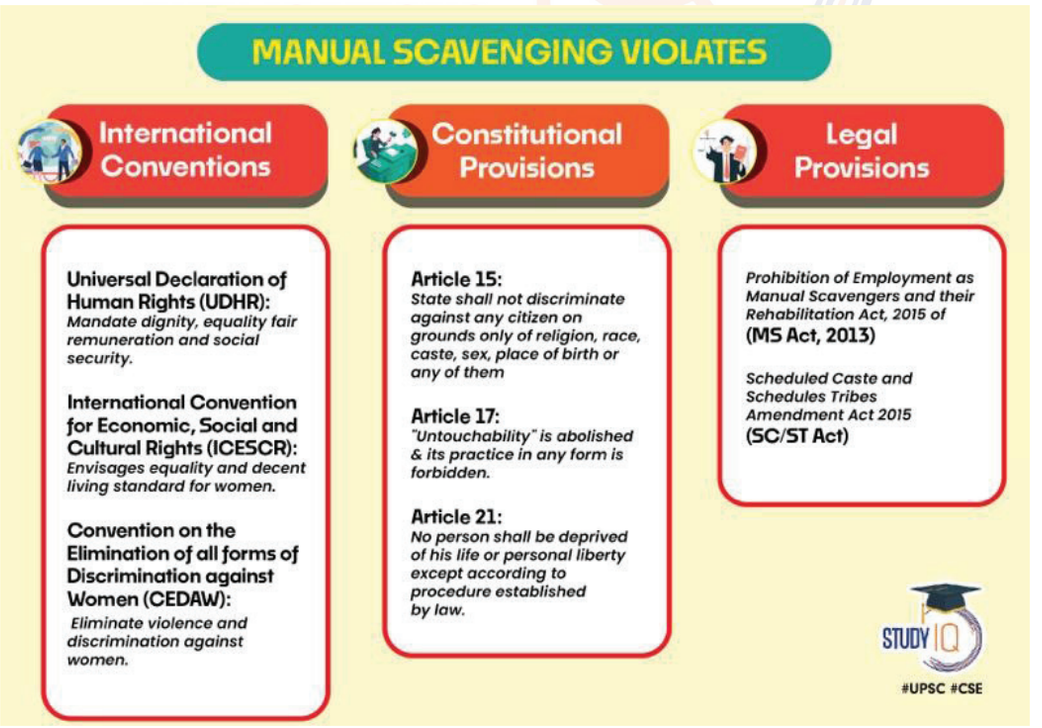
Syllabus Mapping: Social Justice, Vulnerable Sections

Context

The Supreme Court (SC) has reaffirmed its commitment to eradicating **manual scavenging** and **hazardous manual cleaning** of sewers and septic tanks. The SC referred to its **October, 2023 judgment**, which issued directives to the Union and State governments to eliminate these practices

About Manual Scavenging

- **The Prohibition of Employment as Manual Scavengers and their Rehabilitation Act (Manual Scavenger Act, 2013)** defines 'manual scavenger' as "a person engaged in or employed by an individual or an agency or a contractor for manually cleaning, carrying, disposing of or handling human excreta in an insanitary latrine or in an open drain or pit carrying human excreta from insanitary latrine or on a railway track or such other premises to be notified by Central or State Governments.
- Even persons engaged in the above act on a contractual basis will also get protection under the above act.
- However, persons engaged in cleaning excreta with such devices and protective equipment which offers them safety and dignity will not be considered as manual scavengers.



National commission on Safai Karmchari (NCSK)

- It was constituted in August 1994 as **a statutory body under National Commission for Safai Karamcharis Act, 1993,** for a period of 3 years.
- With the lapsing of the 1993 Act in 2004, the Commission is acting as a **Non-Statutory body** under the **Ministry of Social Justice and Empowerment**, its tenure is extended from time to time through Government Resolutions.
- It aims to improve the status of Safai Karamcharis or manual scavengers in India.
- NCSK recommends programs to the Central Government to reduce inequalities in status, opportunities and facilities for Safai Karamcharis.

Criminalisation of sexual relationships on false promise of marriage

Syllabus Mapping: Marriage and Family

Context

Bharatiya Nyaya Sanhita (BNS), 2023 seeks to address a specific issue concerning sexual relationships based on false promises of marriage.

About Section-69 BNS

- **Section-69 criminalizes sexual intercourse under:**
  - False promises of marriage without intention to fulfill them.
  - Promises of employment or promotion.
  - Deception by identity suppression.
- **Punishment**: Up to 10 years of imprisonment and/or a fine.
- **Classification**: Chapter 5 of the BNS, covering "Offences Against Women and Children" under sexual offences.

Criticism of Section 69

- **Gender Bias**: The law does not account for situations where men might be deceived or coerced.
- **Legal Ambiguities**: Risk of misuse to settle personal scores as it might pose a challenge to prove an intent to deceive.
- **Regressive Implications**: Ignores the evolving dynamics of modern relationships, including live-in partnerships.
- **Concerns from Parliamentary Report**:
  - **A report by the Rajya Sabha in 2022** highlighted that Section 69 could infringe on individual privacy and autonomy.
  - It also warned that the vague definitions in the law might reinforce gender stereotypes and lead to difficulties in its enforcement.

Reforms in National Entrance Exams

Syllabus Mapping: Education

Context

A high-level committee chaired by **former ISRO chief K. Radhakrishnan** has proposed major reforms to enhance transparency and efficiency in conducting national entrance exams such as NEET, CUET, and UGC-NET.

About National Testing Agency

- It was established in 2017 as a specialist, self-sustaining and autonomous organisation under the the **Union Ministry of Education.**
- It is registered under the Societies Registration Act 1860. (non-statutory body).
- **Headed by:** Director General appointed by the Union government.
- **Responsible for:** Conducting entrance exams and assessments for admission and recruitment
- **Examinations conducted by the NTA**: JEE (Main), NEET-UG, Common Management Admission Test (CMAT), (UGC-NET) etc.

Key Recommendations of the K Radhakrishnan Committee

- **Conduct Exams Like Elections:**
  - The Centre and state governments should work together, using the state administrative machinery, similar to how elections are conducted.
  - Each testing centre should have a presiding officer appointed by the NTA, responsible for ensuring that the exam follows predefined protocols, just like polling booths during elections.
- **Strict Management of Exam Centres:**
  - Exam centres should be sealed before the scheduled test in the presence of district officials and the police.
  - They should remain guarded until they are reopened on exam day like handling of strong rooms for electronic voting machines.
- **Choosing Exam Centres:**
  - District committees must select centres after evaluating past records, the reputation of the centre's management and intelligence inputs about potential risks.
- **Formation of Coordination Committees:**
  - **State-Level Committees:** Headed by a Chief Secretary-nominated nodal officer, these committees will include representatives from state police, NTA, the Intelligence Bureau (IB) and the NIC.
  - **District-Level Committees:** Led by the District Magistrate including police chief.

- **Improve Digital Infrastructure:**
  - Reduce reliance on private agencies like TCS iON for conducting computer-based exams.
  - Upgrade the digital infrastructure of centrally-run schools like Kendriya Vidyalayas and Navodaya Vidyalayas to serve as reliable testing centres.
- **Introduce a Digi-Exam System:**
  - **Inspired by the DigiYatra model,** this system will ensure candidate verification.
  - Candidates' primary data will be collected at the time of application, while biometric data will be verified before the exam begins.
- **Enhance Monitoring and Security:**
  - **Question Paper and OMR Sheet Safety:** NTA officials will be responsible for safeguarding question papers and OMR sheets until the exam concludes.
  - **CCTV Surveillance:** Candidates will be continuously monitored during the exam via CCTV.

Centre Scraps No-Detention Policy for Classes 5 and 8

Context

The Union government has abolished the no-detention policy for Classes 5 and 8 across schools under its jurisdiction. It will affect schools like **Kendriya Vidyalayas**, **Jawahar Navodaya Vidyalayas**, **Sainik Schools and Eklavya Model Residential Schools.**

About New Rules Under the Ministry of Education

- **Amendment Notification:**
  - The Ministry has amended the **Right of Children to Free and Compulsory Education Rules, 2010**, to include detention provisions.
- **Promotion and Detention Process:**
  - Students who fail regular exams in class 5 and 8 must be given **additional instruction** and a **re-examination** within **2 months.**
  - If they fail the re-exam, they may be **detained.**
- **Responsibility of Teachers and Schools:**
  - Teachers must guide detained students and their parents and provide specialised support to address learning gaps.
  - School heads must maintain a list of detained students and monitor their progress closely.
- **Exam Format:** Exams and re-exams must be **competency-based**, focusing on holistic development rather than memorisation.
- **Key Safeguard:** No child can be expelled from school until the completion of elementary education.

Legislative and Policy Background

- **Right to Education (RTE) Act, 2009:** Section 16 prohibited detaining students up to Class 8.
- **Amendment in 2019:**
  - Allowed states and UTs to decide on holding back students in Classes 5 and 8 if they failed re-examinations.
  - Since then, **18 States/UTs** have scrapped the no-detention policy.

One Nation One Subscription

Syllabus Mapping: Schemes, Innovation, Education

Context

The Union Cabinet has approved the **One Nation One Subscription** scheme.

About One Nation One Subscription (ONOS) Scheme

- It is a **Central Sector Scheme** to provide country-wide access to international high impact scholarly research articles and journal publications to students, faculty and researchers.
- This initiative aligns with the vision of Atmanirbhar Bharat and Viksit Bharat@2047, fostering a robust research and development culture in India.
- **Nodal Ministry:** Department of Higher Education, Ministry of Education.

Key Features of ONOS Scheme

- **Coverage:**
  - The scheme will provide access to 13,000 e-journals from 30 major international journal publishers.
  - The initiative is expected to help students in tier 2 and tier 3 cities, ensuring that geographical location does not limit access to high-quality academic content.
- **Eligibility:** All government-managed higher education institutions (HEIs) and central government R&D institutions will benefit from the scheme.
- **Platform Access:**
  - The ONOS platform will be operational starting January 1, 2025.
  - Access to journals will be fully digital and coordinated by the **Information and Library Network (INFLIBNET)**, an autonomous inter-university centre under the University Grants Commission (UGC).

Cabinet approved next phase of Atal Mission

Syllabus Mapping: Schemes, Innovation, Education

Context

The Union Cabinet approved the continuation of the Atal Innovation Mission.

About Atal Innovation Mission (AIM)

- It is a central sector scheme under **NITI Aayog in 2016.**
- **Aim:** Create and promote an **ecosystem of innovation and entrepreneurship** across the country at school, university, research institutions, MSME and industry levels.

Key Initiatives under AIM:

- **Atal Tinkering Labs (ATL):** Established in 10,000 schools across India for grades 6-12, to nurture curiosity and innovation using technologies like IoT, 3D printing, robotics etc.
- **Atal Incubation Centres (AICs):** Presently there are 72 centres actively supporting over 3,500 startups. They provide essential resources like mentorship, funding, and technical infrastructure to help startups grow and thrive.
- **Atal Community Innovation Centres (ACICs):** To encourage entrepreneurship in underserved regions by providing infrastructure and an environment for innovation.

Atal Innovation Mission 2.0 (AIM 2.0)

- AIM 2.0 involves piloting new initiatives designed to fill gaps in the ecosystem and scaling successes through central and state governments, industry, academia and community.
- Three focus areas:

(a) by increasing input (i.e., ushering more innovators and entrepreneurs),

(b) by improving the success rate or 'throughput' (i.e., helping more startups succeed)

(c) by improving the quality of 'output' (i.e., producing better jobs, products and services).

Key Initiatives under AIM 2.0

- **Language Inclusive Program of Innovation (LIPI):** To build innovation and entrepreneurship ecosystems in India's 22 scheduled languages for lowering the entry barrier confronting innovators, entrepreneurs and investors who don't speak English.
- **Frontier Program:** Create customized templates for the innovation and entrepreneurship ecosystems of J&K, Ladakh, North Eastern states (NE), Aspirational Districts and Blocks. 2500 new ATLs will be created for template development.
- **Human Capital Development Program**: Creating a system for producing professionals (managers, teachers, trainers) to build, operate, and maintain India's innovation and entrepreneurship ecosystem. The pilot will produce 5500 such professionals.
- **Deeptech Reactor**: Create a research sandbox for testing ways of commercializing research-based deep tech startups that require significantly longer time and deeper investment to get to market.
- **State Innovation Mission (SIM):** Assist states/UTs with building a strong innovation and entrepreneurship ecosystem that focuses on their areas of strength. SIM will be a component of the NITI Aayog's State Support Mission.
- **International Innovation Collaborations program:** Taking India's innovation and entrepreneurship ecosystem international. Four areas of intervention are identified:
  - An Annual Global Tinkering Olympiad
  - Creation of 10 Bi-lateral, multilateral engagements with advanced nations
  - Helping UN World Intellectual Property Organization (WIPO) spread the models of AIM and its programs (ATL, AIC) to the countries of the global south
  - Anchoring the Startup20 Engagement Group of the G20 for India.
- **Industrial Accelerator program** to increase industry involvement in scaling-up advanced startups. Minimum 10 Industry Accelerators in critical sectors will be created in Public Private Partnership (PPP) mode.
- **Atal Sectoral Innovation Launchpads (ASIL) program** to build iDEX-like platforms in central ministries for integrating and procuring from startups in key industry sectors. Minimum 10 launchpads will be built across key ministries.

National Mission on Libraries

Syllabus Mapping: Schemes, Health, Education

Context

The Union Minister for Culture and Tourism has provided information regarding the National Mission on Libraries Scheme in Rajya Sabha.

About National Mission on Libraries (NML)

- Launched by **the Union Ministry of Culture** to modernize and improve public libraries and services.
- Established in **2012** based on recommendations from the **National Knowledge Commission.**
- **NML has 4 main components:**
  - **National Virtual Library of India (NVLI):** A digital repository of cultural heritage with multilingual search
  - **NML Model Library Scheme:** Upgrades public library infrastructure and improves accessibility
  - **Quantitative and Qualitative Survey:** Gathers feedback from users and non-users
  - **Capacity Building:** Upskills library professional
- **Objectives of National Mission on Libraries:**
  - Provide digital content-based services to citizens
  - Improve library infrastructure and accessibility.
  - Upskill library professionals

International Fund for Agricultural Development

Syllabus Mapping: Schemes, Tribes, International Organisations

The Odisha government is planning to take a loan from the International Fund for Agricultural Development to implement the **Empowerment and Livelihood Improvement Programme (OPELIP-II) for PVTG's.**

About International fund for Agricultural Development (IFAD)

- **IFAD** is a **United Nations agency** that works to improve agricultural development and reduce poverty in developing countries. **(HQ - Rome, Italy)**
- It was established in **1977** in response to a global food crisis.
- **Goal:** To help rural people improve their food and nutrition security, increase their incomes and strengthen their resilience.

About Pradhan Mantri Janjati Adivasi Nyaya Maha Abhiyan (PM-JANMAN)

- PM-JANMAN was launched in 2023, to improve the lives of **Particularly Vulnerable Tribal Groups (PVTGs).**
- **Nodal Ministry:** Ministry of Tribal Affairs (MOTA).
- Focuses on 11 key interventions across **9 ministries and departments**, covering sectors such as safe housing, clean drinking water, healthcare, education, nutrition and sustainable livelihood opportunities.

About Particularly Vulnerable Tribal Groups

- The **Dhebar Commission (1960-61)** identified disparities among Scheduled Tribes, leading to the creation of the Primitive Tribal Groups (PTG) category.
- In 2006, the PTG category was renamed to PVTGs.
- **Criteria for PVTGs**
  - Pre-agricultural lifestyles
  - Low literacy rates
  - Small or stagnant populations
  - Subsistence economies.
- 75 communities in 18 States and the Union Territory of Andaman and Nicobar Islands are categorised as Particularly Vulnerable Tribal Groups (PVTGs).
- **Odisha has the highest number of PVTGs (15).**

Eklavya Model Residential Schools

Syllabus Mapping: Schemes, Tribes, Education

Context

Challenges in Meeting 5% Sub-Quota for PVTG Students in Eklavya Model Residential Schools.

About Eklavya Model Residential Schools (EMRS)

- EMRS is a **Central Sector Scheme** started in **1997-98** to impart quality education to ST children in remote areas.
- EMRS are established in the States/UTs **from the grants received under Article 275(1) of the Constitution of India.**
- **Features:**
  - The schools focus not only on academic education but on the all-round development of the students.
  - Each school has a capacity of **480 students,** catering to students from **Class VI to XII.**
  - **Non-ST students** can be admitted in these schools on seats up to **10% of the total seats.**
  - **A 5% sub-quota was introduced for PVTGs** in 2020 for enhancing their education.
- **Reservation Categories for admission of children in EMRS:**

Reservation Category	Reservation
Scheduled Tribe Children	80%
Children from PVTG community	5%
Children from DNT/NT/SNT community	5%
• Children who have lost their parents to LWE/ Insurgencies/COVID • Children of widows • Children of Divyang Parents • Children of Land donor/orphan	10%

- **Implementing Agency: National Education Society for Tribal Students (NESTS)** , an autonomous organization under the Ministry of Tribal Affairs manages EMRS across India.
- **Criteria for establishment:** Every block with more than **50% ST population** and at least **20,000 tribal persons,** will have an EMRS.
- **Eklavya Model Day Boarding Schools (EMDBS):** In Blocks with ST population density of more than 90% an Eklavya Model Day Boarding Schools (EMDBS) can be established on an experimental basis to provide access to quality school education to ST students without residential facilities.
- **Recruitment of teachers and staff:** Recruitment and teachers staff at EMRS is done by NESTS. NESTS conducts EMRS Staff Selection Examination through the National Testing Agency to recruit teaching and non-teaching staff employed in EMRS.
- **Funding of EMRS schools:** Central Government will provide the following
  - Capital cost for setting up of the school complex, including hostels and staff quarters.

