Current Affairs
(Consolidation)

DECEMBER 2024
(Part – I)

Contents

Note:

drishti

Note:

Geography

Security

Ethics

Miscellaneous

Rapid Fire Current Affairs

Note:

Note:

Polity and Governance

Highlights

- SC Prioritising SLPs Disposal
- Impeachment Process and Judicial Accountability in India
- SC Guidelines on Death Penalty and Mercy Petitions
- Anna Chakra and SCAN for Reforming PDS System
- Bharatiya Vayuyan Vidheyak Bill 2024
- PM's Development Initiative for North East Region (PM-DevINE)
- PMAY-U 2.0
- Profit-Oriented Research and R&D Challenges in India

- Demand for Holding Parliament Sessions Outside Delhi
- Rising Road Accidents in India
- Rashtriya Gokul Mission
- One Rank One Pension (OROP)
- NMCM and Monuments of National Importance
- Pardoning Powers of President in India
- Interpreting the Places of Worship Act, 1991

SC Prioritising SLPs Disposal

Why in News?

The **Supreme Court (SC)** has started prioritising hearing **special leave petitions (SLPs)** cases with the aim to **reduce the high burden of cases** filed each year, alongside a substantial backlog.

➤ As of December 2024, over **82,000 cases are pending in the SC,** which has prompted the **Chief Justice of India (CJI),** to implement such strategies.

What is a Special Leave Petition (SLP)?

➤ **About:**
  ○ A **SLP** is a **discretionary appeal mechanism (Article 136** of the **Constitution of India)** allowing the **SC** to hear **appeals against judgments,** decrees, or orders of any court or tribunal.
    ● It is **not applicable** for **Armed Forces Tribunals**.

➤ **Origin:**
  ○ The concept of **"special leave"** is derived from the **Government of India Act, 1935,** which had recognized the **prerogative to grant special leave for appeals**.

➤ **Key Features:**
  ○ This is an **extraordinary jurisdiction** of the SC, which enables it to address cases where **no direct right of appeal exists.**

  ○ It is granted **solely at the discretion of the SC**, which may deny leave without providing reasons.
    ● It is **applicable to both civil and criminal matters.**
  ○ When the SC grants an SLP, it transitions into a **formal appeal,** allowing detailed examination of the case and enabling both parties to present their arguments before a final verdict is delivered.
    ● It is typically invoked in cases i**nvolving substantial questions of law** or a **miscarriage of justice.**

➤ **Eligibility:**
  ○ Any aggrieved party can file an SLP against a judgment or order of a **High Court** or tribunal, especially where:
    ● A **certificate of fitness** for appeal to the SC has been denied.
    ● **Substantial questions of law** or injustice are involved.

➤ **Time Limit to File a SLP:**
  ○ An SLP can be filed within **90 days** from the date of a High Court's judgment.
  ○ If the High Court refuses to grant a **certificate of fitness** for appeal to the SC, the SLP must be filed **within 60 days** from the date of such refusal.

➤ **Procedure for Filing a SLP:**

Special Leave Petition Process

Drafting the Petition	Filing the Petition	Admission Hearing	Final Hearing
The petitioner prepares the petition with necessary details.	The petition is submitted to the Supreme Court Registry with fees.	The court decides whether to grant leave to appeal.	Both parties present arguments, and the court delivers a judgment.
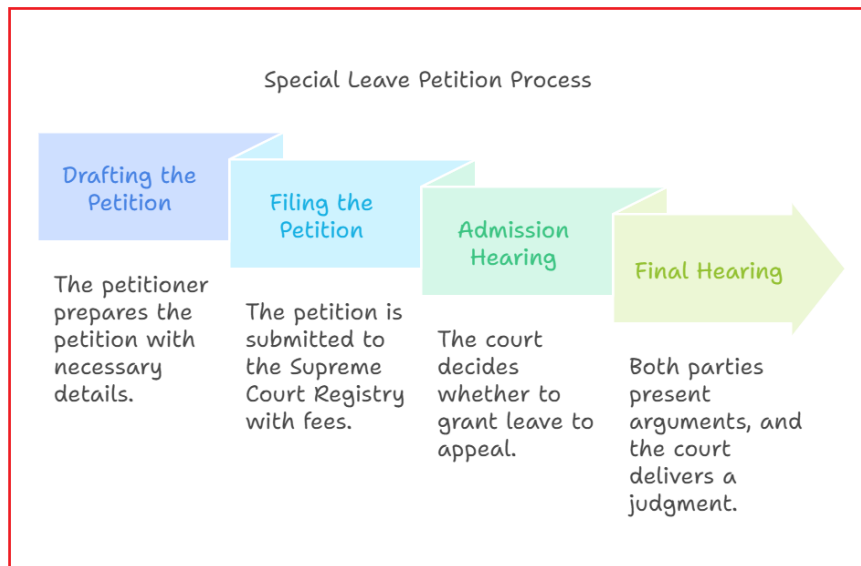
What are the Supreme Court Cases Related SLPs?

➤ In *Laxmi & Co. v. Anand R. Deshpande (1972),* the SC held that during appeals under Article 136, the **Court may consider subsequent developments** to expedite proceedings, safeguard the rights of parties, and uphold the interests of justice.

➤ In *Kerala State v. Kunhayammed (2000)* SC ruled that **declining to grant an SLP does not invoke its appellate jurisdiction**.

○ This discretion ensures that the SC intervenes only in cases warranting judicial scrutiny.

➤ In *Pritam Singh v. The State (1950)*, it was emphasized that the **SC should exercise its powers under Article 136 sparingly,** interfering with **High Court d**ecisions only in **exceptional cases**.

○ Once an appeal is admitted, the **appellant may challenge any erroneous legal findings** by the High Court.

➤ In *N. Suriyakala v. A. Mohandoss & Ors. (2007)* SC clarified that Article 136 does not establish an ordinary appellate forum but grants broad discretionary powers to the Supreme Court to intervene for ensuring justice, rather than providing a right of appeal to litigants.

○ Filing SLPs indiscriminately goes against the purpose of Article 136.

Impeachment Process and Judicial Accountability in India

Why in News?

Recently, an **impeachment motion** is being considered against a **sitting judge of the Allahabad High Court** following his **controversial remarks** at an event organized by a religious organisation. The remarks, deemed by many as communally charged, have raised concerns about **judicial propriety and impartiality.**

What is the Impeachment Process for Judges in India?

➤ **About:**

○ **Impeachment**, though **not explicitly mentioned in the Constitution**, refers colloquially to the process by which a judge can be removed from **office by Parliament.**

○ The impeachment process for judges in India serves as a crucial mechanism to uphold **judicial accountability** while preserving the independence of the judiciary.

➤ **Constitutional Safeguards and Grounds for Impeachment:**

○ **Article 124(4):** The article outlines the removal process for Supreme Court judges, which is applicable to High Court judges as per **Article 218**. The grounds for impeachment are explicitly limited to **"proved misbehaviour" and "incapacity".**

● **Proved Misbehavior:** Actions or conduct by a judge that breaches the **ethical and professional standards** of the judiciary.

● **Incapacity:** A judge's inability to perform judicial duties due to **physical or mental infirmity.**

➤ **Steps in the Impeachment Process:**

Note:

○ **Initiation of Motion:**
- A motion for impeachment must be supported by at least **100 members** in the <u>Lok Sabha</u> or **50 members** in the <u>Rajya Sabha.</u>
- The **Speaker or Chairman** may review relevant materials and consult individuals before deciding whether to admit or reject the motion.
  ■ For example in 2018, the motion against Chief Justice Dipak Misra **was rejected** after due consideration.
- This ensures that the process cannot be initiated casually or without significant support from elected representatives.

○ **Formation of an Inquiry Committee:**
- Upon admission of the motion, the <u>Speaker</u> of the Lok Sabha or the Chairman of the Rajya Sabha constitutes a **three-member committee** comprising:
  ■ The Chief Justice of India or a Supreme Court judge.
  ■ The Chief Justice of a High Court.
  ■ A distinguished jurist.
- The committee conducts a thorough inquiry into the allegations, **gathering evidence** and examining witnesses to determine the validity of the charges.

○ **Committee Report and Parliamentary Debate:**
- The committee submits its findings to the **presiding officer** of the House where the motion was introduced. If the judge is found guilty of the alleged misconduct or incapacity, the report is debated in Parliament.
- Both Houses of Parliament must approve the motion with a <u>special majority</u>, requiring:
  ■ A majority of the total membership of the House.
  ■ At least two-thirds of the members present and vote.

○ **Final Removal by the President:**
- Once the motion is adopted in both Houses it shall be presented to the <u>President</u> in the same session in which the motion has been adopted.

➢ **Checks and Balances:**
○ **High Thresholds for Impeachment:** The stringent requirements for initiating and approving an impeachment motion **protect against misuse** of the process.

○ **Objective Inquiry by Experts:** The inclusion of judicial and legal experts in the inquiry committee ensures a **fair and impartial investigation.**

○ **Parliamentary Oversight:** By involving both Houses of Parliament, the process **ensures accountability** through democratic scrutiny.

➢ **Instances of Impeachment Attempts:**
○ India has witnessed a few attempts at impeachment, with notable cases like those of **Justice V. Ramaswami (1993)** and **Justice Soumitra Sen (2011).**
- While none have resulted in a complete removal, these instances highlight the process's rigor and its role in upholding accountability.

What Guidelines Regulate Judges' Public Statements?

➢ **Freedom of Expression with Responsibility:** Judges, like all citizens, are entitled to freedom of speech and expression under <u>Article 19(1)(a)</u> of the Constitution. However, this right is **subject to reasonable restrictions** to maintain public order, morality, and the integrity of their office.
○ **Public statements** by judges must be **measured and avoid** any hint of bias or partiality, ensuring that they uphold the **dignity of their judicial office.**

➢ <u>Bangalore Principles of Judicial Conduct (2002)</u>

➢ <u>Restatement of Values of Judicial Life (1997)</u>

➢ **In-House Mechanisms for Judicial Conduct:** The judiciary has **internal protocols to address instances** where judges' public statements may be seen as inappropriate or controversial.

➢ **Specific Guidelines on Judicial Restraint:**
○ **Non-Interference in Political Matters:** Judges are expected to **abstain from commenting on political events** or policies to avoid being perceived as partisan.
○ **Refraining from Prejudging Cases:** Judges must avoid making statements about **ongoing cases or legal issues** that could be interpreted as prejudgment or bias.
○ **No Participation in Controversial Events:** Judges should **avoid participating in events or forums** that could appear to compromise their independence or align them with a specific ideology or group.

Note:

drishti

- **Supreme Court Observations:**
  - In _Justice C.S. Karnan's case_ **(2017)**, the court highlighted the damage caused by a judge's public statements undermining the judiciary's integrity.
- **Challenges in Implementation Guidelines:**
  - **Lack of Codified Rules:** Some aspects of judicial behavior, such as **public statements, rely on conventions** rather than statutory regulations.
  - **Gray Areas in Freedom of Speech:** Balancing a judge's right to free expression with their responsibility to maintain judicial propriety is often **subjective.**

How can the Judiciary Uphold Impartiality in a Diverse Society?