  - Recurring cost up to Rs 1.09 lakh per year per student is paid for running of schools and towards expenses of students (uniform, books & stationery, food etc.)
- Funds are released by the Ministry of Tribal Affairs to the National Educational Society for Tribal Students (NESTS) for implementation of this scheme. NESTS further releases funds to State Societies and Construction Agencies etc. as per their requirements.

PVTG Sub quota in EMRS

- **Current Enrollment Data:**
  - **Total EMRS Students**: 1,30,101 (across 407 functional schools as of October 2024).
  - **PVTG Students**: 4,480 students, comprising only **3.4%** of the total population, falling short of the 5% target.
  - Dropouts among PVTG students have increased **consecutively over 3 years.**
- **Reasons for Low Enrollment and Dropouts:**
  - **Infrastructure Gaps**: Poor facilities in many schools.
  - **Teacher Shortage**: Lack of sufficient and qualified teaching staff.
  - **Economic Pressure**: Many PVTG students are compelled to work to support their families.
  - **Quality of Education**: Perception of subpar education and inadequate resources.

57 lakh cards to be distributed under SVAMITVA scheme

Syllabus Mapping: Schemes, Land Reforms

Context

Prime Minister Narendra Modi has directed all Union ministers to attend the public events to be held to distribute **57 lakh property cards under SVAMITVA scheme.**

About SVAMITVA Scheme

- SVAMITVA stands for **Survey of Villages and Mapping with Improvised Technology in Village Areas.**
- It's a **Central Sector Scheme** launched on **National Panchayati Raj Day (24th April) in 2021.**
- **Nodal Ministry:** Ministry of Panchayati Raj
- **Stakeholders involved:** Ministry of Panchayati Raj, State Revenue Department, State Panchayati Raj Department and Survey of India.
- **Important features:**
  - **"Record of Rights"** are provided to rural households using the latest Drone Technology and **Continuously Operating Reference Station (CORS) technology** for capturing images.
  - Such accurate maps provide a clear demarcation of land holdings in a very short frame of time compared to on ground physical measurement.
- **Objectives of SVAMITVA scheme:**
  - **Financial Asset Creation:** Property can be used as collateral for loans and other financial benefits. Land parcels will gain market value and facilitate credit availability in villages.
  - **Revenue and Taxation:** Enables determination and collection of property taxes. States with empowered Gram Panchayats will directly benefit from property tax revenue.
  - **Rural Planning:** facilitate rural planning by creating precise property maps and improving **Gram Panchayat Development Plans (GPDPs)**.
  - **Reduction in Property Disputes:** Legal ownership rights will reduce conflicts over property. Improved property records will help to prevent illegal occupations.
- **Current Achievement:**
  - 2 crore property cards have been issued so far.
  - States like Haryana and Uttarakhand have achieved full coverage.
  - **Future Target:** Aim to cover the entire country by FY 2025-26.

Pradhan Mantri Virasat Ka Samvardhan (PM VIKAS) Scheme

Syllabus Mapping: Schemes, Minorities

Context

The Ministry of Minority Affairs has converged 5 existing schemes into a new scheme named PM-VIKAS.

About PM VIKAS

- It is a **Central sector scheme** under the **Ministry of Minority Affairs (MoMA)**.
- **Aim:** Empower minority and artisan communities through inclusive development.
- PM-VIKAS is an integrated scheme combining (5) existing schemes of MoMA viz. **Seekho aur Kamao, USTTAD, Hamari Dharohar, Nai Roshni and Nai Manzil.**
- **Scheme Components:**
  - **Skilling and Training:** Includes traditional (arts & crafts) and non-traditional (NSQF compliant) skill training.
  - **Leadership and Entrepreneurship:** Focuses on leadership development and entrepreneurship support, particularly for women.
  - **Education:** Provides open schooling opportunities (8th, 10th, and 12th) for school dropouts.

– **Infrastructure Development:** Development of "Vishwakarma Villages" (hub and spoke model) to promote art, craft, tourism and commerce.

Jalvahak Scheme

Syllabus Mapping: Schemes, Minorities

Context

The Union government has launched the Jalvahak scheme to incentivize cargo movement via inland waterways.

About Jalvahak Scheme

- **Aim:** To incentivize cargo transport, decongest roadways and railways, and boost the use of waterways as an **economical, eco-friendly, and efficient** mode of transport.
- **Launched by** – Ministry of Ports, Shipping & Waterways.
- **Implementing Agency:** Implemented jointly by the **Inland Waterways Authority of India (IWAI) and Inland & Coastal Shipping Ltd (ICSL)**, a subsidiary of the Shipping Corporation of India.
- **Incentive:** It will offer up to **35% reimbursement of the total operating costs** for transporting cargo on the National Waterways (NW) 1, 2 and 16.
  - **NW 1:** From Kolkata to Varanasi via Patna (Ganga)
  - **NW 2:** From Kolkata to Pandu in Guwahati (Brahmputra)
  - **NW 16:** Via the Indo Bangladesh Protocol Route (IBPR) (Barak)
- **Criteria for Incentive:** It will provide direct incentive to transport goods via inland waterways for a distance of **more than 300 kms.**
- The scheme will remain valid for **3 years.**
- **Target:** 200 million metric tons (MT) cargo movement by 2030 and 500 MT by 2047.

PRASHAD Scheme

Syllabus Mapping: Schemes, Tourism

Context

The Ministry of Tourism has sanctioned 46 new projects under its PRASHAD Scheme.

About Pilgrimage Rejuvenation and Spiritual Heritage Augmentation Drive (PRASHAD) Scheme

- PRASHAD scheme was launched by the **Union Ministry of Tourism in 2014-15** to develop and promote religious tourism in India.
- It is a **Central Sector Scheme.**
- **Objectives of PRASHAD Scheme:**
  - Development and promotion of religious tourism in India.
  - To integrate pilgrimage destinations in a prioritised, planned and sustainable manner to provide a complete religious tourism experience.
  - Generate employment opportunities in local communities and boost the regional economy.
- **Convergence:** Works alongside other central and state-level schemes like **Swadesh Darshan**, **Smart Cities Mission**, and **AMRUT** for holistic development.

PM-ABHIM

Syllabus Mapping: Schemes, Health, E-Governance

Context

The **Pradhan Mantri Ayushman Bharat Health Infrastructure Mission (PM-ABHIM)** aims to revolutionize India's healthcare system with an outlay of ₹64,180 crore (2021-26).

About PM-ABHIM

- It was launched in **2021 by the Union Ministry of Health and Family Welfare.**
- It focuses on constructing health infrastructure, **including sub-centres, wellness centres, labs and critical care units.**
- **Objectives:**
  - To strengthen grass root public health institutions.
  - To expand and build an IT enabled disease surveillance system.
  - To expand research on COVID-19 and other infectious diseases and to develop the core capacity to deliver the One Health Approach.
- **Components:**
  - It consists of Centrally Sponsored Scheme Components [like Ayushman Bharat - Health & Wellness Centres (AB-HWCs) in rural and urban areas].
  - Some Central Sector Components (like Critical Care Hospital Blocks).

Never Events

- Serious, preventable incidents that should never occur in healthcare if safety protocols are followed.
- **Origin**: Term introduced in 2002 by the **National Quality Forum (NQF)** in the U.S.
  - **E.g.** Wrong-site surgery, insulin overdose, mismatched blood transfusions etc.

Indian Context

- The term "never events" is not explicitly used in India, here the focus is on medical negligence.
- India uses the **Bolam test** to determine if a medical professional's actions were negligent.
- **Bolam test** is a peer review that compares a medical professional's actions to those of other qualified professionals in the same field.
- India has adopted the Bolam test from the **United Kingdom**.

GLP-1 receptor agonists

- World Health Organisation (WHO) has endorsed **GLP-1 receptor agonists** as a new class of medicines for managing **obesity.**
- **Glucagon-like peptide-1 receptor agonists (GLP-1RAs)** are a class of medications that treat type 2 diabetes and obesity.
  - They work by: Increasing insulin secretion, Slowing stomach emptying and Reducing calorie intake.
- **GLP-1 receptor** is a protein that plays a key role in regulating blood glucose levels, insulin secretion and other physiological functions in the human body.
- **Obesity stats:**
  - Globally 1 in 8 people is living with obesity.
    - **890 million adults and 160 million** adolescents are affected by it.
  - India ranks **3rd** globally in obesity, **after USA and China.**
  - 44 million women and 26 million men have obesity in India.

SCIENCE & TECHNOLOGY

TOPICS FOR MAINS

Legal gaps in India's unregulated AI surveillance

Syllabus Mapping: GS-Paper 3, ICT, Artificial Intelligence

Context

The evolving use of AI in surveillance highlights that there need to consider legal frameworks, gaps, and concerns surrounding it in India and how they intersect with constitutional rights, particularly the right to privacy.

AI Surveillance in India:

- In 2019, Indian government announced plans to create the world's largest facial recognition system for policing.
- AI-powered surveillance systems are in use at railway stations.
- The Delhi Police is preparing to use AI for crime patrols.
- Plans include launching **50 AI-powered satellites** to enhance India's surveillance infrastructure.

Issues associated with AI Surveillance In India

- **Privacy Infringement:** AI surveillance systems can lead to **dragnet surveillance**, a term that refers to indiscriminate data collection beyond just suspects or criminals, infringing on citizens' right to privacy (Article 21).
  - **Example**: Hyderabad police accessed the databases from social welfare schemes like "Samagra Vedika."
- **Lack of Proportional Safeguards:** Existing safeguards are insufficient to prevent misuse of AI-driven surveillance.
  - The promised **Digital India Act** (for regulating AI) has yet to materialize.
- **Exemptions in the Digital Personal Data Protection Act (DPDPA), 2023:** Section 7(g) waives consent requirements for processing medical data during epidemics, while Section 7(i) exempts government from consent for employment-related data processing.
  - These exemptions raise concerns about misuse, especially regarding AI surveillance technologies that rely on vast amounts of personal data.
  - Citizens face increased scrutiny under DPDPA provisions like Section 15(c), which mandates that individuals must not suppress any material information when submitting personal data.
- **Lack of Transparency and Accountability:** Absence of publicly available guidelines on **how data is collected, processed, stored, and protected** by law enforcement agencies.
  - No independent oversight to prevent potential misuse of AI technologies.
- **Risk of Discrimination and Bias:** AI surveillance systems can perpetuate **algorithmic biases** and lead to unfair targeting of certain communities.
  - These biases can **violate the principles of equality and non-discrimination**.
- **Data Security Concerns:** High risk of **data breaches** and misuse due to inadequate cybersecurity infrastructure.
  - **Example**: **Telangana Police data breach** exposed vulnerabilities in law enforcement data management.
- **Civil Liberties Erosion:** Unchecked surveillance threatens fundamental rights such as **freedom of expression, association, and movement**.
  - Excessive surveillance may create a **chilling effect on democratic participation**.

Global Comparisons and Best Practices

1. European Union (EU) – Artificial Intelligence Act

- **Risk-Based Approach:** Categorizes AI activities into **unacceptable, high, transparency, and minimal risk**.
- **Unacceptable Risk:** Prohibits real-time remote biometric identification, except for narrowly defined exceptions (e.g., searching for victims of serious crimes).
- **Transparency and Accountability:** Requires clear documentation and disclosure of AI system operations.
  - Mandates regular **audits and risk assessments** for high-risk AI applications.

2. United States – Section 702 of FISA

- **Oversight Mechanisms:** Surveillance programs are subject to review by the **Foreign Intelligence Surveillance Court (FISC)**.
  - However, the program has faced criticism for overreach and inadequate safeguards.

3. United Kingdom – Surveillance Camera Code of Practice

- **Principles-Based Regulation:** Surveillance activities must be **justified, proportionate, and transparent**.
  - Requires law enforcement agencies to follow a **code of co**nduct for deploying CCTV and facial recognition technology.

Proposed Reforms for AI Surveillance in India

- **Comprehensive Regulatory Framework:** Enact a robust legal framework to regulate AI-driven surveillance with clear guidelines on **data collection, processing, storage, and deletion**.
  - Ensure alignment with the principles of **necessity, legitimacy, and proportionality**.
  - **Transparency and Oversight Mechanisms:** Mandate **public disclosure** of:
    - What data is being collected.
    - The purpose of collection.
    - Duration of data retention.
  - Establish **independent judicial oversight** to review and approve surveillance activities.
- **Strict Consent Requirements:** Narrow and specific exemptions for consent under the DPDPA, ensuring they are not overly broad or ambiguous.
  - Implement **transparent consent-gathering practices** with proper safeguards.
- **Risk-Based Regulation:** Adopt a **risk-based approach** to categorize AI activities (similar to the EU model)
- **Data Protection and Security:** Strengthen **cybersecurity infrastructure** to prevent data breaches.
  - Introduce penalties for **unauthorized access or misuse of personal data** by law enforcement agencies.
- **Algorithmic Fairness and Bias Mitigation:** Conduct regular **audits of AI systems** to identify and mitigate biases.
  - Ensure AI algorithms used in surveillance are **transparent and explainable**.
- **Judicial Oversight and Redressal Mechanisms:** Implement **judicial review** for AI surveillance operations.
  - Create mechanisms for **citizens to challenge surveillance practices** and seek redressal for violations.

What India's AI Safety Institute could do

Syllabus Mapping: GS-Paper 3, ICT, Artificial Intelligence

Context

India's Ministry of Electronics and Information Technology (MeitY) is exploring the establishment of an **AI Safety Institute** under the IndiaAI Mission. This reflects the rising importance of AI governance and safety in global and domestic policy discussions. Recent events like the **Quad Leaders' Summit**, **UN Summit of the Future**, and India's leadership roles in the **G20** and the **Global Partnership on Artificial Intelligence (GPAI)** underscore the timeliness of this initiative.

Strategic Context

- **Global Leadership**: India should leverage its recent leadership roles at the G20 and Global Partnership on Artificial Intelligence (GPAI) to position itself as a unifying voice in AI governance.
- **Global Digital Compact:** The Summit of the Future resulted in the Global Digital Compact, emphasizing multi-stakeholder collaboration, human-centric oversight, and inclusive participation from developing countries as key pillars for AI governance and safety.
- **Next Steps**: The UN will initiate a **Global Dialogue on AI**, making it timely for India to establish an AI Safety Institute that engages with the Bletchley Process on AI Safety.

Global Trends in AI Safety Institutes

- **Bletchley Process**
  - Initiated by the **U.K. Safety Summit (November 2023)** and expanded at the **South Korea Safety Summit (May 2024)**.
  - Aims to establish an **international network of AI Safety Institutes** to address risks from advanced AI technologies.
  - The next summit is planned in France, continuing the collaborative trajectory.
- **United States and United Kingdom**
  - Both countries were early adopters, setting up AI Safety Institutes to manage risks from frontier AI models.
  - **MoUs between the U.S. and U.K.**:
    - Share knowledge, resources, and expertise.
    - Collaborate with AI labs for early access to large foundation models.
    - Implement mechanisms to share technical inputs with labs before public rollout.
  - Focus on **cybersecurity**, **infrastructure security**, **biosphere safety**, and **national security threats**.
- **China**: Established an **Algorithm Registry**, aiming to monitor and regulate algorithms for safety and alignment.
- **European Union**: Proposed an **AI Office** under its regulatory framework, combining oversight with compliance requirements.

Role and Functions of Safety Institutes

- Serve as technical government institutions, not regulators.
- Facilitate proactive information sharing and risk assessments.
- Promote external third-party testing and mitigation strategies for AI risks.
- Focus on transforming AI governance into an **evidence-based discipline**.

Key Objectives for India's AI Safety Institute

- Operates as a **technical research, testing, and standardisation agency**.
- Be independent of regulatory and enforcement authorities.
- Integrate into the **Bletchley network** to leverage global expertise and resources.

Recommendations for India's AI Safety Institute

- **Lessons from Previous Initiatives:** Concerns were raised regarding MeitY's AI Advisory from 2024, which suggested requiring government approvals prior to public rollouts of experimental AI systems.
  - Critics questioned the Indian government's capability to assess the safety of novel AI deployments adequately.
  - Issues regarding bias, discrimination, and a one-size-fits-all approach indicated that the advisory lacked technical evidence.
- **Regulatory Caution:** India should avoid adopting prescriptive regulatory controls similar to those proposed in the European Union (EU) and China, which could stifle proactive information sharing among businesses and governments.
  - Establishing specialized agencies like **China's Algorithm Registry or the EU's AI Office** is recognized; however, India should separate institution building from regulation-making to maximize effectiveness.
- **Domestic Priorities**: Address risks related to bias, discrimination, gender, social exclusion, labour markets, data privacy, and surveillance.
  - Build institutional capacity for harm identification, risk assessment, and mitigation strategies.
- **Global Engagement**: Collaborate with international safety institutes and stakeholders.
  - Amplify **global majority perspectives** on human-centric AI safety.

Potential Impact

If successfully implemented, India could emerge as a global leader in forward-thinking AI governance by:

- Championing diverse perspectives on risks associated with AI technologies.
- Deepening global dialogue around harm identification, risk mitigation strategies, red-teaming efforts, and standardization practices.
- Demonstrating a commitment to evidence-based policy solutions that are globally compatible

Privately funded scientific research

Syllabus Mapping: GS-Paper 3, ICT, Artificial Intelligence

Context

The involvement of companies in funding scientific research often creates a tension between the traditional principles of science, such as openness, transparency, and reproducibility, and the profit-driven motives of corporations.

Impact when science is funded by private sector

Conflict Between Transparency and Intellectual Property (IP)

- **Secrecy vs. Open Science**:
  - Corporate-funded research often prioritizes intellectual property protection, which necessitates secrecy.
  - Science historically thrives on openness, reproducibility, and falsifiability. When these principles are compromised, scientific progress is hindered.
- **Case Study: AlphaFold 3**
  - Google DeepMind's AlphaFold 3 predicted protein structures with enhanced capabilities, such as simulating protein-drug interactions.
  - The underlying algorithm was not fully disclosed, unlike its predecessors (AlphaFold and AlphaFold 2).
  - The lack of full transparency sparked criticism, with scientists arguing that secrecy prevented reproducibility and verification of findings.
  - DeepMind justified this approach, citing commercial interests of its spin-off, Isomorphic Labs, in drug discovery.

Trade-offs in Academic-Industrial Collaborations

- **Shift in Research Goals**:
  - Corporate-funded researchers often align their goals with industry needs, potentially sidelining broader scientific inquiry.
  - For example, companies may restrict researchers to specific avenues that align with commercial priorities rather than scientific curiosity.
- **Example: Anaesthesia Robot (McSleepy)**
  - Developed by Thomas Hemmerling's team, its algorithms were published openly.
  - Some parts were integrated into other technologies, referencing the original work.
  - Hemmerling emphasized that closer a research output is to a product, the more likely researchers are to withhold details for commercialization.

Financial Pressures on Researchers and Institutions

- **Economic Dependency**: Universities and research institutions rely on commercial funding to compensate for limited public funding.
  - Researchers are encouraged to patent their findings, turning scientific outputs into revenue streams.
- **Challenges for Scientists**: Researchers face the dilemma of balancing open science with financial viability.
  - They may choose to publish foundational algorithms openly but reserve enterprise-ready versions for commercial purposes, as suggested by Benjamin Haibe-Kains.

Intellectual Property and Restricted Access

- **Delayed or Partial Disclosure**: Corporations may delay the release of data or algorithms, hindering independent verification and scientific advancement.
  - **Example**: AlphaFold 3's authors promised to release the full code six months after publication, compromising immediate reproducibility.
- **Exclusive Rights**: Companies often retain exclusive rights to commercialize discoveries, limiting broader societal benefits.
  - For instance, Nigeria rejected Tesla's proposal to buy lithium, preferring a Chinese company to build a processing plant, showcasing how corporate interests can dictate research use.

Misalignment of Incentives

- **Blurred Boundaries**: Corporations use academic journals to advertise their findings but retain proprietary control over key data and methods.
  - This creates an imbalance where industry uses academic platforms for credibility without adhering to academic principles.
- **Focus on Profit**: For corporate researchers, generating revenue often outweighs advancing science.
  - This leads to prioritization of short-term gains over long-term scientific contributions.

Collaborative Agreements and Their Trade-offs

- **Joint Ventures with Companies**: Researchers sometimes negotiate agreements where companies fund specific projects while allowing labs to retain freedom in other areas.
  - This provides financial security but tightens control over specific research directions.
- **Trade-offs**: Partnerships may limit researchers' ability to explore conflicting areas of interest due to company-imposed restrictions.

Reduced Public Accessibility of Findings

- **Accessibility Barriers**:While foundational research may be disclosed, advanced, deployable versions of algorithms or products are kept proprietary.
  - This limits the scientific community's ability to build on such work.

Dependence on Public Funding for Independence

- **Role of Government Funding**: Public funding ensures researchers can operate without corporate-imposed restrictions.
  - **Example**: COVID-19 vaccines by Moderna and Pfizer were subsidized by governments, ensuring affordability despite IP protection.
- **Sustainability through Public Support**: Hemmerling emphasized that public funding allows researchers to focus purely on innovation without conflicts of interest.

Way Forward to Balance Transparency and Commercialization

- **Hybrid Models**: Researchers can publish foundational discoveries while reserving advanced versions for commercialization.
  - Example: Haibe-Kains' lab publishes algorithms openly but develops a premium version for commercial use.
- **Increased Public Funding**: Governments should allocate more funds to ensure research independence and reduce reliance on corporate funding.
- **Ethical Guidelines for Corporate Partnerships**: Clear agreements should define the scope of corporate control while preserving academic freedom.
- **Incentives for Open Science**: Encourage recognition and funding for researchers who prioritize transparency and reproducibility.

Environmental Impact of Rocket Launching

Syllabus Mapping: GS-Paper 3, Science, Space

Context

The growth in satellite launches raises concerns about their impact on climate monitoring systems and the accumulation of orbital debris.

Environmental Effects of Rocket Launches

- **Emissions:**
  - Every rocket launch releases significant amounts of **carbon dioxide, black carbon and water vapor** into the atmosphere.
  - Black carbon is particularly concerning as **it absorbs sunlight 500 times more effectively than carbon dioxide, contributing to global warming.**
- **Ozone Layer Depletion:** Rocket propellants, especially chlorine-based chemicals, deplete the ozone layer at high altitudes, leading to increased ultraviolet radiation exposure on Earth and disrupting atmospheric circulation.
- **Satellite Ash:** When satellites burn up upon re-entry at the end of their missions, they release metallic ash into the middle layers of the atmosphere, which can harm atmospheric conditions and potentially alter the climate.

- **Energy-Intensive Satellite Production:**
  - The manufacturing process for satellites is energy-intensive, involving metals and composite materials that have substantial carbon footprints due to their extraction and preparation.
  - Satellites also require propulsion systems for orbital adjustments, contributing additional emissions.
- **Orbital Debris Concerns:**
  - **Definition:** Orbital debris includes defunct satellites, spent rocket stages and fragments from break-ups in low Earth orbit (LEO).
  - **Statistics:** As of September 2024, there have been approximately 6,740 rocket launches since 1957, placing 19,590 satellites in orbit. Of these, around 13,230 remain in space, with 10,200 still functional.
  - **Pollution:** The presence of non-functional objects in orbit constitutes a form of pollution. There are about 36,860 cataloged space objects, including those from over 650 fragmentation events, with a total mass exceeding 13,000 tonnes.
  - **Collision Risks:** The increasing mass of space debris raises collision risks for operational satellites. Even small pieces of debris traveling at speeds up to 29 km/h can cause significant damage.
- **Impact on Scientific Data Collection:** Orbital debris interferes with data collection critical for monitoring climate and disasters by obstructing radio waves. This interference necessitates costly shielding and collision avoidance maneuvers for satellite operators.
- **Barriers to space sustainability:**
  - Current space activities **lack clear international regulations,** as they fall outside frameworks like the Paris Agreement.
  - This absence allows unchecked emissions and debris accumulation to threaten Earth's climate and future space exploration.

Achieving Sustainability in Space Exploration

- **Innovative Solutions:**
  - **Reusable Rockets:** Companies like SpaceX and Blue Origin are developing reusable rockets to reduce waste and costs. However, these parts can be heavier and may **increase fuel consumption.**
  - **Cleaner Fuels:** Transitioning to fuels like liquid hydrogen or biofuels could minimize harmful emissions but presents **challenges due to current production methods relying on non-renewable energy.**
  - **Biodegradable Satellites:** Designing satellites with biodegradable materials could help reduce long-term debris but **currently they lack durability required for extreme space conditions.**
- **Autonomous Debris Removal (ADR):** Technologies such as **robotic arms and laser systems** show promise for cleaning up orbital debris **but face high costs and legal uncertainties.**
- **Global Traffic Monitoring System:** A system to monitor satellites and debris in real-time could reduce collision risks but is **hindered by data-sharing resistance due to security concerns.**

Way Forward

- **Global Cooperation:**
  - International collaboration is necessary to create and enforce standards for reducing emissions, managing space debris and sharing critical data.
  - Organizations like the **Committee on the Peaceful Use of Outer Space (COPUOS)** can take the initiative in shaping and implementing these global standards.
- **Investing in Green Technologies:**
  - Governments and private companies should focus on funding innovative, eco-friendly technologies.
  - This includes developing green fuels, systems to clear debris and biodegradable materials for satellite components.
- **Policy Incentives:**
  - Offering financial incentives, like subsidies or tax cuts, can motivate private firms to adopt sustainable practices.
  - On the other hand, penalties can help discourage actions that harm the environment.

India's Ambitious Space Programme Goals

Syllabus Mapping: GS-Paper 3, Science, Space

Context

India's space program is poised for significant advancements over the next two decades. India's space programme aims to secure strategic autonomy in space access by developing powerful and reusable rockets like ISRO's **Next Generation Launch Vehicle (NGLV)**.

ISRO's Road Map for the Next Two Decades

- **Gaganyaan Mission**: First Indian human-spaceflight mission, demonstrating India's human-spaceflight capability.
- **Space Station by 2030s**: India aims to establish its own space station in Earth's orbit.
- **Human-Spaceflight to the Moon**: Long-term goal to expand human-spaceflight capabilities to lunar missions.
- **Development Of Next Generation Launch Vehicle:**
  - **Features and Capabilities:**
    - **Heavy Lift Capability**: NGLV will **triple the payload capacity** of the current **LVM3** (Geosynchronous Satellite Launch Vehicle Mk III).
    - **Reusability**: Unlike current expendable rockets, parts of the NGLV will be **reusable**, offering significant **cost savings**.
  - **Benefits:**
    - Reduces the need for **miniaturization** or weight restrictions.
    - Expands possibilities for space missions.
  - **Comparison with Current Rockets**:
    - **LVM3**: India's most powerful rocket but expendable and limited to **4,000 kg** payload to Geostationary Transfer Orbit (GTO).
    - **SpaceX's Falcon 9**:
- The reusable version carries **5,500 kg** to GTO.
- Expendable version carries **8,300 kg** to GTO.
  - **SpaceX's Starship**: Reusable rocket capable of lifting **21,000 kg to GTO** and **100,000 kg to Low Earth Orbit**.

Current Gaps in India's Space Program

- **Heavy Lift and Reusable Rocket Technology:** ISRO's most powerful rocket, the LVM3, can lift only 4,000 kg to the Geostationary Transfer Orbit (GTO).
  - **Reusability** is still in the **developmental phase**, whereas global competitors like SpaceX have already operationalized reusable rockets such as Falcon 9 and Starship.
- **Private Sector Involvement:** India's private space sector is in its **nascent stages** compared to the U.S., where companies like SpaceX and Blue Origin lead innovation.
  - Limited opportunities for Indian startups to develop and launch heavy-lift rockets.
- **Space Infrastructure and Investment**: Insufficient investment in spaceports and ground infrastructure for frequent and diverse launches.
  - Limited testing facilities for advanced propulsion systems and human-spaceflight technologies.

Need for Heavy Lift Capability Rockets

- **Upcoming Space Missions Require Larger Payloads**: Missions like **Chandrayaan-3** and future human lunar missions require rockets that can carry heavier modules and equipment.
  - **E.g.,** India's next uncrewed lunar mission will need **two LVM3 rockets** to launch modules that are then assembled in space. A single heavy-lift rocket could simplify this process.
- **Global Competition and Technological Advancement**: Competitors like **SpaceX** have developed rockets capable of lifting significantly heavier payloads (e.g., **21,000 kg** to Geostationary Transfer Orbit by Starship).
  - To remain competitive and achieve **strategic autonomy**, India needs comparable heavy-lift capabilities.

- **Dependence on Foreign Launch Providers**: The **LVM3** can lift a maximum of **4,000 kg** to the Geostationary Transfer Orbit (GTO), which restricts mission capabilities.
  - **E.g.,** Recent launches of ISRO satellites like **GSAT-N2** had to rely on **SpaceX's Falcon 9** due to payload limitations.

Suggestions for improving India's space program

- **Accelerate Development of Reusable Rockets:** Prioritize development of ISRO's **Next Generation Launch Vehicle (NGLV)**.
  - Fund private-sector initiatives to develop **reusable heavy-lift rockets**.
  - Collaborate with **foreign partners** to fast-track the development of reusability technologies.
- **Boost Private Sector Participation:** Implement a **Public-Private Partnership (PPP)** model to incentivize private space companies.
  - Provide **milestone-based funding** for private firms to develop launch vehicles, satellites, and space technologies.
  - Facilitate collaboration between Indian startups and **global space firms** for technology transfer.
- **Increase Global Market Share:** Develop cost-competitive, reusable rockets to attract commercial launches.

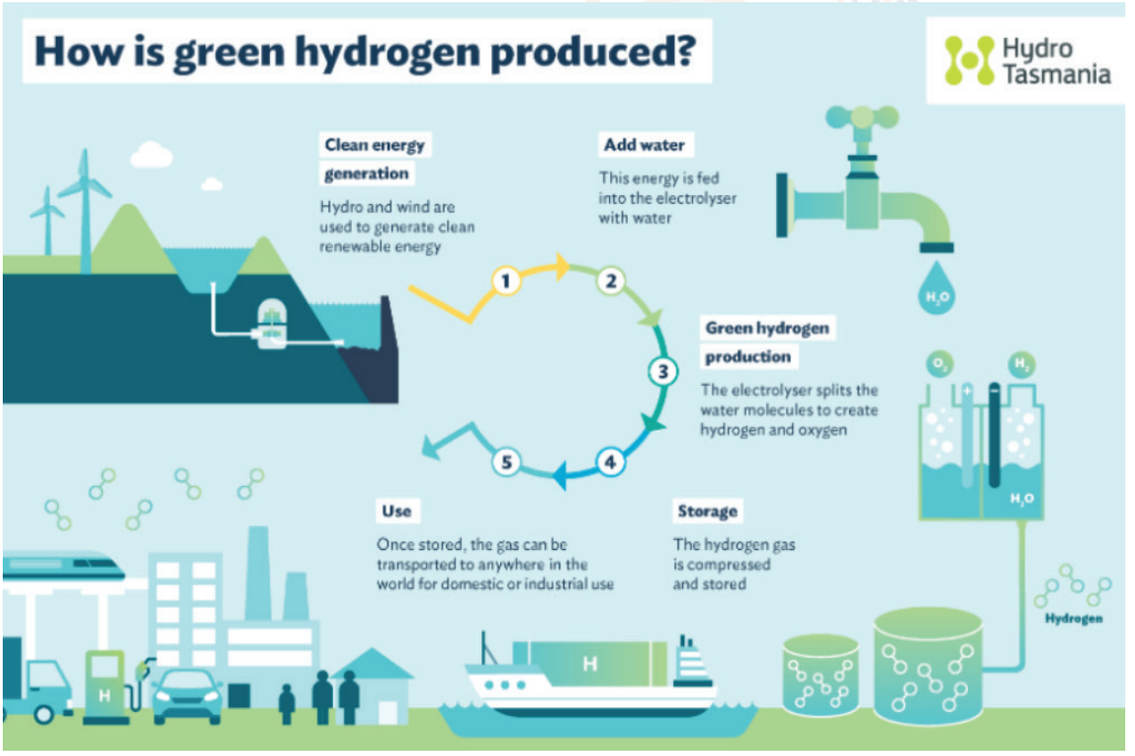
Green Hydrogen and Financial Challenge

Syllabus Mapping: GS-Paper 3, Hydrogen, Alternative Energy

Context

India's ambition to achieve net-zero emissions by 2070 hinges significantly on the development of a robust green hydrogen sector. The country aims to produce 5 million metric tonnes (MMT) of green hydrogen annually by 2030, positioning itself as a leader in this emerging industry. However, various economic and infrastructural challenges threaten to impede this progress.

Green Hydrogen



- Green hydrogen is produced by **renewable energy** through **electrolysis of water.** Electrolyser technology is central to the green hydrogen production process.
- Electrolysis involves the **splitting of water (H2O)** into its constituent elements, **hydrogen (H2)** and **oxygen (O2),** using an electric current.

- **Commercially available technologies for green hydrogen production:**
  - **Alkaline Electrolyzers:** Alkaline electrolyzers operate via transport of hydroxide ions (OH-) through the electrolyte from the cathode to the anode with hydrogen being generated on the cathode side.
  - **Polymer Electrolyte Membrane Electrolysers:** In a polymer electrolyte membrane (PEM) electrolyser, the electrolyte is a solid specialty plastic material.
  - **Solid Oxide Electrolysers:** It uses a solid ceramic material as the electrolyte that selectively conducts negatively charged oxygen ions (O2-) at elevated temperatures (700°-800°C) to generate hydrogen.
- **Applications:** Green hydrogen can be consumed through either **direct combustion,** electricity generation through **fuel cells** and industrial processes like **ammonia, steel** manufacturing and **petroleum refinery** to be used as chemical feedstock.