- **Adherence to Constitutional Values:** The Constitution enshrines principles of **equality**, **justice**, and **secularism**, which serve as the judiciary's guiding framework.
  - Judges must interpret and apply these principles without prejudice or favor.
- **Ensuring Representation in the Judiciary:**
  - **Inclusive Recruitment:** Ensuring that judges from varied backgrounds, **including underrepresented communities,** are appointed to the bench.
  - **Gender Balance:** Encouraging greater **representation of women** in the judiciary to address gender biases in legal interpretation.
  - **Awareness of Marginalized Groups:** Judges must be trained to **recognize the challenges faced by minorities** and marginalized communities.
- **Education and Sensitisation of Judges:**
  - **Training on Diversity and Equality:** Judicial academies should regularly conduct programs on **cultural competence**, implicit bias, and sensitivity towards social diversity.
  - **Awareness of Historical Disparities:** Judges must understand the **systemic inequities** that exist within society and how these affect individuals' access to justice.
- **Objective Decision-Making:**
  - **Judicial decisions** must be based solely on facts, evidence, and applicable laws, without being influenced by the identities of the parties involved.

- Judges must provide **well-reasoned judgments** that demonstrate their neutrality and adherence to the rule of law.
- **Addressing Systemic Biases in the Judiciary:**
  - **Review of Precedents:** Courts should critically **examine past judgments** to identify and address instances where biases may have influenced decisions.
  - **Equitable Interpretation of Laws:** Judges must ensure that laws are applied in a manner that **promotes equality and justice**, particularly for disadvantaged groups.
- **Proactive Measures to Protect Vulnerable Groups:**
  - **Social Justice Bench:** Special benches, such as the one established by the Supreme Court in 2014, focus on addressing **issues affecting marginalized communities.**
  - **Legal Aid and Pro Bono Services:** Ensuring **legal assistance** for economically weaker sections enhances inclusivity and impartiality.
- **The Role of Civil Society and Media:**
  - An informed **civil society** and vigilant **media** can act as watchdogs, ensuring that judicial impartiality is maintained.
  - **Constructive criticism** and scrutiny of judicial actions help reinforce accountability without compromising independence.

SC Guidelines on Death Penalty and Mercy Petitions

Why in News?

Recently, the **Supreme Court of India (SC)** has issued **comprehensive guidelines** aimed at streamlining the **execution of death sentences** and the **processing of mercy petitions**.

- The SC **upheld the Bombay High Court's decision** in _Purshottam Dashrath Borate vs Union Of India, 2019_ to **commute** the death penalty of two convicts in the 2007 Pune BPO gang-rape and murder case to a 35-year life term due to **inordinate execution delays.**

Note:

What are the SC Guidelines on Death Penalty and Mercy Petitions?

➢ **Establishment of Dedicated Cells:**
  ○ The SC directed all states and union territories to **establish dedicated cells** within their **Home or Prison Departments** to **handle mercy petitions efficiently** and within the prescribed time frame.
  ○ These cells will be managed by a **designated officer**, with contact details shared with all prisons, and an **official from the Law or Justice Department** will ensure legal compliance.

➢ **Information Sharing:**
  ○ Prison authorities must promptly forward mercy petitions and relevant details, such as the convict's background, incarceration history, and legal documents to the dedicated cell.
  ○ They must also send **police reports, FIRs, trial evidence,** and court judgments to the cell officer and the Home Department Secretary.
  ○ Mercy petitions must be promptly forwarded to the Secretariats of the **Governor** or **President** for further action without unnecessary delays.

➢ **Electronic Communication:**
  ○ To enhance efficiency, **all communication should be conducted electronically (via email),** except in cases requiring confidentiality.

➢ **Record Maintenance on Death Sentence Cases:**
  ○ The Sessions Courts must **maintain a record of death sentence cases** and **ensure their prompt listing** on the cause list upon receiving orders from the **High Court** or **Supreme Court**.
  ○ Additionally, notices should be issued to **State Public Prosecutors or investigation agencies** to ascertain the status of any pending legal remedies, including appeals, review petitions, or mercy pleas.

➢ **Execution Warrant Protocol:**
  ○ There should be a **mandatory 15-day gap** between the issuance of an execution warrant and its implementation.
  ○ **Convicts must be informed of their right** to legal representation, and copies of the warrant and the issuing order must be provided immediately.
  ○ **Legal assistance must be offered immediately** if requested by the convict to challenge the warrant.

➢ **State Government Responsibility:**
  ○ The State Government **must apply for an execution warrant** as soon as the death penalty becomes **final and enforceable.**

What is the Death Penalty and Mercy Petition?

➢ **About Death Penalty:** It is also known as **capital punishment,** and the **most severe form of punishment** in the Indian judicial system.
  ○ It involves the **execution of an individual by the state** as a penalty for certain grave offenses.

➢ **Legal Framework For Death Sentence:**
  ○ The death penalty in India is governed by various provisions in the **Bharatiya Nyay Sanhita (BNS, 2023), Bharatiya Nagarik Suraksha Sanhita (BNSS, 2023)** and other special laws.
  ○ The **BNS (replaced the Indian Penal Code- IPC)** mandates the death penalty for crimes including **rape causing death (Section 66), gang rape of minors (Section 70(2)), serial rape (Section 71)**, etc.
    • **Section 53 of the IPC** provided for the punishment of death, along with other forms such as life imprisonment and imprisonment.
    • Specific offenses punishable by death include, but are not limited to, **murder (Section 302), terrorism (Unlawful Activities (Prevention) Act, UAPA),** and certain offenses related to **drug trafficking** under the **Narcotic Drugs and Psychotropic Substances Act(NDPS).**
  ○ **The Constitution of India:**
    • The **Constitution of India** does not explicitly **declare capital punishment as unconstitutional.**
    • However, the Supreme Court, as outlined in *Bachan Singh vs. State of Punjab (1980)* identified 5 categories for such cases, including **brutal murder, depraved motives**, and **crimes of significant magnitude** where capital punishment is awarded.

➢ **About Mercy Petition:** It is a **formal request made** by someone who has been sentenced to death or imprisonment seeking mercy from the **President** or the **Governor,** as the case may be.

➢ **Constitutional Framework:**
  ○ As per the Constitutional framework in India, a mercy petition to the President is the last constitutional

Note:

resort a convict can take when he is sentenced by a court of law. A convict can present a mercy petition to the President of India under **Article 72** of the Constitution of India.

○ Similarly, the power to grant pardon is conferred upon the **Governors** of States under **Article 161** of the Constitution of India.

Article 72	Article 161
➢ The President shall have the **power to grant pardons, reprieves, respites or remissions of punishment or to suspend, remit or commute** the sentence of any person convicted of any offence: ➢ In all cases where the punishment or sentence is by a **Court Martial** ➢ In all cases where the punishment or sentence is for an offence against any law relating to a matter to which the executive power of the Union extends ➢ In all cases where the sentence is a sentence of death.	➢ It provides that the Governor of a State shall have the power to grant pardons, reprieves, respites or remissions of punishment or to suspend, remit or commute the sentence of any person convicted of any offence against any law relating to a matter to which the executive power of the State extends. ➢ The SC in 2021 held that the Governor of a State can pardon prisoners, including death row ones, even before they have served a minimum 14 years of prison sentence.

What are the Implications of SC Guidelines on Death Penalty and Mercy Petition?

➢ **Reduction in Delays**: The establishment of dedicated cells and a structured approach for processing mercy petitions will **minimize delays, ensuring timely resolution**. Regular monitoring and prompt listing of cases by Sessions Courts will expedite the process.

○ **Example**: In the *Mukesh Singh vs. NCT of Delhi (2017)* case (also known as **Nirbhaya rape case)** the execution of the Nirbhaya convicts was delayed due to multiple mercy petitions and legal challenges.

➢ **Enhanced Accountability**: Designated officers and **clear responsibilities** for various departments will ensure **transparency and accountability,** making it **easier to track** the progress of cases and petitions.

○ **Example**: In the case of *Shatrughan Chauhan vs. Union of India (2014)*, the Supreme Court criticized the **delay in the execution of death sentences**.

➢ **Legal Support and Human Rights:**

○ The guidelines ensure convicts are informed of their rights and provided legal aid, upholding fairness and constitutional protections under **Article 21.** They align with evolving jurisprudence on capital punishment, focusing on **"rarest of rare" cases** and mitigating factors.

➢ **Strengthened Judicial Oversight**: Sessions Courts must maintain records and ensure timely listing of death sentence cases. Regular **judicial review** and coordination with the **Governor/President** further **safeguard against miscarriages of justice**.

SC Rulings on the Death Penalty
➢ In **Bachan Singh v. State of Punjab, 1980 case,** the SC established the principle of awarding the death penalty only in the **"rarest of rare" cases.**   ○ This dictum implies that capital punishment should be imposed only when the **alternative sentence of life imprisonment is deemed inadequate** due to the extreme nature of the crime.   ➢ In *Jagmohan Singh v. State of UP 1973 case*, SC held that according to **Article 21** deprivation of life is constitutionally permissible if that is done according to the procedure established by law.   ○ Thus the death sentence imposed after a trial in accordance with legally established procedures under CrPC and the **Indian Evidence Act is not unconstitutional under Art. 21.**   ➢ In *Rajendra Prasad v. State of UP 1979 case*, SC held that, if the murderous operation of a criminal jeopardizes social security in a persistent, planned and perilous fashion then his enjoyment of fundamental rights may be rightly annihilated.   ➢ In *Machhi Singh v. State of Punjab 1983 case*, SC laid down certain considerations for determining whether a case falls under the category of rarest of rare cases or not.

Anna Chakra and SCAN for Reforming PDS System

Why in News?

Recently, the Union Minister of Consumer Affairs, Food and Public Distribution and New & Renewable Energy, launched **"Anna Chakra"** and the **SCAN (Subsidy**

Note:

Claim Application for NFSA) portal with the aim to modernize India's **Public Distribution System (PDS)**.

➢ This will enhance the efficiency of the PDS supply chain and streamline the subsidy claim process, benefiting millions of citizens reliant on food security programs.

What is Anna Chakra and the SCAN System?

➢ **About Anna Chakra:**
  ○ Anna Chakra is a pioneering tool for **optimizing the supply chain of the PDS** in India.
  ○ It has been developed in collaboration with the **World Food Programme (WFP)** and the **Foundation for Innovation and Technology Transfer (FITT)** at IIT-Delhi.
  ○ This initiative employs **advanced algorithms to identify optimal routes** for the t**ransportation of food grains**.

➢ **Key Features:**
  ○ **Enhanced Efficiency and Cost Savings**: **Optimizes the PDS logistics network** to ensure **timely delivery of essentials** while achieving **annual savings of Rs 250 crores** through reduced fuel consumption, time, and logistics costs.
  ○ **Environmental Sustainability**: Minimizes transportation-related emissions by reducing transportation distance by **15-50%** and contributing to a **reduced carbon footprint.**
  ○ **Wide Coverage**: Optimization assessment spans **30 states**, benefiting approximately 4.37 lakh **Fair Price Shops (FPS)** and 6,700 warehouses within the PDS supply chain.
  ○ **Seamless Integration**: Linked with the **Railways' Freight Operations Information System (FOIS)** via the **Unified Logistics Interface Platform (ULIP)** and integrated with the **PM Gati Shakti platform**, enabling **geo-location mapping** of FPS and warehouses.

➢ **About SCAN System:**
  ○ The **SCAN** portal is designed to **streamline the subsidy claim process** for states under the **National Food Security Act (NFSA) 2013**.
  ○ It **modernizes PDS operations** for **better fund utilization,** aligns with **government tech initiatives to reduce leakages**, and enhances **food security** for 80 crore people with environmental and economic benefits.

➢ **Key Features:**
  ○ **Unified Platform**: Provides a **single-window system** for states to submit food **subsidy claims,** streamlining the process for all stakeholders.
  ○ **Automated Workflow**: Ensures **end-to-end automation for the release and settlement of subsidies**, enhancing efficiency and transparency.
  ○ **Rule-Based Mechanism**: Utilizes **rule-based processing for claim scrutiny and approval** by the Department of Food and Public Distribution (DFPD), expediting settlements.

What is PDS?

➢ **About:**
  ○ The PDS is an **Indian food Security System** established to **address food scarcity** by **providing foodgrains at affordable prices**
  ○ It operates under the **National Food Security Act (NFSA), 2013,** ensuring **food security for nearly two-thirds of India's population** based on **Census 2011 data.**

➢ **Nodal Ministry:**
  ○ Ministry of Consumer Affairs, Food, and Public Distribution.

➢ **Evolution of PDS:**
  ○ The Public Distribution System (PDS) in India originated during **World War II** as a **wartime rationing measure** and evolved through several phases.
  ○ In the **1960s,** PDS expanded in response to **food shortages,** with the establishment of the **Agriculture Prices Commission** and the **FCI** to ensure **domestic procurement and storage**.
  ○ By the 1970s, PDS became a **universal scheme,** and in **1992,** the **Revamped Public Distribution System (RPDS)** aimed to strengthen and **expand PDS** reach in remote areas.
  ○ The **Targeted Public Distribution System (TPDS)**, launched in **1997**, focused **on the poor** by **categorizing beneficiaries into Below Poverty Line (BPL) and Above Poverty Line (APL)** households.
  ○ The **Antyodaya Anna Yojana (AAY),** launched in **2000,** further targeted the **poorest families**.

Note:

drishti

➢ **Management:**
  ❍ It is **jointly managed by the Central and State/UT Governments**, with distinct responsibilities.
  ❍ The Central Government, via the **Food Corporation of India (FCI)**, handles **procurement, storage, transportation,** and **bulk allocation** of foodgrains.
  ❍ State Governments manage **local distribution, identify eligible households, issue ration cards,** and **supervise Fair Price Shops (FPSs).**

➢ **Commodities Distributed:**
  ❍ PDS primarily provides **wheat, rice, sugar, and kerosene**. Some states also distribute items like **pulses, edible oils, and salt.**

STRUCTURE OF THE PUBLIC DISTRIBUTION SYSTEM IN INDIA
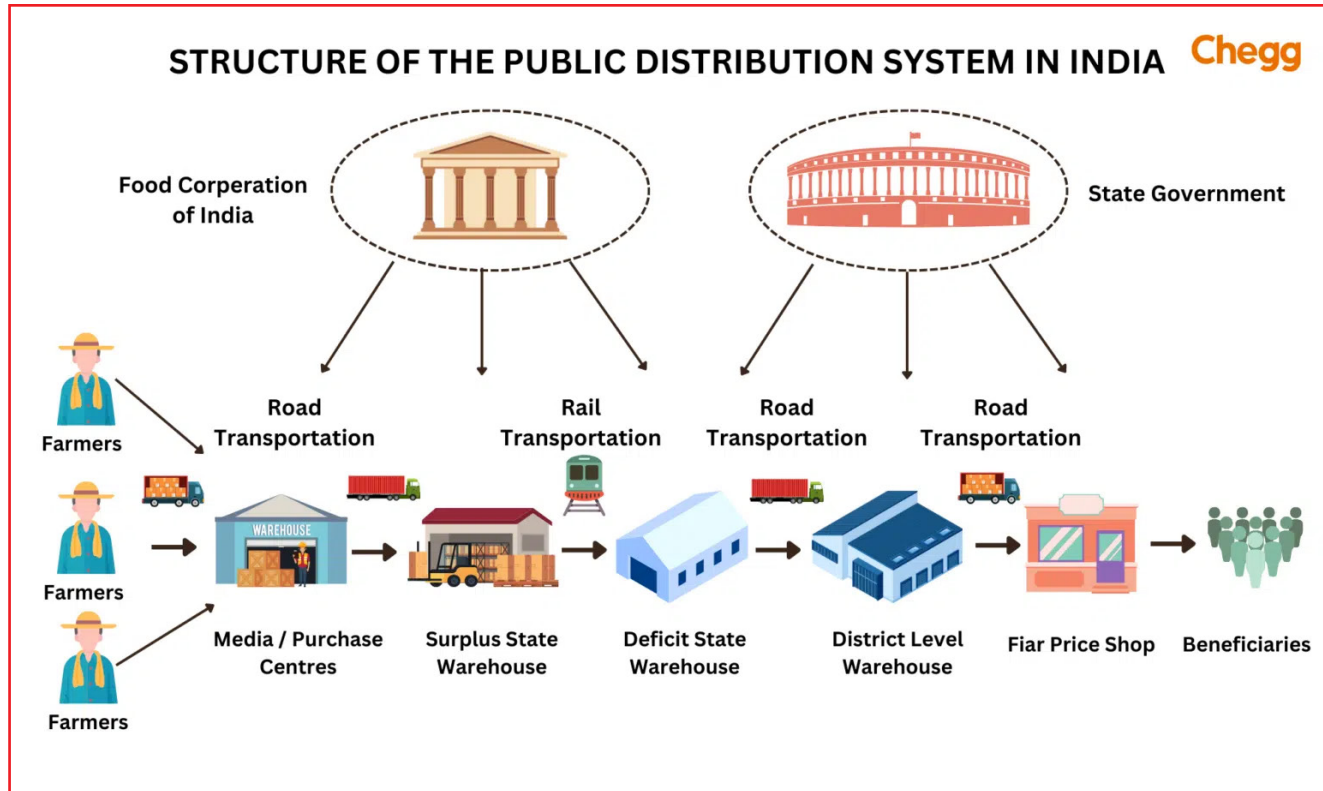
National Food Security Act (NFSA), 2013

➢ **Enacted:** NFSA was enacted on 12th September 2013

➢ **Objective:** The NFSA aims to **ensure food and nutritional security** through a human life cycle approach, providing access to adequate quantities of quality food at **affordable prices,** enabling individuals to **live with dignity.**

➢ **Coverage:** It covers **75% of the rural population and up to 50% of the urban** population under the **Targeted Public Distribution System (TPDS)**, benefiting **67% of India's total population.**

➢ **Eligibility:**
  ❍ **Priority households** as per state government guidelines under TPDS.
  ❍ Households under the existing **Antyodaya Anna Yojana (AAY).**

➢ **Provisions:**
  ❍ **5 kg** of foodgrains per person per month at subsidized rates of **Rs. 3/2/1 per kg for rice/wheat/coarse grains**.
  ❍ AAY households continue to receive **35 kg** of foodgrains per month.

Note:

○ Meal and maternity benefits of at least **Rs. 6,000 for pregnant women** and lactating mothers.

○ **Meals** for children up to 14 years of age.

○ A **food security allowance** for beneficiaries in case of non-supply of entitled foodgrains or meals.

○ **Grievance redressal mechanisms** at the district and state levels.

What Initiatives Have Been Taken to Reform the PDS System in India?

➤ **One Nation One Ration Card (ONORC):**

○ **ONORC** enables **portability of ration cards across the country.** It allows beneficiaries to access subsidized food from **any FPS nationwide,** benefiting **migrant workers and seasonal laborers**.

○ It enhances **inclusivity, transparency, and efficiency** through biometric authentication and digital payments.

➤ **Universal PDS**:

○ Tamil Nadu has implemented a **Universal PDS,** where **every household is entitled to subsidized food grains,** ensuring comprehensive coverage across the state.

➤ **Technology Related PDS Reforms:**

○ **SMART-PDS Scheme:** In 2023, the Government of India approved the **SMART-PDS** scheme for the period **2023-2026.**

● It aims to **maintain and upgrade the technology** used in the **End-to-End Computerization** and **Integrated Management of PDS (ImPDS)**.

○ **Computerized Fair Price Shops (FPS)**: Many **FPS** have been computerized through the installation of **Point of Sale (POS) machines**, which **authenticate beneficiaries** and record the quantity of subsidized grains issued. This automation **reduces the scope for fraud and ensures transparency** in distribution.

○ **Aadhaar and Direct Benefit Transfer (DBT):** **Aadhaar** integration in **TPDS** has enhanced **beneficiary identification, reducing errors and eliminating duplicates**.

● **DBT** ensured **cash transfers to beneficiaries,** offering **flexibility to purchase food grains** from the open market while **reducing reliance on ration shops.**

○ **GPS and SMS Monitoring:** **GPS** tracking has been used to ensure that food grain trucks reach designated FPS without diversion, while SMS alerts notify citizens about the dispatch and arrival of TPDS commodities, promoting transparency and public participation.

Note: The **Supreme Court** appointed **Wadhwa Committee** in **2006** found that states like **Tamil Nadu, Chhattisgarh**, and **Madhya Pradesh** had implemented computerization and other technological measures to streamline the PDS.

➤ These reforms have helped reduce leakages and improve the delivery of food grains.

What are the Challenges Related to PDS?

➤ **Identification of Beneficiaries**: There are significant **inclusion and exclusion errors** in identifying beneficiaries. Many eligible households are left out, while non-eligible households receive benefits.

○ Studies have shown that the PDS suffers from nearly **61% error of exclusion and 25% error of inclusion.**

➤ **Corruption and Leakages**: Corruption and leakages are widespread, with food grains being diverted to the open market or sold at higher prices. This undermines the effectiveness of the system.

○ A recent study by **International Food Policy Research Institute (IFPRI)** and the **Indian Council for Research on International Economic Relations (ICRIER)** highlights that approximately **28% of subsidized grains** meant for the poor in India are **lost to leakage**, resulting in an **estimated financial loss of Rs 69,108 crore** to the government.

➤ **Storage and Distribution**: There is a lack of adequate storage facilities, leading to wastage and spoilage of food grains. Additionally, the distribution network is inefficient, causing delays and losses.