Advantages of green hydrogen as a fuel

- **High Calorific Value:** Hydrogen has almost 2.5 times the energy per tonne compared to natural gas, shifting to Hydrogen thereby reduces natural gas imports.
- **Energy efficiency:** A hydrogen fuel cell is two to three times more efficient than an internal combustion engine fueled by gas.
- **Climate change mitigation:** The method of producing green hydrogen does not emit any greenhouse gases, helping in our fight against climate change.
- **Potentially replacing coal and coke** in **iron and steel production, decarbonizing** this sector will also have a significant impact on India's climate goals.
- **Effectively used as a fuel for heavy duty vehicles,** helping in the **decarbonization of the transportation sector** too.
- **Storage:** Hydrogen has the highest energy per mass of any fuel, which means that the higher the energy density of a system, the greater the amount of energy you can store.
- **Cost effective:** India's distinct advantage in low-cost renewable electricity means that green hydrogen will emerge as the most cost-effective form.
- **Grid stability:** The intermittent nature of renewable energy, especially wind, leads to grid instability. But green hydrogen can be stored for long periods of time which can be used to produce electricity using fuel cells.
- **Monetary benefits:** Experts say the oxygen produced as a by-product can also be monetized by using it for industrial and medical applications or for enriching the environment.
- **Demand:** Hydrogen demand in India could grow more than **fourfold by 2050,** representing almost **10% of global demand** of which majority of this demand could be met with green hydrogen.

Challenges Associated with Green Hydrogen Production in India

- **Economic Viability**: High production and electrolyzer costs make green hydrogen less competitive than traditional hydrogen.
  - **E.g., Green Hydrogen**: Costs between **$5.30 - $6.70 per kg**.
    - **Grey/Blue Hydrogen**: Much lower at **$1.9 - $2.4 per kg**.
    - The significant price gap makes green hydrogen uncompetitive.
- **Financing**: High weighted average cost of capital (WACC) and the lack of innovative financing models increase investment risks.
  - **E.g.,** An increase in WACC from 10% to 20% could lead to a 73% increase in the levelized cost of hydrogen, even if all other production factors remain constant.
- **Infrastructure**: Absence of the production, storage, and distribution of green hydrogen, including pipelines and refueling stations.
- **Policy Gaps**: Limited focus on comprehensive policies and regulatory support.
- **Demand Certainty**: Industries lack confidence in future demand for green hydrogen.
  - **E.g.,** Only **27.6%** of global clean hydrogen projects have reached final investment decisions.
    - This indicates structural barriers to investment beyond technological readiness.

Way Forward

- Establishing **localized industrial clusters** connected to renewable energy sources can create **self-sustaining hydrogen corridors**.

Global Policy Models for Green Hydrogen Development

- **United Kingdom**: **Low Carbon Hydrogen Standard Certification** to build market confidence.
- **United States, Japan, Australia**: Development of **strategic hydrogen hub**s where infrastructure, production, innovation, and consumption co-evolve.
  - Infrastructure is proactively developed rather than following demand.

- **Comprehensive Policy Framework**: Beyond production incentives, India needs policies addressing financing barriers.
  - **Strategies:**
    - **Long-Term Hydrogen Purchase Agreements**
    - **Partial Loan Guarantees** to reduce uncertainty for investors.
    - **Regulatory Sandboxes** for experimentation with new business models, similar to fintech innovation in India.
- **Innovative Financing Models**: Move beyond traditional project finance to cater to hydrogen's unique challenges.
  - **Financing Approaches**:
    - **Modular Project Financing**: Facilities scale in phases, reducing upfront capital needs.
    - **Anchor-Plus Financing**: Base capacity underwritten by a creditworthy anchor customer, with flexible financing for additional capacity.
    - **Equipment Leasing**: Transform electrolyzer costs into manageable operational expenses, following models used in solar and wind sectors.
- **International Collaboration**: Move beyond aspirational agreements to practical market-making initiatives.
  - **Standardized Certification**: For carbon intensity and hydrogen origin to facilitate exports.
  - **E.g.,** The **Hydrogen Energy Supply Chain Project** between Australia and Japan demonstrates how cross-border partnerships can secure demand certainty for large-scale investments.
- **Early projects in industrial hubs** such as Odisha, Maharashtra, and Gujarat will be crucial in demonstrating viable business models for green hydrogen production.

Research Security Should Be A National Priority

Syllabus Mapping: GS-Paper 3, Research & Development

Context

India aims to lead in strategic and emerging technologies like space, defense, and AI by 2047. Significant investments are crucial to achieve global competitiveness and address societal challenges.

Global Context and Examples for Research Compromise

Several cases highlight the need for enhanced research security:

- A senior professor at Harvard University and two Chinese students were arrested for not disclosing links to Chinese funding while receiving U.S. Department of Defense funding.
- COVID-19 vaccine research facilities faced cyberattacks aimed at stealing sensitive data.
- European Space Agency (ESA) experienced cyberattacks that prompted partnerships with the European Defence Agency on cybersecurity.

Global Responses to Research Security

- **United States:** The US CHIPS and Science Act includes provisions for research security, supported by guidelines from the National Institute of Standards and Technology.
- **Canada**: Implemented National Security Guidelines for Research Partnerships, identifying sensitive technologies and institutions from countries like China, Iran, and Russia.
- **European Union**: The European Council recommends self-governance principles and risk-based responses, emphasizing the establishment of a centre of expertise on research security.

Research Security in India

- **Current State**: Despite India's progress in strategic R&D, research security has not received adequate attention in academic or policymaking circles. This leaves gaps that adversaries could exploit.
- **Key challenges to research security**:
  - Foreign influence on universities and research labs.
  - Vulnerabilities in strategic research infrastructure.
  - Insider threats through personnel hiring and access control practices.
  - Limited existing frameworks for securing sensitive data and technologies.

Proposed Measures enhancing research security

- **Mapping Vulnerabilities:** Assess foreign influence and funding in universities.
  - Review vulnerabilities in research labs and infrastructure.
  - Evaluate insider threats in critical facilities.
  - Audit foreign collaborations in strategic sectors.
- **Developing a Research Security Framework:** Categorise research based on strategic value, economic impact, and national security implications.
  - Adopt a risk-based and proportionate response, as recommended by the EU.
  - Develop a surveillance mechanism to monitor emerging risks.
- **Capacity Building & Collaboration:** Engage with trusted international partners for initial capacity-building efforts.
  - Foster collaboration between security agencies, researchers, and technical experts to draft guidelines.
  - Establish a Research Security Office under Anusandhan National Research Foundation (ANRF) to coordinate and implement security measures.
- **Academic Freedom vs. Research Security:** Balancing restrictions on foreign funding/collaborations with the collaborative nature of science.
  - Ensuring that security measures do not stifle open science principles (e.g., open data, shared research infrastructure).
- **Administrative Burden:** Minimise bureaucracy to prevent additional administrative challenges for researchers.
- **Avoiding Overreach:** Prevent research security from becoming a tool for political interference in academia.
  - Ensure decisions are guided by technical expertise, not solely by intelligence/security agencies.

Implementation Strategy

- Secure funding and effective communication to create a cadre of research security professionals.
- Engage researchers at all decision-making levels.
- Adopt the principle: "As open as possible, as closed as necessary."
- Use the ANRF as a focal point for coordination among security agencies and academic institutions.

TOPICS FOR PRELIMS

Pills that can replace injections

Syllabus Mapping: Health, Biology & Biotechnology

Context

A team of researchers has developed ingestible capsules that release a burst of drugs directly inside the stomach or other parts of the digestive system.

Mechanism of Action

- To develop them, the researchers took inspiration from the way **cephalopods like squids and cuttlefish use jet propulsion mechanisms to move underwater and shoot ink.**
- The capsules use **compressed gas** or **coiled springs** to release a **liquid jet of drugs**.
- A **carbohydrate trigger** holds the gas or spring in a compressed state. This trigger dissolves in humid or acidic environments, such as the stomach.

- Once the trigger dissolves, the gas or spring expands, propelling the drug jet into tissue.

Advantages of Innovation

- **Localized Drug Delivery:** Jetting medication directly into tissue ensures rapid and efficient absorption.
- **Enhanced Patient Experience:** The capsule's design reduces the need for invasive injections, making treatments more accessible and convenient.
- **Potential Applications:** Can be used for insulin and other macromolecule drugs, paving the way for oral solutions to traditionally injectable therapies.
- **Advantages Over Injections**:
  - Injections can cause infections, skin irritation, and other side effects.
  - Capsules are non-invasive, easier to administer, and patient-friendly.

Cephlapods

- Cephalopods are marine invertebrates belonging to the class **Cephalopoda** within the phylum **Mollusca**. (E.g. **squids, octopuses, cuttlefish** and **nautiluses**)
- **Characteristics:**
  - **Body Structure**: Soft Bodies equipped with suction cups or hooks for capturing prey and sensing the environment.
  - **Nervous System and Intelligence**:
- Highly developed **nervous system** and **large brains** relative to body size.
- Demonstrated problem-solving abilities, learning capacity, and complex behaviors such as tool use and camouflage.
- **Locomotion**:
  - **Jet propulsion:** Expel water forcefully from their mantle cavity through a siphon to move rapidly.
  - **Camouflage and Defense:**
  - **Chromatophores:** Specialized pigment cells allow rapid color change for communication, camouflage, and predator deterrence.
  - **Ink Sac:** Ejects ink to create a smoke-screen-like distraction for predators.
- **Biological Inspiration:**
  - Jet propulsion mechanics inspire underwater vehicle designs.
  - Camouflage abilities studied for advanced materials and military applications.

Quality Control Order for Nylon yarn

Syllabus Mapping: Chemistry, Everyday Science

Context

Nylon weavers have urged the Central Government to implement the Quality Control Order on nylon filament yarn only after studying in detail the workability of the domestic and imported nylon yarn.

About Nylon

- Nylon is a **synthetic polymer**, known as a **polyamide** (developed in the 1930s by **Wallace Carothers).**
- It is formed by **condensation polymerization** of diamines and dicarboxylic acids or their derivatives.
- **Advantages of Nylon:**
  - Durable and long-lasting.
  - High tensile strength.
  - Lightweight and versatile.
  - Resistant to mold, mildew and pests.
- **Disadvantages of Nylon:**
  - Relatively high cost of production.
  - Non-biodegradable
  - Absorbs moisture, which can affect performance in some applications.

Cancer & Immune System

Syllabus Mapping: Health, Biology & Biotechnology

Context

Recent research conducted by Northwestern University in Chicago highlighted the potential role of the immune system, specifically white blood cells activated by severe infections, in combating cancer.

About Cancer-Fighting White Blood Cells (I-NCMs)

- These special white blood cells are called induced **non-classical monocytes (I-NCMs)**.
- They are created when the body goes through severe infections, like COVID-19 or is exposed to certain chemicals.
- Once formed, these cells leave the bloodstream and travel to tumours, where they attack cancer cells.

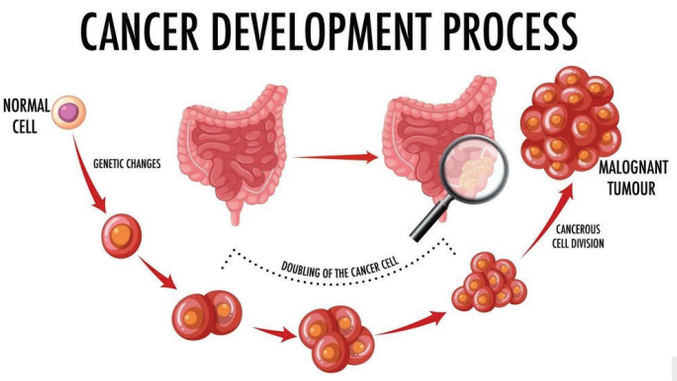
How do they find cancer?

- I-NCMs have a "sensor" called **CCR2**, which acts like an antenna. This antenna picks up signals sent out by cancer cells or areas of inflammation.
- After detecting these signals, I-NCMs move to the tumour and call for backup by summoning **natural killer (NK) cells**.
  - **NK cells** are powerful immune cells that can destroy cancer cells directly.

Immunotherapy

- It is a treatment that uses the body's immune system to fight cancer, infections and other diseases.
- **Role of I-NCMs:**
  - During experiment Injecting I-NCMs into mice successfully reduced cancer **metastasis.**

  - I-NCMs act as a bridge, bringing NK cells to tumour sites to eliminate cancer cells.
- **CAR-T Cell Therapy:**
  - Another form of immunotherapy where T cells are reprogrammed in a lab and reinfused into the patient. These modified T cells directly attack cancer cells.



Gene therapy for Haemopholia

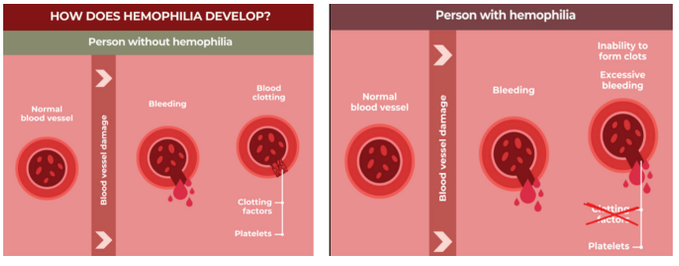
Syllabus Mapping: Health, Biology & Biotechnology

Context

Indian scientists have achieved a major milestone by using gene therapy to treat severe **Hemophilia A.**

About Haemophilia

- It is a **rare genetic blood disorder that prevents blood from clotting properly.** It's usually inherited and more common in males.
- Most common types are hemophilia A (classic hemophilia) and hemophilia B (Christmas disease)
- **Haemophilia A:** It occurs when the body doesn't produce enough **factor VIII,** a protein that helps blood clot.
- India has the **second-largest patient pool globally**, with an estimated **40,000 to 100,000 patients**.
- Treatment costs are very high: **₹2.54 crore** per patient over 10 years.



Gene Therapy

- It is a medical technique that treats or prevents disease **by altering a person's genes.** It can involve:
  - Replacing a disease-causing gene with a healthy copy.
  - Inactivating a disease-causing gene.
  - Introducing a new or modified gene into the body.
  - Training the body's immune system to recognize and attack cancer cells.
- Gene therapy can be used to treat a variety of diseases, including: Cancer, Genetic diseases like hemophilia and sickle cell disease etc.
- **Gene Therapy as a One-Time Solution for Haemophilia**
  - **Mechanism:** A gene is introduced into the body, enabling it to produce enough Factor VIII to prevent haemorrhage.
  - It uses **lentivirus as a vector** to integrate the clotting factor gene into stem cells, which is later reintroduced into the patient's body.
  - **Advantages:**
    - Eliminates the need for frequent infusions of clotting factors or other medications.
    - Potentially safer for children and avoids the need for immunosuppressive therapy.

40 Years of Bhopal Gas Tragedy

Syllabus Mapping: Chemistry

Context

After 40 years after the Bhopal Gas Tragedy, hundreds of tonnes of toxic waste remain on the premises of Union Carbide India Ltd.

About Bhopal Gas Tragedy

- It occurred on December 3, 1984, in Bhopal (Madhya Pradesh), when **45 tons of toxic methyl isocyanate** gas leaked from a pesticide plant owned by **Union Carbide India Limited (UCIL).**
- It was **India's first major Chemical (industrial) disaster.**
- The **toxic waste** at the UCIL premises remains largely untreated, with minimal progress in both waste disposal and reassessment.
- Numerous studies over the years have shown that **groundwater** in areas surrounding the factory is contaminated with **heavy metals** and **toxic substances** posing significant health risks, like **cancer.**

About Methyl Isocyanate (CH3NCO)

- Tt is a colorless, flammable liquid that reacts with water to produce **methylamine (MIC)** and carbon dioxide, along with heat.
- It is toxic when inhaled, ingested or exposed to the skin or eyes. It's also highly flammable and can be explosive when mixed with air.

Other Major Chemical Disasters in India

- **Ammonia Gas Leak at Chennai (2024):** Due to damaged gas pipeline caused by cyclone Michaung.
- **Vizag Gas Leak (2020):** Styrene gas leak at LG Polymers in Visakhapatnam.
- **Tughlakabad Gas Leak (2017)**: Chemical Chloro methylpyridine (used in pesticides manufacturing) leaked from container

Extrachromosomal DNA

Syllabus Mapping: Health, Biology & Biotechnology

Context

Scientists have discovered a weakness in cancer cells with ecDNA. By targeting a specific protein **(CHK1)** involved in DNA repair, they can selectively kill these cancer cells. This could lead to new, more effective treatments for certain types of cancer.

About Extrachromosomal DNA (ecDNA)

- ecDNA are small circular DNA fragments that float freely in the nucleus, separate from chromosomes.
- **Genesis:** Formed due to DNA damage (e.g., chromothripsis) or errors during DNA replication.
- **Role of ecDNA in Cancer:**
  - Found in up to 90% of certain tumour types, including brain tumours, liposarcomas, and breast cancers.
  - ecDNA often contains multiple oncogenes, promoting tumour growth and drug resistance.
    - **Oncogenes** are mutated genes capable of causing cancer that are required to activate tumour growth.

Why is ecDNA a problem?

- **Cancer Growth:** ecDNA can carry multiple copies of cancer-causing genes, making tumors grow faster and become more aggressive.
- **Drug Resistance:** Cancer cells with ecDNA can evolve more quickly, making them resistant to treatments.

AgeXtend

Syllabus Mapping: Health, Biology & Biotechnology

Context

Researchers at IIIT-Delhi have developed AgeXtend, an artificial intelligence (AI)-powered platform designed to discover molecules that could slow down ageing and promote healthier lives.