➤ **Quality of Food Grains**: The PDS often distributes **inconsistent and poor-quality food** grains, and its focus on free rice and wheat **fails to meet the diverse nutritional needs,** particularly of children under five.

Note:

Bharatiya Vayuyan Vidheyak Bill 2024

Why in News?

Recently, the **Parliament** passed the **Bharatiya Vayuyan Vidheyak (BVV) Bill, 2024,** which seeks to replace the **Aircraft Act, 1934 (last amended in 2020),** and bring major reforms to the **aviation sector.**

What are the Key Features of the Bharatiya Vayuyan Vidheyak Bill, 2024?

➢ **Aircraft Act 1934:** The Bill retains the provisions from the **Aircraft Act, 1934,** which established the **DGCA (Directorate General of Civil Aviation), BCAS (Bureau of Civil Aviation Security)**, and **AAIB (Aircraft Accidents Investigation Bureau).**

   ○ These bodies will continue to oversee safety, security, and accident investigations, respectively.

   ○ The Bill provides a mechanism for **appeals against the orders of DGCA** or **BCAS to the central government,** which will be the final authority.

➢ **Single Window Clearance:** The BVV Bill, 2024, moves the responsibility for managing **Radio Telephone Operator Restricted (RTR) certifications** from the Department of Telecom (DoT) to the DGCA.

   ○ This change aims to streamline the licensing process for aviation personnel and address **corruption in the DoT's RTR exams,** ensuring more transparency under the DGCA's oversight.

     ● RTR certification, or RTR (A) for aeronautical purposes, is a license certifying a **person's qualification to use radio communication equipment on an aircraft,** primarily for air traffic control communication. It is mandatory for pilots in India.

➢ **Regulation of Aircraft Design:** The Bill empowers the DGCA to regulate not only the manufacture, repair, and maintenance of aircraft but **also the design and locations where aircraft are being designed.**

   ○ With these new powers, the DGCA can ensure more comprehensive and efficient oversight of the aviation sector in India.

➢ **Arbitrator Appointment:** The Bill allows the Central government to **unilaterally appoint an arbitrator** (a person who is or has been qualified for appointment as a **Judge of a High Court**) to resolve compensation disputes related to land acquisition near airports.

What are the Concerns Regarding the BVV Bill, 2024?

➢ **Lack of Independence of DGCA**: The Bill keeps the DGCA under direct government control, unlike independent regulators**, and** the Bill does **not specify the qualifications or tenure of the DGCA head**, which could result in potential conflicts of interest and influence from the central government.

➢ **Arbitration Process Issues**: The unilateral appointment of an arbitrator for compensation disputes may **violate the right to equality under Article 14 of the Constitution,** as it undermines the impartiality and independence of the arbitration process.

   ○ The **Supreme Court** stated that such appointments could **violate the right to equality** due to concerns about impartiality.

   ○ By exempting the Bill from the **Arbitration and Conciliation Act, 1996,** the government risks bypassing standardised arbitration processes, leading to potential inconsistencies in adjudication.

➢ **Penalty Framework:** The Bill allows the **central government to set penalties** for aviation offenses, raising concerns about potential inconsistency and fairness due to executive discretion rather than fixed legal guidelines.

Arbitration and Conciliation Act, 1996

➢ Arbitration is a method of resolving disputes between parties outside of the court system. It's **an alternative dispute resolution (ADR)** method, along with conciliation and mediation.

➢ Arbitration in India is governed and regulated by the **Arbitration and Conciliation Act 1996 (which is amended in 2015, 2019 and 2021).**

   ○ The 2019 Amendment Act aims to establish the **Arbitration Council of India** (ACI) for grading arbitral institutions and accrediting arbitrators. However, ACI has not yet been formally established and operationalized.

What are the Implications of BVV Bill, 2024 for the Aviation Sector?

➢ **Streamlined Licensing**: Bringing RTR certification under DGCA control aims to reduce corruption and delays in the certification process.

Note:

- ➤ **Improved Oversight**: Expanded powers to regulate aircraft design and enforce penalties could enhance safety and compliance.
- ➤ **Regulatory Challenges**: Concerns over the lack of independence for DGCA and government centralization may affect fairness and transparency.
- ➤ **Regulatory Burden on Private Airlines:** Imposes severe penalties for offenses like dangerous flying, with fines up to one crore rupees and imprisonment, though the discretionary power for penalties raises concerns.
  - ❍ New compliance requirements may increase costs for private operators.

What is the Scenario of India's Aviation Industry?

- ➤ **Rapid Growth in Passenger Traffic:** Domestic air traffic in FY23 reached **306.79 million** passengers, a **13.5% YoY growth**, while international traffic rose **22.3%** to **69.64 million** passengers.
  - ❍ India is the third-largest domestic aviation market after the US and China.
- ➤ **Expanding Infrastructure:** Operational airports increased from 74 in 2014 to 157 in 2024, with a goal of 350-400 by 2047.
- ➤ **Fleet Expansion:** Indian carriers added **112 new aircraft** in 2023, bringing the total to **771 planes**, with plans to reach **1,100 by 2027**.
- ➤ **Market and Revenue Growth:** India's aviation revenue is expected to grow by **15-20% in FY24** and **10-15% in FY25**.
  - ❍ Freight traffic showed steady growth, with domestic freight at **1.32 million tonnes** and international freight at **2.04 million tonnes** in FY24.
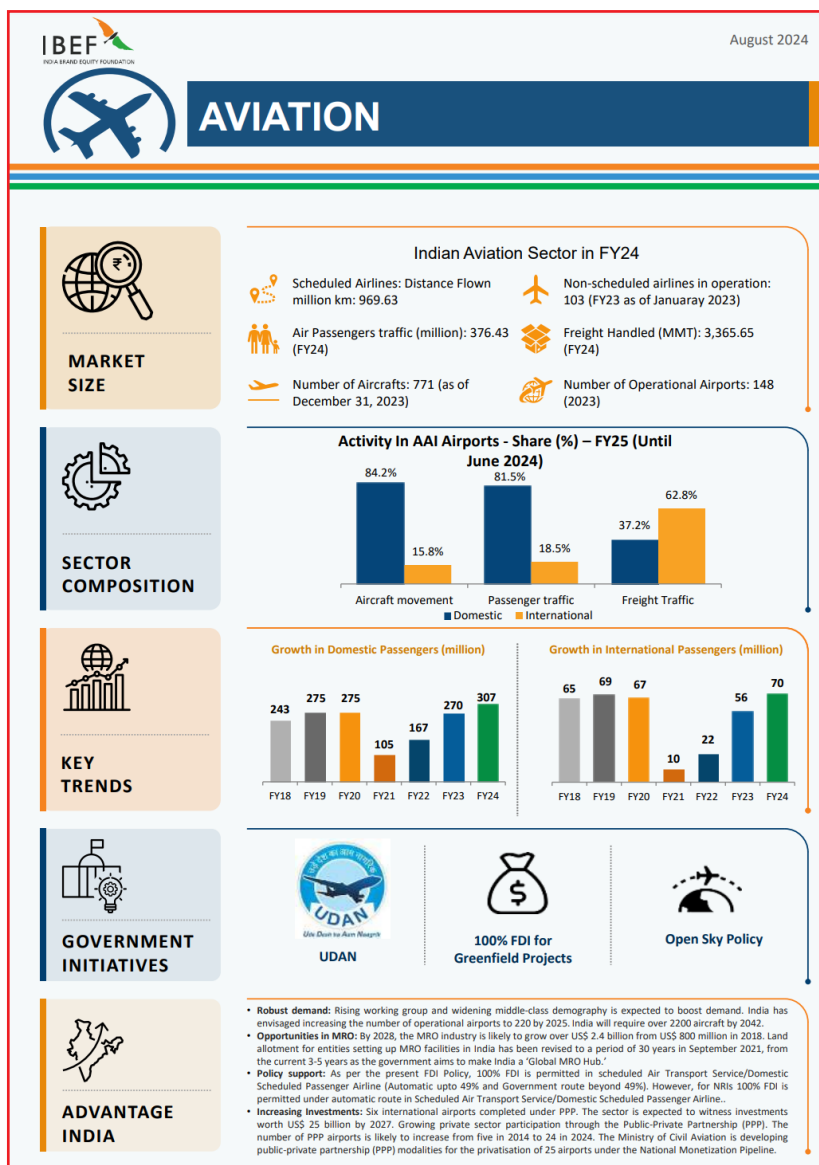
What are India's Initiatives Related to the Aviation Industry?

- ➤ **Policy Interventions:**
  - ❍ **National Civil Aviation Policy 2016:** The **NCAP 2016** aims to make flying accessible to the masses by enhancing affordability and connectivity, promoting ease of doing business, deregulation, simplified procedures, and e-governance.
    - ● The **Regional Connectivity Scheme-Ude Desh Ka Aam Naagrik (UDAN),** is a key component of NCAP 2016.
  - ❍ **UDAN-RCS Scheme:** Aims to improve regional air connectivity; operationalized **519 routes** and benefited over **13 million passengers**.
  - ❍ **FDI Policy:** The Centre allows **100% Foreign Direct Investment(FDI) in aviation sectors** like air transport and Maintenance, Repair, and Overhaul (MRO).

Note:

➢ **Infrastructure Modernization:** Initiatives like **Digi Yatra** and **NABH Nirman** enhance operational efficiency and passenger experience.

- ❍ **21 Greenfield Airport projects** have been approved, with 11 operationalized by 2023 **(Donyi Polo Airport, Itanagar, Arunachal Pradesh is the first greenfield airport in India).**
    - ● Greenfield airports are aviation facilities built from scratch on undeveloped land, designed with **eco-friendly features to minimize environmental impact.**

➢ **Sustainability Efforts:** Airports like Delhi and Mumbai achieved **Level 4+ Carbon Accreditation.**

- ❍ 73 airports fully use **green energy,** with **solar energy**, and new greenfield airports prioritize **net-zero emissions.**

PM's Development Initiative for North East Region (PM-DevINE)

Why in News?

Recently, in a written reply to a question in the **Rajya Sabha**, it was informed that 35 projects worth **Rs. 4857.11 crore**, including seven announced in **Union Budget 2022-23**, have been sanctioned under **PM-DevINE**.
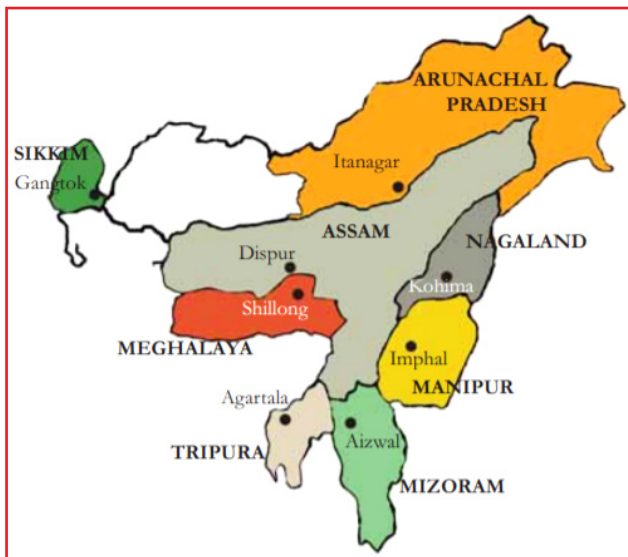
What is PM-DevINE Scheme?