About AgeXtend

- It is an artificial intelligence (AI)-powered platform designed to discover molecules that could slow down ageing and promote healthier lives.
- It was developed by researchers at the Indraprastha Institute of Information Technology Delhi (IIIT-Delhi).
- It utilises bioactivity data from existing geroprotectors-substances that slow ageing-to predict new molecules with similar properties.
- Its AI modules evaluate geroprotective potential, assess toxicity and identify target proteins and mechanisms of action, ensuring both accuracy and safety in the discovery process.
- The researchers tested AgeXtend by excluding well-known compounds like **metformin and taurine, molecules already known to extend lifespan**, and found that the platform could still predict their benefits.
- AgeXtend also screened more than 1.1 billion compounds and identified promising candidates validated through experiments on yeast, **Caenorhabditis elegans** (a nematode), and human cell models.
- The research also explored AgeXtend's ability to analyze natural compounds found in the human microbiome, tiny organisms living in our bodies, and their role in controlling cell ageing.

Centre wants states to make snakebites notifiable disease

Syllabus Mapping: Health, Biology & Biotechnology

Context

The Union Health Ministry has urged states to classify snakebites as a notifiable disease, requiring both private and public hospitals to report cases.

About Snake bite

- Snakebites can lead to acute medical emergencies that require immediate care.
- They can cause severe paralysis that can prevent breathing, can lead to a fatal hemorrhage, and damage different tissues.
- Snakebites need to be treated with antivenom to prevent death and severe symptoms.
- **Data on Snakebites in India:**
  - India is home to **310 snake species,** of which:
    - 66 are venomous.
    - 42 are mildly venomous.
    - 23 species are medically significant due to their fatal venom.
  - **'Big Four' snakes** cause 90% of bites: Indian cobra, Common krait, Russell's viper & Saw-scaled viper.
  - Commercial **polyvalent antivenom** is effective for 80% of snakebites caused by the Big Four.
- **National Action Plan for Prevention and Control of Snakebite Envenoming (NAPSE):**

- It was launched by the government in 2024 to halve snakebite deaths by 2030.
- It recommends making snakebites a notifiable disease.
- Major focus on high-risk states like: Bihar, Jharkhand, Madhya Pradesh, Odisha, Uttar Pradesh, Andhra Pradesh, Telangana, Rajasthan, Gujarat.

What Are Notifiable Diseases?

- Diseases which are legally required to be reported to the government for public health action.
- **Examples:** Tuberculosis, HIV, cholera, malaria, dengue, and hepatitis.
- Criteria:
  - Likely to cause outbreaks.
  - Lead to significant deaths.
  - Require rapid public health interventions.

India's malaria caseload, deaths fall by 69%

Syllabus Mapping: Health, Biology & Biotechnology

Context

The 2024 'World Malaria Report' has been released by the World Health Organisation (WHO). As per the report, India has made "significant progress" in reducing malaria incidence and mortality.

About Malaria

- Malaria is a **mosquito-borne disease caused by a parasite.** It is preventable and curable.
- It is a life-threatening disease primarily found in tropical countries.
- **5 species** of parasites can cause malaria in humans and 2 of these species – **Plasmodium falciparum and Plasmodium vivax** – pose the greatest threat.
- It is a **notifiable disease** in India.
- **Spread:**
  - Malaria mostly spreads to people through the bites of some infected **female Anopheles mosquitoes**.
  - Malaria does not spread from person to person.
  - Blood transfusion and contaminated needles may also transmit malaria

Highlights of WHO's World Malaria Report 2024

- **India's Achievements:**
  - **Reduction in Caseload and Deaths**:
    - Malaria cases reduced by **69%**, from **6.4 million in 2017** to **2 million in 2023**.
    - Malaria deaths declined by **69%**, from **11,100 to 3,500** during the same period.
  - **Exit from the HBHI Group**: India is no longer part of the **High-Burden-High-Impact (HBHI)** group of endemic countries.
- **Key Strategies Behind India's Success:**
  - **Artemisinin-Based Combination Therapy (ACT):** It is a combination of two or more drugs used to treat malaria. Artemisinin kills most malaria parasites, while a partner drug clears the remaining parasites.
  - **Long-Lasting Insecticidal Nets (LLIN):** LLIN are mosquito nets that contain insecticide in the fibers, making them effective for years without needing to be retreated. These nets block and kill mosquitoes, reducing mosquito populations and their lifespan when widely used.
  - **Targeted Interventions:** Focused efforts in forested and tribal areas in Jharkhand, Odisha, Chhattisgarh, and the North-East improved access to diagnostics, treatments and drugs.
  - **Effective Monitoring and Case Management:** Consistent evaluations helped ensure proper implementation of interventions

Ghost Guns

Syllabus Mapping: Miscellaneous

Context

Usage of ghost guns has increased in the US in recent times. The person suspected of the fatal shooting of UnitedHealthcare CEO, was carrying a "ghost gun" when he was apprehended.

About Ghost Guns

- Ghost guns, also known as Privately Made Firearms (PMF), are untraceable firearms created using kits or **3D printing technology.**
- **Characteristics:**
  - Lack serial numbers, making them virtually untraceable by law enforcement.
  - Do not require background checks for purchase, unlike commercial firearms.
  - Made from a combination of 3D-printed parts, metals, and plastics.

3D Printing

- It is a process of creating three-dimensional objects from digital models by adding material layer by layer. It is also known as **additive manufacturing**,
- It is an additive process, in which layers of a material like plastic, composites or bio-materials are built up to construct objects that range in shape, size, rigidity and colour.

Disease X

Syllabus Mapping: Renewable energy

Context

The unclassified outbreak in the Democratic Republic of Congo (DRC), with over 400 deaths, has raised concerns about Disease X becoming a reality.

About Disease X

- Disease X represents a hypothetical, yet highly probable, global health threat.
  - Pathogen X could include **viruses, bacteria, parasites, fungi, helminths or prions.**
- The term was coined by the **World Health Organization (WHO) in 2018,** the term is a placeholder for any unknown pathogen capable of causing a devastating epidemic or pandemic.
- **Historical Patterns:**
  - Since 1940, over **300** emerging infectious diseases have been identified, **with 70% of them having zoonotic origins (transmitted from animals to humans).**
  - Deforestation, urbanisation and climate change push humans and wildlife into closer contact, increasing zoonotic spillover risks.
- **Examples of Past Emerging Diseases:** HIV, SARS, MERS and Ebola: All emerged due to ecological disruptions and human activity.
- **WHO's Priority List of Pathogens:**
  - It includes diseases like **Ebola, Marburg, Nipah and Disease X.**
  - This list aims to direct global research, funding and policy efforts toward combating high-risk diseases with limited medical countermeasures.

Preparing for Disease X

- **Surveillance Systems:** Use genomic sequencing and real-time data sharing for early outbreak detection.
- **Healthcare Infrastructure:** Strengthen healthcare systems in low- and middle-income countries to improve outbreak response.
- **Research Investments:** Coalition for Epidemic Preparedness Innovations (CEPI) is developing platforms to create vaccines within 100 days of outbreak detection.
- **Global Frameworks:** Expanding frameworks like the Nagoya Protocol to include biological materials such as pathogens can ensure fair and equitable access to research findings and medical solutions.

DHARINI - 3D Map of Developing Babies

Syllabus Mapping: Biology and Biotechnology

Context

Researchers at IIT Madras have unveiled **DHARINI**, the largest and most detailed 3D map of developing baby brains during the second trimester.

About DHARINI

- DHARINI is the world's largest and most detailed high-resolution 3D foetal brain atlas, mapping over 5,000 brain sections and 500 brain regions.
- The atlas focuses on brains from the second trimester (at 14, 17, 21, 22 and 24 weeks of pregnancy), a key period for rapid growth and development.
- DHARINI is the **only brain atlas** to capture the growing brain in fetuses.
- **Technological Process**
  - **Freezing and Slicing:** The brains were frozen and thinly sliced, enabling scientists to see the structures. Thin slicing was done using complex robotic instrumentation — the slices are of just 10 to 20 micron thickness which is equivalent to 1/10th or 1/5th the thickness of human hair.
  - **Microscopic Imaging:** These thin slices, which become transparent, are then stained and microscopically imaged in extreme detail.
  - **3D Mapping:** Digitized slices are reconstructed into a 3D brain atlas using advanced technology.

Enantiomers

Syllabus Mapping: Renewable energy

Context

Recently an international group of scientists published a 300-page technical report and a commentary in the **journal Science** warning against efforts to build mirror life.

What is Chirality?

- Chirality refers to the property of objects or molecules having a **handedness** (left or right), where they cannot be superimposed on their mirror images.
- **E.g.** A bottle cap is unscrewed **anti-clockwise** in the real world but appears **clockwise** in a mirror.
- **Mirror Life:** Mirror life refers to organisms whose building blocks are **enantiomers** of their natural counterparts.
- **Molecular Chirality**: **Enantiomers**
  - Molecules that are mirror images of each other are called **enantiomers**.

- Each enantiomer has distinct properties and biological effects, despite having the same chemical composition.

Examples of Enantiomers

- **Thalidomide**:
  - It is a sedative drug which was sold in the late 1950s.
  - **Right-handed enantiomer**: Worked as a sedative.
  - **Left-handed enantiomer**: Caused **severe birth defects**, leading to the drug's withdrawal.
- **In the Human Body**:
  - **Proteins:** Built using **left-handed amino acids**.
  - **DNA:** The double-helix **twists to the right**.
  - The reasons behind this preference for specific handedness in life forms remain a mystery.

Idiopathic pulmonary fibrosis

Syllabus Mapping: Health

Context

Recently Tabla maestro Zakir Hussain passed away due to idiopathic pulmonary fibrosis.

About Idiopathic pulmonary fibrosis (IPF)

- IPF is a chronic and progressive lung disease where the lung tissue becomes scarred and thickened (fibrosis) without a known cause.
- This scarring makes it increasingly difficult for the lungs to function properly, leading to breathing difficulties.
- IPF targets the **interstitium (**tissue surrounding **alveoli)**, making it harder for oxygen to move into the bloodstream.
- **Symptoms:**
  - Shortness of breath, especially during physical activity.
  - Chronic dry cough.
  - Fatigue and weakness.
  - Clubbing (widening and rounding) of fingers and toes in some cases.
- **Affected Population:** Generally occurs in individuals aged 50-70 years. Slightly more prevalent in men than women.
- **Treatment**
  - **Medications:** Antifibrotic drugs like **pirfenidone and nintedanib** to slow disease progression.
  - **Oxygen Therapy:** To improve oxygen levels in the blood.
  - **Pulmonary Rehabilitation:** Exercise, breathing techniques etc.
  - **Lung Transplantation:** Considered in advanced cases

Ultra-thin films of diamond

Syllabus Mapping: Electronics

Context

Researchers have developed a new method to create ultra-thin films of diamond using Scotch tape, which could revolutionize the production of diamond-based electronics.

Invention of the Method

- The method was discovered accidentally by **Jing Jixiang**, an electrical engineer at the **University of Hong Kong**. While working on a project, Jixiang used Scotch tape to peel away a small piece of diamond from a silicon wafer.
- Initially, the team implanted nano-sized diamonds into a small silicon wafer and exposed it to **methane gas** at high temperatures, a process known as **chemical vapor deposition** (CVD), which is commonly used to create thin films for semiconductors.
- To extract the diamond layer, the researchers cut the silicon wafer to expose the diamond edge and applied Scotch tape. Peeling the tape away successfully removed **a thin layer of diamond.**
- A similar Scotch tape technique was used to create **graphene** (a single layer of carbon atoms).

Electronic Properties of Diamond

- Acts as a **good insulator.**
- Allows electrons of certain energies to move with **minimal resistance**.
- Can handle **higher energies with greater efficiency compared to silicon chips**.

Properties and Advantages of Diamond Films

- **Thinness and Smoothness:** The produced diamond films are extremely thin (less than one micrometre) and smooth enough to support standard micromanufacturing techniques.
- **Flexibility:** The films are highly flexible, allowing for applications in various technological fields, including electronics and sensors.

Potential Applications:

- **Quantum Devices:** Diamond's unique properties make it suitable for sensors in **quantum technologies**.
- **High-Energy Electronics**: Ideal for handling **greater energy loads** with efficiency.
- **Power Grids:** Could revolutionize power grids and electric vehicles by managing larger amounts of electricity.

India-made solar photovoltaic (PV) cells

Syllabus Mapping: Renewable energy

Context

The Ministry of New and Renewable Energy (MNRE) has set a deadline for all solar companies wishing to participate in government procurement programs must use **India-made solar photovoltaic (PV) cells** in their panels.

Key points of the order

- **Deadline for Adoption**: By **June 2026**, solar companies must use domestically produced solar cells to be eligible for government procurement schemes.
  - Currently, Indian solar companies predominantly rely on solar cells imported from **China and Southeast Asia.**
- **ALMM List-II**: The MNRE will issue **List-II** of solar PV cells under the **Approved List of Module Manufacturers (ALMM)**, effective from **June 1, 2026**. This list will include only companies that manufacture solar cells in India.

Approved List of Models and Manufacturers (ALMM)

- It is a list of solar panel models and manufacturers that are certified by the Bureau of Indian Standards (BIS) and approved by the Ministry of New and Renewable Energy (MNRE).
- It ensures the quality and reliability of solar panels used in government-sponsored projects.

About Photovoltaic Cells

- **Photovoltaic (PV) cells**, also known as **solar cells**, are the fundamental building blocks of solar panels, responsible for converting sunlight into electricity.
- **Key Components of a Photovoltaic Cell:**
  - **Semiconductor Layer:** The primary material, often silicon, absorbs sunlight and generates electrical charge.
  - **Electrodes:** These collect the electrical charge generated by the semiconductor material.
  - **Glass/Protective Layer:** This protects the PV cell from environmental damage while allowing sunlight to pass through.
- **Types of Photovoltaic Cells:**
  - **Monocrystalline Solar Cells**: Made from a single crystal structure, known for high efficiency.
  - **Polycrystalline Solar Cells**: Made from silicon crystals that are melted and poured into molds, less efficient than monocrystalline cells.
  - **Thin-Film Solar Cells:** Made by depositing thin layers of photovoltaic material on a substrate, these are flexible but less efficient.

Why is India Import-Dependent for Photovoltaic Cells ?

- **Lack of Domestic Manufacturing of Raw Materials:**
  - India's domestic capacity to produce the core components needed for photovoltaic cells is limited.
  - **E.g.** Materials like **wafers (used in PV cells) and ingots (a raw form of silicon)** are not produced in sufficient quantities within India.
- **Cost-Competitiveness of Imported Cells:**
  - Imported solar cells from countries like China are more cost-effective due to lower production costs.
  - The cost of domestically produced solar cells is about **1.5 to 2 times** higher than imported cells, even after considering Basic Customs Duty.
- **Lack of Advanced Manufacturing Technologies:**
  - India lacks the advanced technologies and specialized production facilities required to manufacture high-efficiency photovoltaic cells at a competitive price.
- **Policy and Investment Gaps**:
  - While the Indian government has launched various **incentive schemes** to promote solar energy, such as the **PM KUSUM Scheme** and the **Atmanirbhar Bharat initiative**, the **domestic manufacturing sector** has not been able to scale up quickly enough to meet demand.

Solar Manufacturing Capacity in India:

- **Installed Solar Capacity:** As of now, India has installed **92 GW** of solar capacity.
- **Manufacturing Capacity:** India's solar-module manufacturing capacity stands at 63 GW, while the solar-cell manufacturing capacity is about 5.8 GW.
- **India's biggest solar power plant**: Bhadla Solar Plant (Rajasthan) - 2,245 megawatts

Speed Gun

Syllabus Mapping: Miscellaneous

Context

The principle behind the working of a speed gun, used for motion tracking.

About Speed Gun

- It is a device to measure the speed of a moving object without having to be in contact with the object.
- It uses **electromagnetic radiation,** typically radio waves, which bounce off the object to calculate its speed using the Doppler effect.
- **Applications:**
  - Traffic monitoring by law enforcement.

  - Sports for tracking athlete performance.
  - Industrial uses require precise motion tracking.
- **How Speed Guns Work ?**
  - Speed guns **emit radio waves,** which are reflected by the moving object.
  - The frequency difference between the emitted and reflected waves is used to determine the speed of the object.
  - The speed is calculated using the formula: **(frequency difference * speed of light) / (2 * emitted frequency).**
  - The speed of light in a medium is constant, allowing for accurate speed measurement over long distances.

Doppler Effect

- It refers to the change in frequency of waves due to the relative motion between the source and the observer.
- As a moving object approaches, the frequency of waves (like sound or light) increases, creating a higher pitch; as it moves away, the frequency decreases, resulting in a lower pitch.
- **E.g.** A train horn sounds higher-pitched as it approaches a platform and lower-pitched as it moves away.

Starlink device usage in India despite being unapproved

Syllabus Mapping: Space, Internet

Context

Recently **Starlink satellite antenna and router** were seized in Manipur. It has raised concerns over the misuse of satellite internet in India.

About Starlink

- Starlink is a **satellite-based internet service** developed by **SpaceX (founded by Elon Musk).**
- It uses a constellation of **low Earth orbit (LEO) satellites** (orbiting at ~550 km) to deliver high-speed, low-latency broadband.
- It supports high data-rate activities like streaming, gaming and video calls, making it popular in: **Remote areas, Disaster zones & Locations with restricted internet access.**

Satellite Internet

- Satellite internet refers to a type of internet connection that uses satellites to provide broadband service.
- This technology enables users to access the internet from virtually anywhere, particularly in remote or underserved areas where traditional terrestrial internet infrastructure is lacking.
- Satellite internet works by transmitting data from a user's dish to a satellite in orbit, which then relays the information to a ground station connected to the internet backbone.

How Does Starlink Control Access?

- **Signal Encryption**: Prevents hacking or interception of satellite transmissions.
- **Geofencing**: Terminals are geographically restricted to areas authorized for service.
  - **E.g.** A Starlink device bought in the U.S. might not work in India unless its geographic location is reconfigured.
- **Challenges**:
  - Precise international border coverage is difficult due to:
    - Contested borders.
    - Satellites transmitting across moving boundaries.
  - Devices purchased abroad may bypass restrictions if not regulated.

Starlink's Regulatory Status in India

- **Unapproved Service**: Starlink has not received regulatory approval in India under the **Indian Wireless Act and Indian Telegraph Act.**
- **Legislation: Section 6 of the Indian Wireless Act** and **Section 20 of the Indian Telegraph Act** prohibit the use of satellite-based communication devices like Thuraya or Iridium phones without approval.
- **App Availability:** Despite bans, the Starlink app is downloadable in India, unlike restricted apps like TikTok.

News in Brief

Important Engineering Concepts used in F1 Cars

- **Aerodynamics:**
  - Aerodynamics is the study of how air flows around objects, particularly vehicles.
  - It focuses on minimizing air resistance (drag) and maximizing the vehicle's stability and efficiency.
  - It is used to design vehicles that move smoothly through the air, reducing the effort needed to move them forward and improving fuel efficiency.
- **Brake Regeneration (Kinetic Energy Recovery Systems or KERS):**
  - It is a technology that recovers the kinetic energy lost during braking and converts it into electrical energy.
  - This energy is stored in a battery or capacitor and can be used later to boost the vehicle's performance, particularly for acceleration.

Network Readiness Index (NRI) 2024

- India has improved its position by 11 slots and is now placed at **49th rank as per the NRI 2024 report.** (In 2023 India's ranking was 60th).
  - India also ranked **2nd among lower-middle-income countries**, only behind **Vietnam**.
- NRI measures how ready countries are to take advantage of the opportunities offered by information and communications technology (ICT).
- It evaluates countries based on their performance in **4 areas: technology, people, governance and impact.**
- **Released by:** Portulans Institute, a non-profit educational institute (Washington DC).

Nanozymes

- Nanozymes are a class of nanomaterials with enzyme-like catalytic activities.
- Nanozymes can be categorized into **4 types based on their catalytic activities:** Oxidoreductases, Hydrolases, Isomerases and Synthases.
- **Advantages over conventional enzymes:**
  - **Stability:** Nanozymes are highly stable and can be used in harsh environments
  - **Low Cost, High Durability & Mass Production.**
  - **Therapeutic potential**
- **Applications:** Nanozymes have been used as therapeutics against cancer, inflammatory diseases, **neurodegenerative and neurological disorders,** bacterial, fungal and viral infections, wounds and diseases associated with **Reactive Oxygen Species.**

Never Events

- Serious, preventable incidents that should never occur in healthcare if safety protocols are followed.
- **Origin**: Term introduced in 2002 by the **National Quality Forum (NQF)** in the U.S.
- **E.g.** Wrong-site surgery, insulin overdose, mismatched blood transfusions etc.

Indian Context

- The term "never events" is not explicitly used in India, here the focus is on medical negligence.
- India uses the **Bolam test** to determine if a medical professional's actions were negligent.
- **Bolam test** is a peer review that compares a medical professional's actions to those of other qualified professionals in the same field.
- India has adopted the Bolam test from the **United Kingdom**.

Popular drugs for weight loss endorsed by WHO scientists

- The World Health Organisation (WHO) has endorsed **GLP-1 receptor** agonists as a new class of medicines for managing **obesity.**
- **Glucagon-like peptide-1 receptor agonists (GLP-1RAs)** are a class of medications that treat type 2 diabetes and obesity.
  - They work by: Increasing insulin secretion, Slowing stomach emptying and Reducing calorie intake.
- **GLP-1 receptor** is a protein that plays a key role in regulating blood glucose levels, insulin secretion and other physiological functions in the human body.
- **Obesity stats:**
  - Globally 1 in 8 people is living with obesity. **890 million adults and 160 million** adolescents affected by it.
  - India ranks **3rd** globally in obesity, **after USA and China.**
  - 44 million women and 26 million men have obesity in India.

Fentanyl

- In recent cases it has been discovered that **Drug cartels in Mexico** recruit chemistry students from colleges to make fentanyl.
- It is a powerful synthetic opioid, often used in medicine to treat severe pain after surgery or for cancer patients. It is also used as **Anesthesia.**
- It is 50 **to 100 times more potent than morphine and about 50 times more potent than heroin.**
- It is classified as a **Schedule II** controlled substance due to its high potential for abuse and addiction.

Amazon launches new AI models

- Amazon has introduced a range of artificial intelligence foundational models at its flagship annual event **Amazon Web Services (AWS) re: Invent** called Nova, which will allow for text, image and video generation
- It also introduced image-generation model **Nova Canvas** and video generating model **Nova Reel.**
- Nova Reel software allows users to make six-second videos that can be useful for companies to display their products on their website or marketplace.

Antimatter

- **Subatomic Antiparticles:** For every known subatomic particle (like electrons, protons, and neutrons), there exists an antiparticle with the same mass but opposite charge and other quantum properties.
- **Examples:**
  - The antiparticle of an electron is a positron, carrying a positive charge.
  - The antiparticle of a proton is an antiproton, carrying a negative charge.
- **Annihilation:** When a particle and its antiparticle meet, they annihilate each other, releasing a burst of energy in the form of photons (light).

SPACE TECH - PRELIMS

MACE Observatory

Context

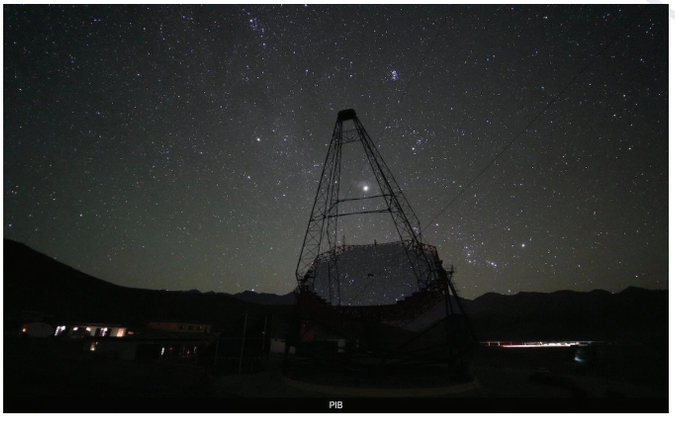
The Major Atmospheric Cherenkov Experiment (MACE) Observatory was recently inaugurated at Hanle, Ladakh.

About MACE observatory

- It is the highest and largest imaging Cherenkov telescope in Asia and the world located at an altitude of almost 4,300 metres.
- It is built indigenously by the **Bhabha Atomic Research Centre (BARC), Electronics Corporation of India Ltd (ECIL), Tata Institute of Fundamental Research (TIFR) and the Indian Institute of Astrophysics (IIA).**

Why Hanle?

- Hanle is like heaven for gamma ray astronomers with its dark skies, low humidity and almost no air pollution.
- The longitudinal advantage of its location enables MACE to observe sources invisible to other parts of the world.
- Hanley Dark Sky Reserve is **India's first dark sky reserve.** It is situated in **Changthang Plateau (Ladakh)**. It is operated by the Indian Institute of Astrophysics.



Scientific Objectives of the MACE Observatory

- Observe high-energy gamma rays from some of the most energetic events in the universe, such as: Supernovae, Black Holes gamma-Ray Bursts.
- Detect and understand dark matter,
- Complement existing observatories worldwide, strengthening India's role in multi-messenger astronomy.

Related Terms

- **Gamma Rays:** Gamma rays are a form of electromagnetic radiation, similar to visible light but with much higher energy. They help scientists understand extreme phenomena in the universe, like supernovae (exploding stars) and black holes.
  - They are produced from **black holes**, **pulsars**, **supernovae and gamma-ray bursts**.
- **Cherenkov Radiation:** It refers to the light produced when charged particles move faster than the speed of light in a medium (like air).
- **High-Energy Range (20 - 100 GeV):** Giga-electron volt (GeV) is a unit of energy used in particle physics. One GeV equals one billion electron volts.
- **Astrophysics:** Branch of astronomy that deals with the physical properties and behaviour of celestial bodies.
- **Multi-Messenger Astronomy:** It is an approach that combines information from different types of astronomical signals (like light, gravitational waves, and neutrinos) to get a fuller picture of cosmic events.

Source:

- **The Hindu - MACE in Ladakh opens its one-of-a-kind eye to cosmic gamma rays**

Gaganyaan Mission

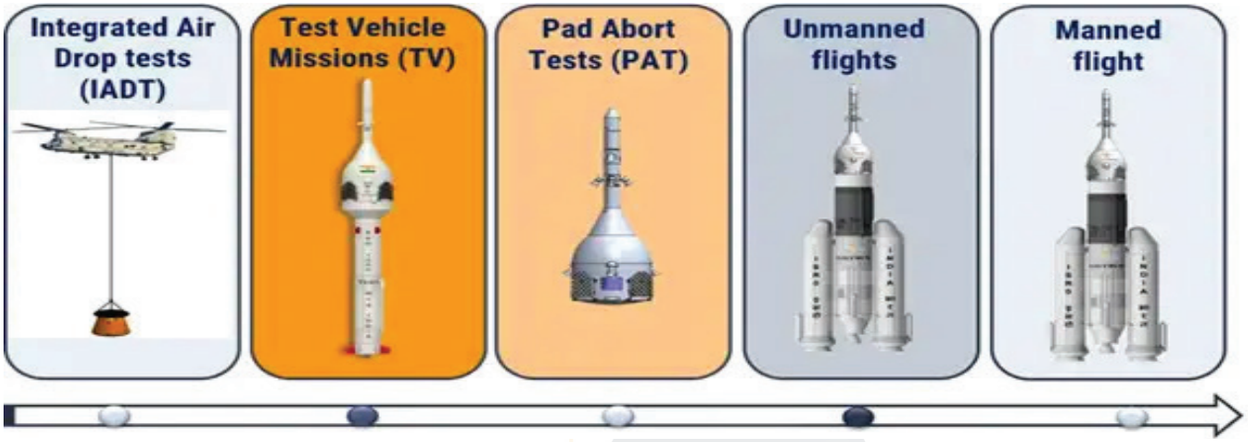
Context

2 Gaganyatris who are part of Axiom-4 Mission have completed their initial phase of training.

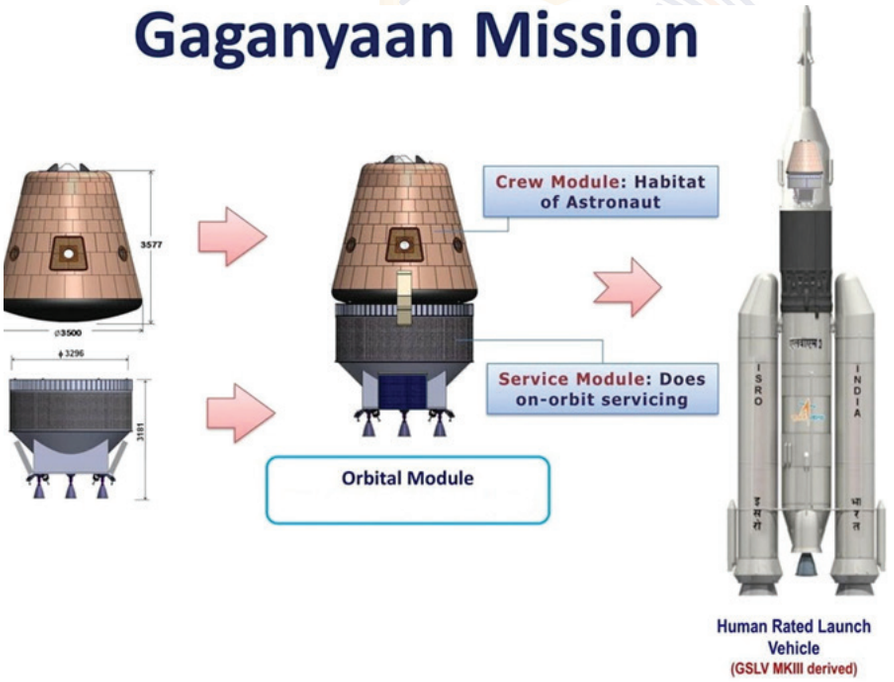
About Gaganyaan Mission

- It is India's first human spaceflight program.
- **Objectives of the Mission:**
  - To send a crew of **3 astronauts** into orbit around Earth for **3 days** and then safely return them to Earth.
  - To demonstrate India's ability to conduct human spaceflight missions to Low Earth Orbit (LEO).
- The program involves **3 Flights:**

- **First uncrewed flight:** It will test the safety mechanisms and demonstrate the performance of the Crew Escape System of the Gaganyaan Mission.
- **Second uncrewed flight:** This flight will carry **Vyom Mitra**, a humanoid robot that can speak with ground controllers and read instrument panels.
- **First crewed flight:** It will carry a crew of three astronauts who will spend 3 days in LEO. Mission will conclude with a controlled landing in the Indian Ocean



- **Launch Vehicle:** LVM 3
  - It is a three-stage rocket with a solid stage, liquid stage, and cryogenic stage.
  - It also includes a Crew Escape System (CES) and an Orbital Module.



About Axiom 4 Mission

- It is the fourth private astronaut mission to the **International Space Station.**
- **Duration** of the mission: **14 days**.
- **Launch Site:** Kennedy Space Center in Florida
- **Launch Vehicle: SpaceX's Falcon 9 rocket.**
- This mission is organised in collaboration with **NASA.**

Fact

- After successful launch **India will become the 4th nation** in the world to launch a Human Spaceflight Mission after **USA, Russia, and China**.

Source: The Hindu - Gaganyatris have finished initial training, says ISRO, For More Information Watch: Study IQ

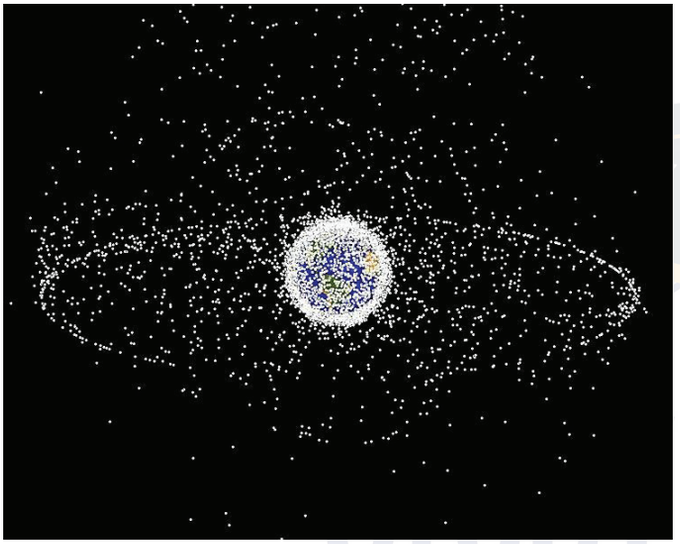
Space Debris Management

Context

India is taking significant steps toward ensuring the sustainable use of outer space by focusing on **Space Situational Awareness (SSA)** and debris mitigation.

About Space Debris

- Space debris, also known as **space junk**, refers to man-made objects that are **no longer operational and orbit Earth.**
- These objects include d**efunct satellites, spent rocket stages, fragments from spacecraft collisions and other discarded hardware** from past space missions.



Impacts of Space Debris

- **Threat to Operational Satellites:** Space debris can collide with operational satellites and spacecraft, causing damage or destruction. This can lead to the loss of critical communication, navigation, weather monitoring, and remote sensing services that rely on satellites.
- **Chain Reaction (Kessler Syndrome):** A major collision between large objects could trigger a chain reaction known as the Kessler Syndrome, where the resulting debris creates more collisions, leading to a self-sustaining cascade that significantly increases the amount of debris in orbit.
- **Risk to Human Spaceflight:** Space debris poses a risk to crewed spacecraft and astronauts on the International Space Station (ISS) and other future crewed missions. Even small debris fragments can cause severe damage to spacecraft hulls and vital systems.
- **Reduction of Orbital Slots:** The accumulation of space debris in specific orbital regions can limit the availability of desirable orbital slots for future missions.