➢ **About: PM-DevINE**, is a **Central Sector Scheme** introduced in the **Union Budget 2022-23** with the aim of promoting rapid and holistic development in the **North East Region (NER)**.

- ❍ The scheme was approved by the Cabinet on **12th October 2022**, with a total financial outlay of **Rs 6600 crore** for the period from **2022-23 to 2025-26**.

➢ **Implementation:** The scheme is implemented by the **Ministry of Development of the North Eastern Region (MDoNER)** to address region-specific developmental needs, ensuring efficient utilisation of resources and coordinated project execution.

➢ **Infrastructure Development**: In line with the scheme's objectives, a total of **17 projects** worth **Rs. 2806.65 crore** have been approved for NER.

- ❍ It aligns with **PM GatiShakti**, focusing on cohesive funding of infrastructure projects to ensure seamless connectivity and accessibility across NER.
- ❍ Prioritises funding for projects that tackle critical social issues and improve the quality of life for residents in NER.
- ❍ Emphasizes creating sustainable livelihood opportunities specifically for youth and women, fostering greater participation in the region's growth.
- ❍ Focuses on bridging developmental disparities in sectors not covered by other schemes, enhancing regional balance.

➢ **Achievements under PM-DevINE:**

- ❍ **35 projects** worth **Rs 4857.11 crore** include initiatives such as cancer care facilities, university infrastructure upgrades, and radiation oncology centers.
- ❍ **Road connectivity projects** have developed new roads, connecting remote villages, reducing travel time, and boosting local economies.
- ❍ **Smart water supply** projects providing integrated drinking water systems have directly benefited over **1 lakh** residents.

➢ **Ineligible Projects:** Excludes projects involving **Direct Benefit Transfers (DBT)** or those providing long-term individual benefits.

- ❍ Projects related to administrative buildings, government offices, or sectors already addressed by existing MDoNER schemes or listed in the **Negative List** are ineligible.

PM–DevINE Scheme Objectives

Development Gaps
Addressing gaps in various sectors

Infrastructure Funding
Funding infrastructure projects in line with PM Gati Shakti

Livelihood Activities
Enabling activities for youth and women

Social Development Projects
Supporting projects based on needs in the NER
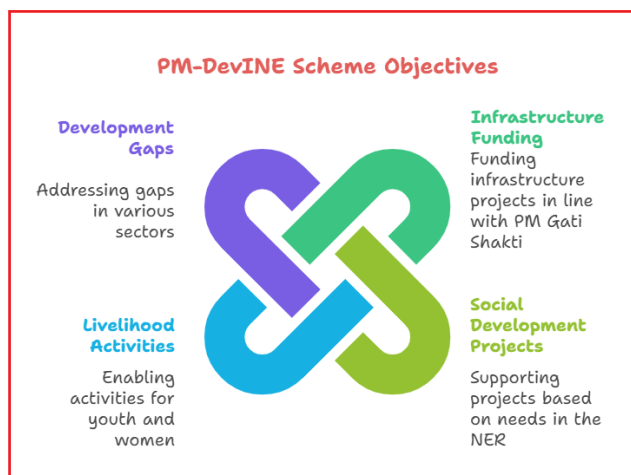
What are Various Development Initiatives and Their Achievements in the North East?

➢ **Infrastructure Initiatives:**

○ **Bharatmala Pariyojana**, **Kaladan Multi-Modal Transit Project**, and **the India-Myanmar-Thailand Trilateral Highway** enhance regional and international connectivity, fostering trade and economic growth for the Northeast Region.

○ **The Regional Connectivity Scheme** under **UDAN** works towards making air travel more affordable and accessible and linking remote areas.

➢ **Industrial Development:**

○ **The North East Industrial Development Scheme (NEIDS) (2017-2022)** provided incentives for MSMEs to stimulate regional employment and industrial growth.

○ **The UNNATI Scheme (2024)** was introduced to enhance industrialization, offering incentives such as capital investment support, interest subventions, and service-linked benefits.

➢ **Agricultural and Environmental Focus:**

○ **The National Bamboo Mission** promotes sustainable bamboo development, while the **North Eastern Region Agri-Commodity e-Connect (NE-RACE)** connects farmers to global markets, enhancing agricultural income.

➢ **Digital and Scientific Innovation:**

○ **The Digital North East Vision 2022** aims to transform lives through digital technologies, while **the North East Science and Technology Cluster (NEST)** promotes grassroots innovations and eco-friendly technological growth.

➢ **Tourism, Cultural, Entrepreneurial Growth:**

○ The **Swadesh Darshan Scheme** develops tourism circuits to highlight the region's natural beauty and cultural heritage, promoting eco-tourism.

○ Major festivals like **Hornbill Festival** and **Pang Lhabsol**, along with the **Ashtalakshmi Mahotsav**, promote regional traditions, handicrafts, and tourism.

PMAY-U 2.0

Why in News?

Recently, on 14th November 2024, the **Ministry of Housing and Urban Affairs (MoHUA)** in partnership with **National Housing Bank (NHB)**, organized a national workshop in New Delhi focusing on the **Pradhan Mantri Awas Yojana – Urban 2.0 (PMAY-U 2.0)** and its **Interest Subsidy Scheme (ISS)**.

What are the Core Themes in PMAY-U 2.0?

➢ **Objective of PMAY-U 2.0:** PMAY-U 2.0 will provide financial aid to **1 crore urban poor and middle-class families** through States/UTs/PLIs for affordable housing in urban areas over five years from **1st September 2024**.

➢ Preference will be given to widows, single women, persons with disabilities, senior citizens, transgenders, Scheduled Castes/Scheduled Tribes, minorities, and other vulnerable sections.

● **Special focus includes** Safai Karmi, street vendors **(PM SVANidhi Scheme)**, artisans **(Pradhan Mantri-Vishwakarma Scheme)**, **Anganwadi workers**, construction workers, slum/chawl residents, and other identified groups**.**

➢ **Workshop Participation:** The workshop was attended by over 250 participants from various banks, **housing finance companies (HFCs)**, and **primary lending institutions (PLIs)**, emphasizing the collaborative effort needed for successful implementation.

➢ **Key Features of PMAY-U 2.0:**

○ The scheme includes four verticals, allowing beneficiaries to choose based on eligibility.

○ The **ISS vertical** provides interest subsidies to **economically weaker sections (EWS),** low-income groups (LIG), and middle-income groups (MIG) on home loans.

Note:

○ The Government assistance under PMAY-U 2.0 will be **upto 2.50 lakh per unit**.

-Beneficiary Led
-Construction (BLC)
- EWS beneficiary to construct house on own land
- Provision of land patta/ rights to the landless by States/UTs
- Geo-tag the construction stages of the house by beneficiaries.
- Release of instalment is linked to construction stage
- Free of cost statutory approvals, if needed
- Upgradation of Tenable Slums with housing infrastructure

-Affordable Housing in Partnership (AHP)
- EWS beneficiary to purchase/avail alloted houses in Apartment projects by public/ private sector agencies/ parastatal agencies
- Redeemable Housing Vouchers for purchase of houses in whitelisted private sector projects
- Various State Incentives to public/private projects
- In-Situ Slum Redevelopment of tenable Slums or Slum Resettlement

Affordable Rental Housing (ARH)
- **Model-1:** Utilizing existing Government funded vacant houses by converting them into ARH under PPP mode or by public agencies.
- **Model-2:** Construct, Operate and Maintain rental housing by Private/Public Entities for urban poor, working women, employees of Industries, Industrial Estates, Institutions and other eligible EWS/LIG families.

Interest Subsidy Scheme (ISS)
- Max. Loan value ₹25 lakh, Max. House Value ₹35 lakh
- 5 Yearly installments of Loan subsidy
- Annual household income:
- EWS - up to ₹3 lakh
- LIG - up to ₹6 lakh
- MIG - up to ₹9 lakh
- EWS/LIG/MIG- Loan Subsidy upto ₹1.80 Lakh

➢ **Role of Financial Institutions:** The Government called upon banks and HFCs to actively participate in this reformative journey towards **achieving the goal of "housing for all"** by 2047, which aligns with India's vision of becoming a developed nation.

What is Pradhan Mantri Awas Yojana?

➢ **The scheme has following two components:**
○ **Pradhan Mantri Awaas Yojana- Gramin (PMAY-G):**
- **Launch:** To achieve the objective of **"Housing for All" by 2022**, the erstwhile rural housing scheme **Indira Awaas Yojana (IAY)** was restructured to **Pradhan Mantri Awaas Yojana-Gramin (PMAY-G)** from 1st April 2016, as a **centrally sponsored scheme**.
- **Ministry Involved:** Ministry of Rural Development.
- **Status:** States/UTs have sanctioned **2.85 crore houses** to the beneficiaries and 2.22 crore houses have been completed till March 2023.
- **Aim:** To provide a pucca house with basic amenities to all rural families, who are homeless or living in **kutcha or dilapidated houses by the end of March 2022**.
   ■ To help rural people **Below the Poverty Line (BPL)** in the construction of dwelling units and upgradation of existing unserviceable kutcha houses by assisting in the form of a full grant.
- **Beneficiaries:** People belonging to **SCs/STs, freed bonded labourers and non-SC/ST categories, widows or next-of-kin of defence personnel killed** in action, ex-servicemen and retired members of the paramilitary forces, disabled persons and minorities.
- **Selection of Beneficiaries:** Through a three-stage validation such as **Socio-Economic Caste Census 2011**, **Gram Sabha**, and **geo-tagging.**

Note:

drishti

- **Cost Sharing:** The **Centre and states share expenses in 60:40 ratio** in case of plain areas, and in **90:10 ratio for northeastern states**, two **Himalayan states** and the **UT of Jammu and Kashmir.**
    - The Centre bears **100% cost in case of other Union Territories,** including the UT of Ladakh.
- ○ **Pradhan Mantri Awas Yojana – Urban (PMAY-U):**
    - **Launch:** Launched on 25th June 2015 it intends to provide housing for all in urban areas by the year 2022.
    - **Implemented by:** **Ministry of Housing and Urban Affairs**
    - **Status:** A total of 118.64 lakh houses have been sanctioned and more than 88.02 lakh are completed/delivered to the beneficiaries.

- **Features:**
    - Addresses Urban housing shortage among the Urban Poor including the **Slum Dwellers** by ensuring a pucca house for eligible urban poor.
    - The Mission covers the entire urban area consisting of **Statutory Towns**, **Notified Planning Areas**, **Development Authorities**, **Special Area Development Authorities**, Industrial Development Authorities or any such authority under State legislation which is entrusted with the functions of urban planning & regulations.
    - The Mission promotes women's empowerment by providing the ownership of houses in the name of female members or in a joint name.

PMAY (U) Features

1. All-weather housing units with Water, Kitchen, Electricity and Toilet
2. Women empowerment
3. Better quality of life for Urban Poor
4. Security of Tenure
5. Adequate physical and social infrastructure
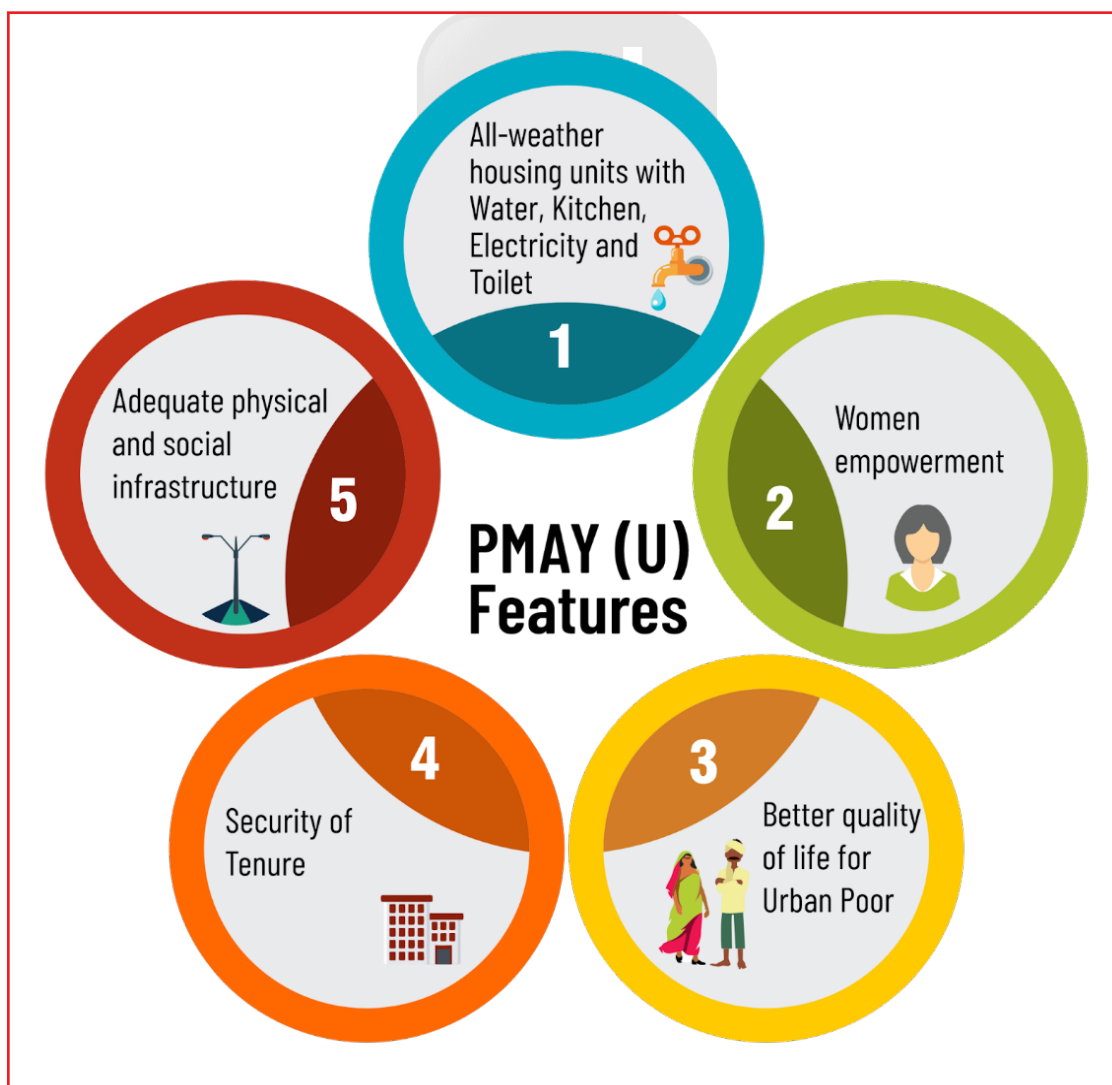
Note:

○ **Scheme Implemented in Four Verticals:**

- **In-situ Rehabilitation** of existing slum dwellers using land as a resource through private participation.

- **Credit Linked Subsidy:** People from **Economically Weaker Section (EWS)**, Low Income Group **(LIG)**, and Middle Income Groups **(MIG-I and MIG-II)** can get interest subsidies of 6.5%, 4%, and 3% on housing loans up to Rs. 6 lakh, Rs. 9 lakh, and Rs. 12 lakh respectively for buying or building houses.

- **Beneficiary-led Individual House Construction/ Enhancement:** Central Assistance upto **Rs. 1.5 lakh per EWS house** is provided to eligible families belonging to EWS categories for individual house construction/ enhancement.

What are the Socio-Economic Implications of PMAY-U 2.0?

➢ **Affordable Housing Access:** PMAY-U 2.0 is expected to significantly increase access to **affordable housing for urban poor and middle-class families,** enhancing their quality of life.

➢ **Economic Boost:** By facilitating home ownership, the **scheme can stimulate economic growth through increased construction** activities and related job creation in the housing sector.

➢ **Social Inclusion:** The initiative promotes **social equity by providing housing** solutions to marginalized communities, thus contributing to inclusive urban development.

➢ **Impact on Urban Infrastructure:** Improved housing can **lead to better urban infrastructure** as more families **gain access to basic amenities**, contributing to overall urban planning efforts.

What Strategies Can Enhance the Implementation of PMAY-U 2.0?

➢ **Strengthening Monitoring Mechanisms:** Establish **robust monitoring systems** to track the progress of housing projects and ensure timely disbursement of subsidies.

➢ **Public Awareness Campaigns:** Launch awareness programs to educate potential beneficiaries about the scheme's benefits and application processes, ensuring wider participation.

➢ **Capacity Building for Financial Institutions:** Provide training for staff at banks and HFCs on the specifics of PMAY-U 2.0, enabling them to assist applicants effectively.

➢ **Leveraging Technology:** Utilize technology through a **unified web portal that simplifies application processes, tracks status updates**, and facilitates communication between stakeholders.

➢ **Collaboration with State Governments:** Foster partnerships between central and state governments to align efforts towards achieving housing targets effectively.

Profit-Oriented Research and R&D Challenges in India

Why in News?

In May 2024, **Google DeepMind** released **AlphaFold 3,** an **Artificial Intelligence (AI)** tool for **predicting protein structures.** Unlike its previous **open-source versions,** AlphaFold 3's full code was withheld, preventing scientists from fully understanding its workings or replicating its results.

➢ This decision has sparked discussions about the **growing influence of for-profit funding(**investors seeking profit**) in scientific research,** creating tensions between **transparency and intellectual property protection**, and highlighting challenges in India's research and development ecosystem.

How Does Commercialisation Influence Scientific Research?

➢ **Positive Impacts:**

○ **Funding and Resources:** For-Profit Companies fund research, providing access to advanced facilities and driving innovation, as seen in pharmaceutical trials like **Bharat Biotech's intranasal vaccine**.

○ **Faster Development:** Commercial incentives speed up technology development, with academia-industry collaboration driving breakthroughs in gene editing technologies like **CRISPR** advancing medicine and agriculture.

○ **Practical Applications:** Research with commercial backing often focuses on real-world applications,

Note:

leading to **tangible benefits** such as medical breakthroughs or developments of new **large language models (LLM)** like **Chat GPT.**

➢ **Negative Impacts:**
  ❍ **Global Inequality in Research Access**: Wealthier institutions have a **competitive edge,** while underfunded researchers **face innovation barriers.**
    ● Limited open-source tools hinder access in low-resource settings.
  ❍ **Blurred Lines Between Academia and Industry**: Increasing collaborations between corporations and universities **challenge traditional academic norms of openness and independence.**
    ● Companies often use academic platforms to legitimize restricted discoveries, raising concerns about fairness and ethical practices.
  ❍ **Trust and Scientific Integrity**: Open sharing of methodologies ensures robust testing and trust in scientific outputs, while withholding details creates a **"black box,"** which may compromise the reliability and adoption of scientific advances.
  ❍ **Ethical Concerns:** Commercial pressures can sometimes lead to unethical practices, such as exploiting **Intellectual property (IP) patents, prioritizing profit over public good**, or compromising research integrity.

What Can be Done to Balance Transparency with Commercial Interests?

➢ **Open-Source Models with Enterprise Versions**: Researchers can share **foundational discoveries openly** while commercializing advanced applications for industry use (e.g., algorithms shared openly but bundled with proprietary tools).
  ❍ Encouraging **public-private partnerships** enables researchers to maintain transparency while leveraging industry resources, with companies providing unrestricted funding for **broader research and reserving IP protections for specific commercial projects.**
➢ **Public Funding as a Catalyst**: Increased government funding reduces reliance on private sponsors, allowing more open research.
➢ **IP Laws and Secrecy:** Reform IP laws to balance commercial protection with scientific openness, enabling both innovation and public access.

  ❍ Subsidies for essential commercial products (e.g., **Covid-19 vaccines**) can also ensure affordability while maintaining IP protection.
  ❍ Policymakers should **establish guidelines to balance openness** with IP rights, promoting fair citation and transparency in funded research.
➢ **Rewards for Open Science:** Scientists prioritizing transparency should receive institutional support, funding, and recognition.

What is the Current Scenario of Research & Development (R&D) in India?

➢ **Global Innovation Index (GII)**: India's secured rank of 39th in the **GII 2024** among 133 economies underscores the country's increasing focus on R&D across sectors like biotechnology, space exploration, quantum technology, and renewable energy.
➢ **World Intellectual Property Indicators (WIPI):** According to the **WIPI 2024, India holds the 6th position** in patents filed, demonstrating progress in innovation.
➢ **Scientific Publications:** As of 2022, India ranks **3rd globally in scientific publications** and scholarly output **(India's research output surged by 54% from 2017 to 2022),** highlighting its growing presence in global research.
➢ **Biotechnology**: India demonstrated its R&D prowess during the Covid-19 pandemic with the development of indigenous vaccines like **Covaxin.**
➢ **Renewable Energy**: India has made remarkable progress in renewable energy, especially **solar** and **green hydrogen** technologies, with record-low solar power costs and pioneering projects like the **Kayamkulam Floating Solar Power Plant.**
➢ **Quantum and Supercomputing Technologies**: India is also making strides in quantum technologies and supercomputing, with initiatives like the **National Quantum Mission** and the development of the **PARAM Siddhi-AI supercomputer.**
➢ **Telecommunications: India's Own 5G Technology(5Gi)** and **Bharat 6G Project**, are positioning India as a leader in telecommunications research.

What are the Challenges in India's R&D Ecosystem?