Key SSA initiatives

- **Project NETRA:**
  - It is an early warning system in space to detect debris and other hazards to Indian satellites.
  - Once operational, it will give India its own capability in Space Situational Awareness (SSA) like the other space powers.
  - NETRA can spot, track and catalogue objects as small as 10 cm, up to a range of 3,400 km and equal to a space orbit of around 2,000 km.
- **ISRO's System for Safe and Sustainable Space Operations Management (IS4OM):**
  - IS4OM is an initiative by ISRO focused on ensuring safe and sustainable operations in space.
  - **Functions:** Monitoring Orbital Decay, Space Debris Management & Collaboration with International Entities
- **Inter-Agency Space Debris Coordination Committee (IADC):**
  - It is an inter-governmental forum established in 1993 aimed at coordinating efforts to address space debris issues.
  - **Functions:**
    - **Information Exchange:** Facilitating communication among member space agencies regarding space debris research and mitigation strategies.
    - **Debris Mitigation Guidelines:** Developing recommendations for managing space debris, which include:
    - Limiting debris released during normal operations.
    - Minimising potential on-orbit breakups.
    - Planning for post-mission disposal of spacecraft.
  - **Members of IADC:** NASA (USA), ESA (European Space Agency), ISRO (India), CNSA (China National Space Administration), JAXA (Japan Aerospace Exploration Agency)

Source: PIB - Space Debris Management

SpaDeX

Context

Indian Space Research Organisation (ISRO) is preparing to launch a record 24 scientific experiments on board the POEM satellite under the **Spadex Mission.**

About SpaDeX (Space Docking Experiment)

- It is a new mission by ISRO aimed at demonstrating in-space docking and undocking of two satellites while in motion.
- It is made up of 2 small spacecraft - **Chaser & Target. (Launch Vehicle- PSLV C-60)**

- Both spacecraft will be launched **simultaneously but independently** into a **470-km wide circular orbit at 55° inclination** & With a **local time cycle of about 66 days.**
- **Stages:**
  - **Rendezvous** – Aligning orbits of 2 spacecraft
  - **Docking** – Connecting 2 spacecraft
  - **Undocking** – Disconnecting the 2 spacecraft.
- **Objectives:**
  - **Primary Objective - Docking Manoeuvre:** The satellites will demonstrate docking (joining) and undocking (separating) while in orbit.
  - **Secondary Objective - Electric Power Transfer:** Transfer of electric power between docked spacecraft. It is a critical technology for:
    - In-space robotics.
    - Composite spacecraft control.
    - Payload operations post-undocking.
- **Significance:** Important for the success of India's upcoming Bharatiya Antariksh Station (India's space station project).
- **About PSLV Orbital Experimental Module (POEM):**
  - POEM is a space platform that allows the scientific community to perform experiments in microgravity conditions in orbit.
  - It uses the spent fourth stage of the Polar Synchronous Launch Vehicle (PSLV) as an orbital platform.
  - **Important Experiments conducted on POEM in past:** Electric propulsion systems, devices for releasing satellites, and technology for tracking stars

Facts

- India will become the **4th country** in the world to have a space programme capable of docking in space. **(After Russia, USA & China)**

Source: The Hindu - SpaDeX: meeting in space

HISTORY, ART & CULTURE

TOPICS FOR PRELIMS

Women who helped draft the Indian Constitution

Syllabus Mapping: Modern Indian History, Constituent Assembly

Context

On Constitution Day, President Droupadi Murmu recalled the role women members played in the Constituent Assembly.

About Women in Constituent Assembly

- The **299**-member Assembly had **15 women members,** including prominent figures such as **Sarojini Naidu, Sucheta Kripalani and Vijaya Lakshmi Pandit.**
- But it also had lesser-known women from diverse backgrounds who participated in debates on gender, caste and reservations.
- **Participation of Women in different Committees:**
  - **Hansa Mehta and Amrit Kaur** served on the Fundamental Rights and Minorities Sub-Committees.
  - **G. Durgabai** was on the Steering and Rules Committees.

Name		Notable Contributions
Ammu Swaminathan (Kerala)		• Co-founded the **Women's India Association** in 1917 with leaders like Annie Besant. • Advocated for gender equality through the **Hindu Code Bill.** • Fought for the removal of oppressive customs for widows.
Annie Mascarene (Kerala)		• Campaigned for universal adult franchise, especially for marginalized groups. • Advocated for universal voting rights and political participation despite caste discrimination.
Begum Qudsia Aizaz Rasul (Punjab)		• **Opposed separate electorates based on religion**, maintaining unity among communities. • Actively participated in debates about the political future of Muslims in a divided India. • Helped to promote women's hockey in India
Dakshayani Velayudhan (Kerala)		• **First Dalit woman in the Constituent Assembly and Cochin Legislative Council.** • Also first Dalit woman to graduate in science • Advocated for Dalit rights and opposed caste-based discrimination.
Renuka Ray (West Bengal)		• Represented women's issues, particularly divorce and inheritance rights. • Advocated for women's equality in public policy and social justice.

Mithilanchal

Syllabus Mapping: Art & Culture

Context

Opposition parties in Bihar have reiterated their longstanding demand for the formation of a Mithila State.

About Mithilanchal

- Mithilanchal is a geographical and cultural region bounded by the **Mahananda river in the east, the Ganga in the south, the Gandaki river in the west and by the foothills of the Himalayas in the north. (Comprises parts of Bihar, Jharkhand and adjoining districts of the eastern Terai of Nepal)**
- The demand for Mithilanchal was first made by local people in **1912,** based on **Sir George Grierson's survey**, when Bihar was leaving the Bengal presidency to become a separate state.
- In modern day Bihar, Mithilanchal comprises **20 of its 38 districts.**
- **Mythological significance:** According to the Ramayana, Rama, the prince of Ayodhya, broke Shiva's celestial bow to marry Mithila's king Janaka's daughter Sita — who is believed to have been born in the Sitamarhi district while her father ruled from Janakpur in Nepal.
- The native language in Mithila is **Maithili (8th Schedule language)**
  - Maithili is written in **Tirhuti** and **Devanagri script.**
- The region is known for its **Mithila painting**, also known as the **Madhubani art**.

Similar statehood demand in other regions

- **Bodoland in Assam:** This region has demanded separate statehood to preserve its cultural identity and for better economic development
- **Vidarbha:** It comprises the Amravati and Nagpur divisions of eastern Maharashtra.
- **Purvanchal, Bundelkhand, Awadh Pradesh and Paschim Pradesh:** In 2011, then UP Chief Minister, Mayawati, passed a resolution in the Assembly to split UP into four smaller states – in the interest of providing better administration.
- **Saurashtra:** The movement for separate Saurashtra state was initiated in 1972 by Ratilal Tanna. Lack of better water supply to the region, lack of job opportunities and subsequent youth migration have been cited as major reasons for the demand of statehood.
- **Gorkhaland**: A proposed state covering areas inhabited by the ethnic Gorkha (Nepali) people, namely Darjeeling hills and Dooars in the northern part of West Bengal.

World craft city tag for Srinagar

Syllabus Mapping: Art & Culture

Context

A 3-day craft exchange initiative event was held in Srinagar following its recognition as a 'World Craft City' by the World Crafts Council (WCC) in 2024. It reunited artisans from **Kashmir and Central Asia** after approximately 500 years.

Similarities in Craft Techniques between Kashmir and Central Asia

- **Uzbekistan's suzani work and Kashmir's sozini embroidery** share similar techniques, colors, and floral motifs.
- The Kashmiri carpet industry **uses Persian techniques** like the Farsi baff and Sehna knot for weaving wool and silk carpets.
- Kashmiri carpet patterns are named after **Iranian cities such as Kashan, Kirman, Tabriz, Isfahan and Meshed.**

Contributions of Zain-ul-Abidin to Kashmiri Crafts

- **Zain-ul-Abidin, the 9th Sultan of Kashmir Sultanate (15th century),** brought master artisans from Samarkand, Bukhara and Persia to develop local industries.
- He promoted crafts like **wood carving, carpet weaving** and **papier-mâché**.
- Established workshops and provided state patronage to artisans, ensuring the flourishing of crafts.

Key Craft Techniques of Kashmir

- **Sozni Work:** It is a detailed and intricate needlework style, particularly used on shawls. It uses floral and geometrical motifs with fine thread on wool and silk fabrics.
- **Wood Carving:** It is done on walnut wood using a chisel and hammer for intricate patterns.
- Originated from Persian techniques introduced during Zain-ul-Abidin's reign.
- **Sehna Knot (Carpet Weaving):** A Persian weaving method where the yarn loops around a warp thread for compactness and uniformity. It is used in Kashmiri carpets.

World Crafts Council (WCC)

- WCC is a non-profit, NGO that aims to promote and preserve traditional crafts worldwide.
- It was established in **1964** and is headquartered in **Kuwait.**
- Its main objective is to promote crafts globally and improve the economic conditions of craftspeople.
- WCC organises events, exchanges, and awards to highlight and support traditional crafts and artisans worldwide.
- **World Craft Cities in India: Jaipur, Mamallapuram, Mysore & Srinagar.**

Raja Mahendra Pratap

Syllabus Mapping: Modern Indian History, Personalities

Context

The Vice President of India attended the 138th birth anniversary of Raja Mahendra Pratap.

About Raja Mahendra Pratap

- He was an **Indian freedom fighter, journalist, writer & revolutionary.**
- He was born in **December 1886 in Hathras, Uttar Pradesh.**
- He belonged to the royal family of **Mursan Estate**.
- **In December, 1915,** he established the **1st Provisional Government of India at Kabul** in Afghanistan as a government-in-exile of Free Hindustan, with himself as President, Maulavi Barkatullah as Prime Minister, and Maulana Ubaidullah Sindhi as Home Minister.
- He is popularly known as **"Aryan Peshwa".**
- He was nominated for the **Nobel Peace Prize** in 1932 for his role in promoting freedom and peace.
- He established the **Prem Mahavidyalaya** in **Vrindavan** in 1909—**One of India's first polytechnic institutes.**

Adhai Din ka Jhonpra

Syllabus Mapping: Art & Culture, Architecture

Context

Admission of petition seeking a survey of the Ajmer Sharif Dargah has reignited demands for a similar survey of the Adhai Din Ka Jhonpra, one of India's oldest mosques.

About Adhai Din Ka Jhonpra

- It is a historical mosque in the city of **Ajmer (Rajasthan).**
- It is one of the oldest mosques in India, and the **oldest surviving monument in Ajmer.**
- Its construction was commissioned by **Qutb-ud-Din-Aibak in 1192 CE** after the defeat of **Prithviraj Chauhan** in the **Second Battle of Tarain**. Its architect was **Abu Bakr of Herat.**
- The structure was completed in **1199 CE** and was further enhanced **by Iltutmish 1213 CE**.
  - The **seven-arched facade (screen wall) was added by Iltutmish.**
- Most of the building was constructed by Hindu masons, under the supervision of Afghan managers.
- It is an **Archaeological Survey of India (ASI)-protected monument.**

Contested Origins of Adhai Din ka Jhonpra

- **Jain Influence**:
  - Historian **Har Bilas Sarda** refers to Jain tradition that a temple was built in **660 CE by Seth Viramdeva Kala** for the Jain festival Panch Kalyan Mahotsava.
  - British officer **James Tod** (1819) identified it as a Jain temple, describing it as "one of the most perfect ancient monuments of Hindu architecture."
- **Architectural Insights:**
  - **Alexander Cunningham** (ASI, 1874) noted that the mosque was constructed using materials from multiple Hindu temples.
  - Cunningham also discovered **Kali sculptures** and inscriptions that were inconsistent with Jain traditions.
- **Sanskrit College**:
  - Excavations revealed inscriptions pointing to a Sanskrit college built by **Visaladeva**.
  - Similar structures, like **Raja Bhoja's Pathshala in Dhar,** support the idea that it had an educational purpose before becoming a mosque.

Akal Takht

Syllabus Mapping: Art & Culture, Religions

Context

Recently President of the Shiromani Akali Dal (SAD), received religious punishment from the Akal Takht, the supreme temporal seat of Sikhs.

About Akal Takht

- It is the **Supreme Governing Body of the Sikh community and one of the 5 takhts of Sikhism.**
  - **Other 4 takhts in Sikhism are:** Keshgarh Sahib (Anandpur), Patna Sahib, Hazur Sahib and Damdama Sahib
- Located opposite the **Harmandir Sahib in the Golden Temple complex.**
- Akal Takht sustained damage during **Operation Bluestar in 1984** but was later rebuilt by the Indian government and renamed **Sarkari Takht.**

- Guru Granth Sahib is brought to the Akal Takht every evening and transferred to the Golden Temple each morning.

History of Akal Takht

- The Akal Takht was established by **Guru Hargobind in 1606** after the execution of his father, **Guru Arjan Dev, by the Mughals.**
- It was created to address both the spiritual and temporal concerns of the Sikh community.
- The Guru is said to have requested two swords, symbolising **miri (temporal power) and piri (spirituality).**
- The sword representing miri was slightly shorter, **indicating the primacy of spiritual authority over temporal power.**

Jathedars

- He is the **top spokesperson of the Sikh community** and resides at the Akal Takht.
- The position requires the individual to be baptized, well-versed in Sikh history and scriptures and free from moral flaws.
- **Appointment of Jathedars:** Initially they were chosen by **Sarbat Khalsa assemblies.** After-1925, they were appointed by the **Shiromani Gurdwara Parbandhak Committee (SGPC),** which manages Sikh shrines.
- Any person who identifies as a Sikh can be summoned to the Akal Takht, tried, and sentenced but Akal Takht's justice **applies only to those who voluntarily submit to its authority.**

Harmandir Sahib

- Sri Harmandir Sahib is also known as **Sri Darbar Sahib** or Golden Temple.
- The Golden Temple was **founded in 1574 by the fourth Sikh Guru, Guru Ram Das** and was completed in 1604.
- Guru Arjan Sahib designed the architecture of Sri Harmandir Sahib.
- The temple is built on the lower level and unlike Hindu Temples having only one gate for the entrance and exit, **it is open from all four sides.**
- The ceiling of the temple is made with gold and precious stones.
- On the top of this room stands the low fluted 'Gumbaz' (dome) having lotus petal motif in relief at the base inverted lotus at the top which supports the "Kalash" having a beautiful "Chhatri" at the end.
- The Temple organises the largest 'langar sewa' (or community kitchen) in the world.

Periyar Memorial

Syllabus Mapping: Art & Culture, Religions

Context

The Chief ministers of Kerala and Tamil Nadu will inaugurate the Periyar memorial in Viakom, Kerala.

About Periyar

- Born in 1879, Periyar initially joined the **Indian National Congress** but later resigned due to its perceived Brahmin dominance.
- He spearheaded the **Self-Respect Movement,** aiming to uplift the social and economic status of lower castes.
- Championed rationalism, self-respect, women's rights, and the eradication of caste.
- Led the **Vaikom Satyagraha,** a non-violent movement demanding entry for Dalits into temples.
- Founded the **Dravidar Kazhagam, advocating for an independent Dravida Nadu**.
- Considered the **"Father of the Dravidian movement,"** his ideas significantly influenced social and political developments in Tamil Nadu.
- He believed in a single, formless God and respected the **teachings of Tamil saint Thiruvalluvar.**

About Vaikom Satyagraha

- It was a nonviolent protest that took place in the **Kingdom of Travancore (present-day Kerala) from 1924 to 1925.**
- **Aim of Vaikom Satyagraha:** To end caste discrimination and untouchability that prevented lower-caste Hindus from accessing the **Vaikom Mahadeva Temple** and the public roads around it.
- **Leaders**: The movement was led by **K. Kelappan (also known as Kerala Gandhi)**, **K. P. Kesava Menon and T. K. Madhavan** with support from **Mahatma Gandhi and E. V. Ramasamy "Periyar".**
- **Events:** The movement began on March 30, 1924, when a group of volunteers in khadi and caps attempted to enter the temple. They were stopped and arrested by the police.

Prominent movements for the emancipation of lower caste:

YEAR	MOVEMENT	Leaders	About Movement
1873	Satyashodhak Movement	Jyotirao Phule	Emancipation of low castes, untouchables and widows; against Brahminic dominion.
1916	Justice Party Movement	Dr. T.M Nair, P. Tyagaraja Chetti, C.N Mudalair	Opposed Brahminic control in government, education and politics.
1924	Depressed Classes Movement	B.R.Ambedkar	Focused on the upliftment of depressed classes; opposed untouchability; published a Marathi newspaper titled **Bahiskrit Bharat (1927).**
1925	Self-Respect Movement	E.V. Ramaswami Naicker (Periyar)	Opposed the caste system and Brahmin bias; established the **Kudi Arasu journal (1910).**

National Mission on Cultural Mapping and Roadmap

Syllabus Mapping: Art & Culture, Religions

Context

The National Mission on cultural mapping was launched to preserve India's rich cultural heritage and promote rural traditions to revitalize rural economies.

About National Mission on Cultural Mapping (NMCM)

- It was launched **in 2017** by the **Ministry of Culture** to preserve, promote, and document India's diverse cultural heritage, particularly in rural areas.
- It is executed by the **Indira Gandhi National Centre for the Arts (IGNCA).**
- **Objectives of the Scheme:**
  - Cultural mapping of 6.5 lakh villages along with their geographical, demographic profiles, and creative capitals.
  - To create awareness about the strengths of cultural heritage and its interface with development and cultural identity.
  - Creation of National Registers of Artists and Art practices.
  - Development of a web portal and mobile app to function as a **National Cultural Work Place (NCWP).**
- The mission operates through **3 interconnected programmes:**
  - **Sanskritik Pratibha Khoj:** Campaign for cultural awareness, talent hunts, and revitalization of folk and tribal heritage.
  - **Mera Gaon Meri Dharohar (MGMD):** Cultural mapping to identify and promote local art practices, artists, and craftspeople.
  - **National Cultural Workplace (NCWP):** Interactive web portal for artists and craftspeople. Online platform serving as a cultural service provider.

Case Study of Thongjao Village, Manipur

- Known as the **"Land of Pottery."**
- Legacy of Padma Shri awardee Neelamani Devi, a master craftswoman, has kept the traditional pottery art alive.
- Villagers create both functional pots and intricate masterpieces, passing the craft to the next generation.
- **Global Stage:** Through the Mera Gaon Meri Dharohar (MGMD) platform, Thongjao's pottery and artisans' stories are promoted globally.

C. Subramania Bharati

Syllabus Mapping: Modern Indian History, Personalities

Context

A complete and annotated version of the works of C. Subramania Bharati will be released by the Prime Minister in New Delhi.