➢ **Low Budget Allocation**: India spends **less than 1% of its Gross Domestic Product (GDP) on R&D,** far below

Note:

global averages like the US (2.8%), and China (2.1%). This hampers research infrastructure development and restricts high-impact research capacity.

➤ **Inclusivity Issues**: Socio-cultural barriers and <u>**gender disparities**</u> have led to a lack of inclusivity in India's R&D activities.

    ❍ **Women, for example, are underrepresented in <u>Science, Technology, Engineering and Mathematics (STEM)</u>** fields and face hurdles in accessing research opportunities.

      ● This not only limits the talent pool but also hinders diversity in research perspectives, which is crucial for fostering innovation.

➤ **Education System**: India's educational system faces challenges for R&D growth, **with low Ph.D. enrollment**, and insufficient monitoring of research projects.

    ❍ The focus on **rote learning and a disconnect between academics** and **industry needs** hinder the development of research skills.

➤ **Quality vs. Quantity:** India publishes many research papers, but their quality is a concern due to low citation rates.

➤ **Brain Drain**: India faces a significant <u>**"brain drain**</u>," **with top researchers migrating abroad for better opportunities.**

    ❍ India has 216.2 researchers per million people, far behind China (1200) and the US (4300), due to low salaries, limited funding, and inadequate infrastructure, hindering R&D competitiveness**.**

➤ **Translating Research into Technology**: India struggles to **convert basic research into successful technologies due** to a focus on fundamental research, weak industry-academia ties, and inefficient technology transfer systems.

India's Initiatives Related to Research and Development
➤ <u>**Vigyan Dhara Scheme**</u>
➤ <u>**Rashtriya Vigyan Puraskar (RVP)**</u>
➤ <u>**Science, Technology, and Innovation Policy 2020**</u>
➤ <u>**VAIBHAV Fellowship**</u>
➤ <u>**National Research Foundation**</u>
➤ **AICTE - Research Promotion Scheme (RPS):** Introduced by <u>**All India Council for Technical Education (AICTE)**</u> in order to promote research in identified thrust areas of technical education.

Demand for Holding Parliament Sessions Outside Delhi

Why in News?

Recently, a YSR Congress <u>**Member of Parliament (MP)**</u> proposed the idea of conducting **two Parliament sessions every year in south India** highlighting the logistical and climatic challenges faced by MPs during the harsh winters and scorching summers in Delhi.

➤ The idea, which has historical support from figures like **B.R. Ambedkar and Atal Bihari Vajpayee**, are now under fresh scrutiny.

What was the Previous Demand for Holding Parliamentary Sessions Outside Delhi?

➤ Idea Supported by Dr. B.R. Ambedkar:

    ❍ The idea of decentralizing parliamentary sessions was proposed by **Dr. B.R. Ambedkar** who suggested holding sessions outside Delhi.

    ❍ **Dr. B.R. Ambedkar**, in his book "***Thoughts on Linguistic States***", proposed two capitals, arguing that **Delhi is most inconvenient to the people of South** due to **cold and distance**, making them **feel ruled by the North**.

    ❍ He also highlighted **Delhi's vulnerability to attacks**, being within bombing range of neighboring countries, as a critical defense concern.

    ❍ He proposed **Hyderabad as a second capital** for India, particularly for summer months, citing its central location and suitability for year-round parliamentary sessions, unlike Delhi's extreme climate.

➤ **Private Member's Resolution:**

    ❍ In November 1959, Independent Gurgaon **MP Prakash Vir Shastri** introduced a **Private Member's Resolution** that proposed **holding a Session of the Lok Sabha in South India,** suggesting Hyderabad or Bangalore.

    ❍ **Atal Bihari Vajpayee**, who was then a first-time MP **backed the proposal,** saying it had "been made to strengthen the unity of the country" and shouldn't be looked at through a "political prism".

Note:

Constitutional Status of Holding Parliament Sessions

➢ The **Constitution of India does not mandate** a specific location for holding Parliamentary sessions.

➢ **Article 85** of the Indian Constitution empowers the **President** to summon each House of **Parliament at such time and place as deemed fit**, ensuring that no more than six months elapsed between two sessions.

➢ However, traditionally, all sessions are held at the Parliament House in New Delhi, the nation's capital.

What are the Arguments for Holding Parliament Sessions Outside Delhi?

➢ **Enhanced Regional Representation:** Holding sessions in South India could enhance the visibility and representation of southern states in national policy making.

  ○ It would symbolize a commitment to inclusivity, ensuring that the voices from all regions are heard and considered.

➢ **Climate Considerations:** The extreme weather conditions in Delhi can hinder effective governance. A **more favourable climate could lead to better health and productivity** among MPs, thereby i**mproving legislative efficiency.**

➢ **Decentralization of Power:** This initiative could be a step towards **decentralizing political power, aligning with the democratic principle** that governance should be accessible to all citizens, regardless of their geographical location.

➢ **Historical Precedent:** The **support from historical figures** for similar proposals **lends credibility to the current initiative,** suggesting that this is a longstanding concern that merits serious consideration.

What Challenges Might Arise from Shift?

➢ **Logistical Hurdles:** Relocating parliamentary machinery, infrastructure, and personnel to another region would be **complex and resource-intensive.**

  ○ This has been termed as "tedious" and wastage of time and resources by critics.

➢ **Political Polarization:** Critics argue that this move might deepen the **North-South divide** by reinforcing regional identities over national unity.

➢ **Institutional History:** Parliament has operated from Delhi for over 75 years without impacting southern states' integration into the Union. Critics suggest that existing mechanisms are sufficient for regional representation.

What are the Countries with Multiple Capitals?

➢ **South Africa:** South Africa operates with three capitals—**Pretoria (administrative), Cape Town (legislative), and Bloemfontein (judicial)**. This division geographically decentralizes power, promotes regional representation, and reflects the country's diverse cultural and historical contexts.

➢ **Malaysia's Dual Capitals:** Malaysia has **Kuala Lumpur as its administrative** capital and **Putrajaya as the administrative and judicial hub**. The development of Putrajaya as a planned city has eased congestion in Kuala Lumpur while providing a more organized setting for government functions.

➢ **Switzerland's Decentralized Model:** Switzerland designates **Bern** as its federal city while maintaining a decentralized political structure. This system ensures significant regional autonomy, balancing the interests of its diverse linguistic and cultural groups, fostering national harmony.

➢ **Australia's Purpose-Built Capital: Canberra,** purpose-built and strategically located between **Sydney and Melbourne**, serves as Australia's capital. This decision ensured neutrality and unity between the two largest cities, reflecting thoughtful planning for national governance.

Rising Road Accidents in India

Why in News?

Recently, data from the Union Ministry of Road Transport and Highways has highlighted the severity of India's road safety challenges, showing a rise in road accidents and fatalities despite the **government's commitment to reduce road accident deaths by 50% by 2030**.

What is the Current State of Road Accidents in India?

➢ **Total Accidents and Fatalities:**

  ○ India records the **highest number of road accident fatalities globally** with a reported **road death rate**

Note:

of 250 per 10,000 km, higher than the rates in the United States (57), China (119) and Australia (11).

❍ In 2023, India recorded over **4.80 lakh road accidents** which resulted in over **1.72 lakh deaths**, marking a **2.6% increase** compared to 1.68 lakh fatalities in **2022**.

❍ In 2023, around **54,000 fatalities** occurred due to two-wheeler riders **not wearing helmets**, 16,000 deaths were linked to **non-use of seat belts**, and 12,000 fatalities were attributed to **vehicle overloading**.

● Additionally, around 34,000 accidents involved **drivers without valid licenses.**

➢ **Accident Rate:**

❍ The number of **crashes increased by 4.2%** in 2023 as compared to 2022.

❍ On average, India experienced 1,317 road crashes and 474 fatalities each day, translating to **55 crashes and 20 fatalities every hour.**
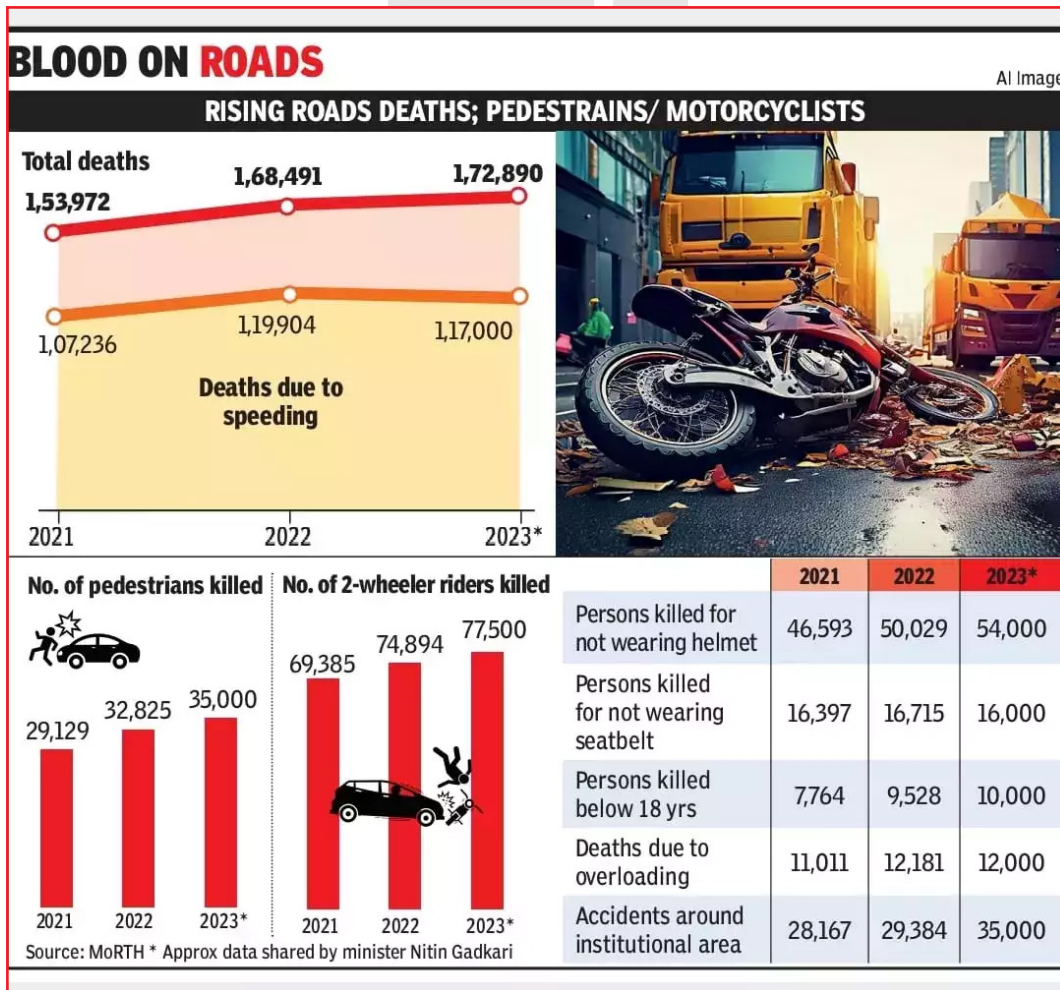
❍ The **road crash severity,** measured as fatalities per 100 crashes, **marginally declined from 36.5 in 2022 to 36 in 2023.**

➢ **Demographic Insights:**

❍ In 2023, India saw **10,000 minors and 35,000 pedestrians** killed in road accidents.