About C. Subramania Bharati

- He was a poet, freedom fighter, and social reformer **from Tamil Nadu.**
- He was known as **Mahakavi Bharathiyar.**
- He was born in Ettayapuram, South India, in 1882, and died in Madras in 1921.
- He is considered one of India's greatest poets. His songs on nationalism and freedom of India helped to rally the

masses to support the Indian Independence Movement in Tamil Nadu.

- Bharathi joined as **Assistant Editor of Swadesamitran**, a Tamil daily, in 1904.
- In 1907, he started editing the **Tamil weekly India** and the **English newspaper Bala Bharatham** with M.P.T.Acharya.
- He **assisted Aurobindo** in the Arya journal and later Karma Yogi in Pondicherry.
- He was exiled from British India in 1908 and went to live in Pondicherry, a French colony in South India.
- He spent **ten years in exile** there and eventually returned to Madras, where he died.
- **Best Known works of Bharati:**
  - Kaṇṇan pattu (1917; Songs to Krishna), Panchali sapatham (1912; Panchali's Vow) and Kuyil pattu (1912; Kuyil's Song).
  - Translated Vedic hymns, Patanjali's Yoga Sutra and Bhagavat Gita into Tamil.

Guruvayur Temple

Syllabus Mapping: Art & Culture, Architecture

Context

The Supreme Court has strongly criticized the Guruvayur Devaswom administration for its decision to not conduct the age-old ritual **'Udayasthamana Pooja'** at Kerala's Sri Krishna Temple **on Guruvayur Ekadashi day.**

About Guruvayur Temple

- It is located in **Guruvayur, Thrissur District, Kerala**, and is dedicated to **Lord Krishna**, worshipped as **Guruvayurappan**. It is also called **"Dwarka of South".**
- In 1931-32, a satyagraha was initiated by **K. Kelappan (known as Kerala Gandhi)** to advocate for the inclusion of untouchables into the temple.
- **Adi Shankaracharya**, the 8th-century Indian philosopher is credited with streamlining and the temple's rituals.
- **Features of Guruvaur Temple:**
  - The temple is built in the traditional Kerala architectural style.
  - Structures like the **Nalambalam** (temple structure surrounding the sanctum sanctorum), **Balikkal** (sacrificial stone) and **Deepastambam** (pillar of lights) are situated on the temple premises.
  - **Dwajasthamba:** It is a flagstaff, around 70 feet tall, fully covered with gold.
  - The temple is also famous for being home to a **large population of captive male Asian elephants.**

About Udayasthamana Pooja

- It is an elaborate ritual conducted to offer continuous prayers and offerings to the deity **throughout the day.**
- The pooja includes multiple rounds of Abhishekams (ritualistic bathing of the idol), Naivedyams (food offerings), and Aartis (offerings of light).
- The ritual is particularly significant on **Vrishchikam Ekadashi,** one of the holiest days in the Hindu calendar, dedicated to Lord Vishnu.
- Performing this pooja on this day is believed to **enhance the spiritual energy of the deity and bring prosperity and blessings to devotees.**

Durgadi Fort

Syllabus Mapping: Art & Culture, Architecture

Context

Recently, the Kalyan civil court has ruled that Durgadi Fort is owned by the Maharashtra government, dismissing the claims of the Majlis-E-Mushawarat Trust.

About Durgadi Fort

- It was constructed in the **16th century** during the **Adil Shahi Sultanate (Bijapur)** and was later **modified by the Marathas.**

- It is situated in **Kalyan, Maharashtra, near the Ulhas River.** During this time Kalyan was a **trading port.**
- In 1760, after the Marathas captured Kalyan, they built a wooden temple dedicated to **Durgadevi** and renamed it **Durgadi Killa.**
- After the British took control in **1818,** the temple ceased to function, and by 1876, the image of the goddess was stolen.

Adil Shahi Dynasty

- The Adil Shahi dynasty, also known as the Bijapur Sultanate, was a Muslim kingdom in the Deccan region of India that was ruled from **1490–1686:**
- **Yusuf Adil Shah founded the dynasty in 1490**. He was a former provincial governor of the Bahmani Sultanate.
- The **capital was in Bijapur**, in the southwest of India, and the sultanate covered parts of present-day Karnataka and Maharashtra.
- **Some of the major rulers include:**
  - **Yusuf Adil Shah:** The first ruler, from 1490–1510
  - **Ismail Adil Shah:** Founded the sultanate in 1490 and added many monuments to Bijapur
  - **Ibrahim Adil Shah I:** Adopted Sunni Islam and instituted new political and religious measures
  - **Ibrahim Adil Shah II:** A patron of art and architecture who **wrote Kitab-i Nauras** (Book of Nine Rasas)
  - Sikandar Adil Shah: The last ruler, from 1672–1686
- The Mughal Empire **conquered** the Bijapur Sultanate in 1686 under **Emperor Aurangzeb.**

100 Years of Communist Party of India

Syllabus Mapping: Modern Indian History, Post-Indendence India

Context

The Communist Party of India will celebrate its centenary on **December 26, 2025**, marking its formation on **December 26, 1925** in Kanpur.

About the Communist Party of India

- Formed on **December 26, 1925**, at the first Party Conference in Kanpur.
- **First General Secretary**: S.V. Ghate.
- Leaders like **M.N. Roy** and **Abani Mukherji** established CPI in **Tashkent** after the second Comintern Congress.

Contributions of CPI: Pre-Independence

- **Freedom Struggle**:
  - **Kanpur Bolshevik Conspiracy Case (1924)**: Targeted communists like M.N. Roy, Muzaffar Ahmad, and others for allegedly conspiring to overthrow British rule through revolution.
  - **Demand for Poorna Swaraj**: Advocated full independence before it was mainstream.
  - **Constituent Assembly Demand**: Called for an assembly representing the people's will.
- **Peasant and Worker Movements**:
  - Supported land reforms and worker rights.
  - Example: **Telangana Rebellion** in Hyderabad showcased their commitment to land redistribution and social justice.

Post-Independence Contributions of CPI

- **Political Milestones**:
  - Principal opposition party in the 1950s and 1960s.
  - **First Non-Congress Government (1957)**: Formed government in Kerala, defeating Congress.
- **Social and Legal Achievements**:
  - Key role in enacting the **Forest Rights Act**, **Right to Information Act**, and others during the UPA-I rule.
  - Pioneered labour rights and formation of trade unions even during British rule.
- **Constitutional Impact**:
  - Influenced provisions for justice, equality, and fraternity in the **Preamble**.
  - Advocated land reforms, workers' rights, and protection of backward classes in the Constituent Assembly.

Communist Party of India (Marxist) - CPI(M)

- **Formation**: Split from CPI in **1964** due to ideological differences and India-China border tensions.
- **Identity**: Advocates for farmers, tribals, Dalits, workers, and minorities.
- **Flag**: Red with a crossed hammer and sickle in white.

Challenges Faced by CPI

- **Split (1964)**: Over ideological differences between Soviet and Chinese communism.
- **Electoral Decline**:
  - Significant loss in seats over the years, e.g., CPI (2 seats) and CPI(M) (4 seats) in the **2024 Lok Sabha elections**.
  - Decline began in the **2014 Lok Sabha elections** (CPI: 1 seat, CPI(M): 9 seats).

Mahakumbha 2025

Syllabus Mapping: Art & Culture, Architecture

Context

The Maha Kumbh Mela 2025, a sacred pilgrimage, will be held in Prayagraj from 13th January to 26th February 2025.

About Kumbh Mela

- It is the **largest peaceful congregation of pilgrims on earth**, during which participants bathe or take a dip in a sacred river.
- This gathering takes place at **4 different places**, namely:
  - In **Haridwar,** on the banks of the **Ganges**.
  - In **Ujjain,** on the banks of **Shipra**.
  - In **Nashik**, on the banks of **Godavari** (Dakshin Ganga).
  - In **Prayagraj**, at the confluence of the **Ganges, the Yamuna**, and the mythical invisible **Saraswati**.
- **Different Types of Kumbh:**
  - The Kumbh Mela is celebrated 4 times over a course of 12 years.
  - At Haridwar and Prayagraj, **Ardh-Kumbh Mela** is held every 6th year.
  - The **Maha Kumbh Mela is celebrated at Prayag after 144 years** (after 12 'Purna Kumbh Melas').
  - **Maagh Kumbh** is celebrated **every year** in the month of Maagh (Jan-Feb) in Prayagraj.

Significance of Kumbha Mela

- Recognised by UNESCO (2017) as **intangible cultural heritage.**
- **Kumbh 2019:** Achieved 3 Guinness World Records:

1. Largest traffic and crowd management.
2. Biggest public site painting (Paint My City Scheme).
3. Biggest sanitation and waste disposal mechanism.

- Determined by Sun, Moon, and Jupiter alignment.
- **Simhastha Kumbh** is held at **Nashik/Ujjain** when planets are in Leo (Zodiac).

Rituals and Activities in the Kumbha Mela

- **Akharas:**
  - Origin from akhand (indivisible). **Unified by Adi Shankaracharya** to protect Sanatan Dharma.
  - Represent social order, unity, and spiritual ethics.
  - Categorised by deity worshipped:
    - **Shaiva Akharas**: Worship Lord Shiva.
    - **Vaishnava Akharas**: Worship Lord Vishnu.
    - **Udaseen Akharas**: Founded by Chandra Dev, son of Guru Nanak.
- **Shahi Snan (Royal Bath):** Marks the start of the Mela; ceremonial bath by saints and Akharas.
- **Peshwai Processions:** Grand traditional processions of Akharas with elephants, horses, and chariots.

News in Short

Padma Shri awardee Baiga tribal artist Jodhaiya Bai dies

- Jodhaiya Bai was a **Baiga tribal art artist.** She played an important role in bringing international recognition to **Baiga tribal art.**
- She was honoured with the **Padma Shri in 2023 & Nari Shakti Award in 2022** for her exceptional contribution to the field of arts.

About Baiga Tribe

- Baiga are an ethnic group in central India who are known for their unique culture, including their tattoos, their relationship with the forest and their festivals.
- They reside in **Madhya Pradesh**, **Chhattisgarh, Jharkhand, Bihar, Odisha, West Bengal, and Uttar Pradesh**.
- They practice **slash-and-burn cultivation**, locally called **"Bewar"**.
- Baiga was the **first community in India** who was granted **habitat rights** in 2016.

Potti Sriramulu

- Andhra Pradesh Government will celebrate **125th Birth Anniversary of Potti Sriramulu** (16 March 2025).
- He was born in **1901**, in Madras Presidency (present-day Nellore, Andhra Pradesh).
- Actively participated in the Non-Cooperation **Movement (1920-1922), Salt Satyagraha (1930) & Individual Satyagraha.**
- Post-Independence, he became an important figure in the struggle for a **separate Telugu-speaking linguistic state.**
- He started a hunger strike in **1952,** demanding the creation of Andhra Pradesh, separate from the Madras Presidency.
- He had undertaken **fast unto death ('Amarajeevi') in Madras** on 19 October 1952.
- After his death, the formation of separate Andhra Pradesh was announced by the Union government.
- His death led to widespread rioting and violence in Andhra Pradesh.

Rann Utsav

- It is the **annual white desert carnival** held by Gujarat Tourism Department at **India's largest salt desert 'Great Rann of Kutch'.**
- It celebrates the cultural and artistic heritage of Kutch.

About Art forms of Kutch

- **Textiles and Embroidery:**
  - **Bandhani (Tie and Dye):** Threads are tied tightly around the fabric to create patterns, followed by dyeing.
  - **Kutchi Embroidery:** Intricate designs with mirrors (abhla bharat), beads, and threads. Includes styles like **Suf, Kharek, and Rabari embroidery.**
  - **Ajrakh Printing:** Block printing with natural dyes, primarily in indigo and red hues.
  - **Rogan Art:** Hand-painted designs using castor oil-based colors.
- **Mud and Mirror Work (Lippan Kaam):** Decorating walls of houses with clay and mirror work. Common in **Bhungas** (traditional circular mud houses).
- **Bell Making:** Copper and brass bells crafted by Lohar artisans. They are not made with a mould or fire, but by beating strips of metal to the desired shape and then interlocking the pieces.

Gorakhpanthi Sect

- Gorakhpanthi sect is a religious and philosophical movement associated with the teachings of **Gorakhnath.**
- **Gorakhpanthis are considered an offshoot of the broader Nathpanthi tradition**
- **Origins and Philosophical Foundations**
  - **Guru Matsyendranath's Influence**:
    - The Nath tradition was initiated by **Matsyendranath**, blending **Tantric Shaivism** and **Tantra-inspired Buddhism**.
  - **Guru Gorakhnath's Role**:
    - A prominent disciple of Matsyendranath, **Gorakhnath** (11th-12th century) further developed the tradition.
    - He is known for promoting **self-discipline (yoga)** and **inclusive spiritual practices**. He **rejected caste-based and ritualistic barriers.**
    - His teachings emphasized **Equality**, incorporating followers from diverse backgrounds, including **Muslims** and **lower-caste Hindus**.

Cumbum Tank

- It is located in Prakasam district of Andhra Pradesh.
- It is the **third-largest pond in the world, the second-largest in Asia and the first in India.**
- It is a medium irrigation project, built by the **Vijayanagar Princess Varadharajamma (also known as Ruchidevi), wife of Sri Krishna Devaraya.**
- It was formed by damming a gorge through which the **Gundlakamma and Jampaleru rivers** flow.
- It was included in the **World Heritage Irrigation Structures list of the International Commission of Irrigation and Drainage (ICID)** in 2020.

Historical Background of Ajmer Sharif Dargah

- It is the final resting place of the Sufi saint, **Moinuddin Chishti** located at Ajmer, Rajasthan.
- **About Moinuddin Chishti:**
  - Moinuddin Chishti was a 13th-century **Sufi saint** and philosopher.
  - He was born in 1141 CE in Sistan (modern-day Iran/Afghanistan region).
  - He arrived in Delhi during the reign of **Sultan Iltutmish (1236).**
- **Construction of the Dargah:**
  - **Original Shrine**: Constructed **by Sultan Ghiyasuddin Khilji** of the Malwa Sultanate in the early 15th century.
  - **Mughal Patronage**:
    - **Akbar**: Made annual pilgrimages to the dargah.
    - **Shah Jahan:** Added the white marble mosque (Shah Jahan's Mosque) in 1637.

Historical Background of Sambhal Mosque

- Constructed during Mughal Emperor **Babur's reign (1526–1530)** by his general, **Mir Hindu Beg.**
- It is one of the 3 mosques built during the reign of Babur: **Other 2 (Panipat & Babri Masjid).**
- **Hindu beliefs:** According to local tradition the mosque incorporates remnants of a Vishnu temple, believed to be the site of the arrival of **Kalki, the tenth avatar of Vishnu.**

80-pillar hall of Kumhrar

The Kumhrar site, associated with Mauryan history, is being excavated by the Archaeological Survey of India (ASI) to reveal the 80-pillar assembly hall..

- **About the excavation site:**
  - It is believed to have been a Buddhist assembly hall used for the Third Buddhist Council convened by Emperor Ashoka (268 BCE – 232 BCE).
  - It highlights the prominence of **Pataliputra (modern-day Patna) as the seat of the Mauryan empire**
  - Kumhrar was home to the **Mauryan palace,** described in ancient texts as a structure of unparalleled grandeur.
  - Greek ambassador Megasthenes compared it to the splendor of Susa and Ecbatana, Persian capitals known for their opulence.
  - The palace's wooden construction, combined with intricate designs, showcased the Mauryan mastery of architecture and urban planning.
- **About Mauryan Era Pillars:**
  - They are monolithic, tall, lustrous, well-proportioned, free-standing structures with tapering shafts.
  - They are made of **sandstone**.
  - **E.g.** Sarnath (Lion Capital), Rampurva (BullCapital, Prayag -Prashasti (Allahabad Pillar) etc.

Rashtriya Seva Dal (RSD)

- RSD was founded by **N. S. Hardikar (Narayan Subbarao Hardikar)** in **1941.**
- It played a key role in **mobilizing youth and nurturing a spirit of nationalism** during the Indian freedom struggle.
- The organization was closely associated with the Indian National Congress, and many of its members were involved in the party's activities.
- **Pandurang Sadashiv Sane (Sane Guruji)** was an important leader associated with RSD .

Abathsahayeswarar temple

- The 1,300-year-old Abathsahayeshwarar Temple received the UNESCO Asia-Pacific Award for cultural heritage conservation in 2023.
- It is located in **Thukkatchi in Thanjavur district of Tamil Nadu**.
- It was constructed during the r**eigns of Kings Vikrama Chola and Kulothunga Chola**.
- This temple stands as a testament to the architectural brilliance and spiritual dedication of the **Chola dynasty**.
- Historically, the village surrounding the temple was known as Vikrama Chozheeswaram and Kulothunga Chola Nallur, named after these illustrious rulers.
- Kulothunga Chola also installed the **idol of Aadhi Sarabeshwarar in the temple**.
- The temple is home to numerous deities, including **Soundaryanayaki Ambal and Ashtabhuja Durga Parameshwari** and also consists of five prakarams, or enclosures.

Mahaparinirvan Diwas

- Observed annually on **December 6** to **honor Dr. Bhimrao Ambedkar's** immense contributions to society.
- The term "Mahaparinirvan," derived from Buddhism, means **ultimate liberation or freedom after death**.
- The death of Lord Buddha at the age of 80, as described in the **Mahaparinibbana Sutta**, is considered the original Mahaparinirvan.
- Ambedkar's death anniversary is referred to as Mahaparinirvan Diwas due to his pivotal role as a **Buddhist leader** and champion for social justice.