❍ **Pedestrians** and **two-wheeler users** account for a significant proportion of deaths **44.8%** and **20%**, respectively.

➢ **Regional Disparities:**

❍ **Uttar Pradesh (UP)** has the **highest number of road accident deaths in India**.

● In 2023, UP saw 44,000 accidents resulting in 23,650 fatalities, including 1,800 minors, 10,000 pedestrians, and two-wheeler users.

❍ Over-speeding contributed to 8,726 deaths.

BLOOD ON ROADS   AI Image

RISING ROADS DEATHS; PEDESTRAINS/ MOTORCYCLISTS

Total deaths
1,53,972 — 1,68,491 — 1,72,890

Deaths due to speeding
1,07,236 — 1,19,904 — 1,17,000

2021   2022   2023*

No. of pedestrians killed
29,129 (2021)   32,825 (2022)   35,000 (2023*)

No. of 2-wheeler riders killed
69,385 (2021)   74,894 (2022)   77,500 (2023*)

Source: MoRTH * Approx data shared by minister Nitin Gadkari

	2021	2022	2023*
Persons killed for not wearing helmet	46,593	50,029	54,000
Persons killed for not wearing seatbelt	16,397	16,715	16,000
Persons killed below 18 yrs	7,764	9,528	10,000
Deaths due to overloading	11,011	12,181	12,000
Accidents around institutional area	28,167	29,384	35,000

Note:

What are the Causes for High Road Accidents in India?

- ➢ **Human Behavior**: A primary cause of road accidents in India is human error, particularly **reckless driving and over-speeding**
  - ❍ **Over-speeding** was responsible for **68.1%** of deaths in 2023.
  - ❍ Additionally, **non-compliance with traffic laws** such as **not wearing helmets and seat belts** has led to thousands of fatalities.
- ➢ **Infrastructure Deficiencies**: Road design flaws, such as **potholes, lack of proper underpasses, foot overbridges,** and **poorly maintained roads**, significantly contribute to accidents.
- ➢ **Lack of a Crash Monitoring System:** The national road safety data systems in India are inadequate for informing public policy. At present, there is **no national database at the crash level** for detecting accidents.
- ➢ **Vehicle-Related Issues**: Inadequate safety features in vehicles, such as **substandard engineering and old technology**, also contribute to the high fatality rate.
  - ❍ Crash tests conducted by the **Global New Car Assessment Programme (NCAP)** in 2014 showed that several of India's best-selling car models **did not pass the frontal impact crash test** set by the **United Nations (UN).**
- ➢ **Lack of Awareness and Enforcement**: Despite interventions, India still faces **significant gaps in enforcing road safety regulations**.
  - ❍ Many Indians have limited knowledge about the importance of safety features such as **airbags, anti-lock braking systems,** and the proper use of **seat belts.**
  - ❍ Public awareness campaigns, though ongoing, have **not been able to instill a consistent culture of road safety.**

What are the Initiatives For Road Safety in India?

- ➢ **Government Initiatives:**
  - ❍ **National Road Safety Policy (NRSP),** 2010 as per **S Sundar Committee**.
    - Development of a **Road Safety Information Database** and **National Road Safety Council**.

- ❍ **Motor Vehicles Amendment Act, 2019**
- ❍ **The Carriage by Road Act, 2007**
- ❍ **The Control of National Highways (Land and Traffic) Act, 2000**
- ❍ **National Highways Authority of India Act, 1998**
- ❍ **Third High Level Global Conference on Road Safety for Achieving Global Goals 2030**
- ➢ **Supreme Court's Intervention:**
  - ❍ **The Supreme Court of India** had set up the three-member **Justice K.S. Radhakrishnan** panel on road safety in **April 2014** which recommended the **ban on the sale of alcohol on highways** to restrain drunk driving.
    - It also directed states to **implement laws on wearing helmets**.
  - ❍ The SC in 2017, issued a number of **directives** with regard to road safety and included measures like constitution of a **State Road Safety Council, road safety fund,** constitution of a **district road safety committee** and Inclusion of road safety education in the **academic curriculum of schools.**
- ➢ **Global Initiatives:**
  - ❍ **Brasilia Declaration on Road Safety (2015):** This declaration aims to achieve **Sustainable Development Goal (SDG) 3.6**, which targets a **50% reduction in global deaths and injuries** from road traffic accidents **by 2030.**
    - It was **signed by India in 2015**.
  - ❍ **Decade of Action for Road Safety 2021-2030: UN's Second Decade of Action for Road Safety 2021-2030** focuses on **reducing road traffic deaths and injuries by at least 50% by 2030** through a global resolution to improve road safety.
    - The Global Plan aligns with the **Stockholm Declaration,** by emphasizing the importance of a holistic approach to road safety.
  - ❍ **Bloomberg Initiative for Global Road Safety (BIGRS) 2020-2025:** This initiative targets **reducing road traffic fatalities and injuries in low- and middle-income countries** and cities by implementing a range of **proven, life-saving measures.**

Note:

drishti

Sundar Committee Recommendations on Road Safety

The Sundar Committee recommended several key measures to improve road safety in India:

➤ **National Road Safety & Traffic Management Board:** Creation of an **apex body at the national level** through a Parliamentary Act, comprising **experts from road engineering, automobile engineering, traffic laws**, and **medical care**.

➤ **State Road Safety & Traffic Management Boards:** Establishment of **similar boards** at the **state and union territory levels** to coordinate with local authorities on road safety and traffic management.

➤ **National Road Safety Plan:** Development of a **comprehensive plan with targets**, strategies, and actions to reduce accidents and fatalities.

➤ **Post-Accident Care:** Improvement of trauma management and establishment of a national accident database for data collection and analysis.

➤ **Funding:** Earmarking **1% of the total cess** proceeds on diesel and petrol for a Road Safety Fund.

Rashtriya Gokul Mission

Why in News?

Recently, the Ministry of Fisheries, Animal Husbandry & Dairying highlighted the role of the **Rashtriya Gokul Mission (RGM)** in the conservation of **indigenous bovine breeds** and the enhancement of milk production in the **Lok Sabha.**

What is the Rashtriya Gokul Mission?

➤ **About:** The RGM was launched in 2014 for the development and conservation of indigenous bovine breeds.

○ The mission continues as part of the **Rashtriya Pashudhan Vikas Yojna** for the period **2021 to 2026** with a budget outlay of Rs. 2400 crore.

➤ **Need:** The decline of indigenous bovine breeds, like **Punganur(**Andhra Pradesh**),** threatens valuable genetic resources. These breeds are **climate-resilient, produce high-quality milk, and adapt well to local environments,** highlighting the need for preservation efforts.

➤ **Objectives:** RGM aims to boost bovine productivity, promote high-quality breeding, strengthen **Artificial Insemination (AI)** services.

➤ **Components of RGM:**

○ **High Genetic Merit**: Enhances **genetic merit through bull production** via **progeny testing, Pedigree Selection and genomic selection, and germplasm import.**

   ● It strengthens **semen stations,** implements **in vitro fertilization (IVF) technology for assured pregnancies,** and sets up breed multiplication farms to scale genetic improvement in livestock.

○ **Artificial Insemination Network**: Promotes establishment of **Multi Purpose Artificial Insemination Technicians in Rural India (MAITRIs)** to expand nationwide AI access.

   ● RGM implements the **National Digital Livestock Mission,** to improve data management and service delivery.

○ **Conservation of Indigenous Breeds**: Support for **Gaushalas** for the care and preservation of indigenous cattle.

○ **Skill Development and Awareness:** Focuses on skill development through **capacity-building programs, raising farmer awareness**, and supporting **research and innovation** in bovine breeding.

➤ **Funding Pattern:** The components of the RGM are largely funded by a **100% grant-in-aid basis**, with some specific components involving partial subsidies (e.g., IVF pregnancies, sex sorted semen, breed multiplication farms).

➤ **Key Initiatives Under RGM:**

○ **Gokul Grams**: indigenous cattle, called Gokul Grams for the promotion and conservation of indigenous breeds.

○ **Awards for Farmers**: **Gopal Ratna Award** and **Kamdhenu Award** to recognize exemplary management of indigenous cattle and herds.

○ **National Kamdhenu Breeding Centre**: A center for scientific conservation and development of indigenous breeds. It functions as a national repository of **germplasm(genetic material)** of Indigenous Breeds of the country

○ **E-Pashu Haat – Nakul Prajnan Bazaar**: An e-market portal connecting breeders and farmers.

Note:

○ **National Bovine Genomic Center**: A center for genomic enhancement to select high-merit bulls using gene-based technology.

Artificial insemination
➢ AI is a reproductive technology that involves manually introducing sperm into a female's reproductive tract to achieve pregnancy.

Other Initiatives Related to Livestock Sector
➢ Animal Husbandry Infrastructure Development Fund (AHIDF)
➢ National Animal Disease Control Programme
➢ National Artificial Insemination Programme

One Rank One Pension (OROP)

Why in News?

Recently, the Prime Minister commemorated the implementation of the **One Rank One Pension (OROP) scheme**. The scheme was **officially implemented on 7th November 2015**, with **benefits effective from 1st July 2014**.

➢ OROP aims to **provide uniform pension benefits to armed forces personnel** based on their **rank and length of service**, reaffirming the government's commitment to veterans and their families.

What is OROP?

➢ **Background:**
  ○ **The K.P. Singh Dev Committee (1984)** recommended addressing 'One Rank One Pension', based on the established pension principles for **Supreme Court** and **High Court judges**.
  ○ **The 4th Central Pay Commission** found equalizing pensions challenging, requiring major administrative efforts without ensuring consistent benefits for all pensioners.
  ○ **The 5th Central Pay Commission opposed 'One Rank One Pension',** arguing that additional benefits shouldn't extend to pensioners due to changes in job roles and qualifications.
  ○ **The Cabinet Secretary Committee (2009)** rejected 'One Rank One Pension', but suggested measures to reduce the pension disparity between retirees.

➢ **The Rajya Sabha Petition Committee** recommended the implementation of 'One Rank One Pension' for all Defence Forces personnel.

➢ **Definition:** OROP ensures that **all armed forces personnel retiring at the same rank receive the same pension**, regardless of their retirement date. Eg, a General who retired in the year 1980 will be receiving the same pension as a General who retired in the year 2015.
  ○ OROP addresses long-standing demands from veterans for equitable pension distribution, recognising their sacrifices and service to the nation.

➢ **Key Features of OROP:**
  ○ **Pensions are determined by rank and length of service**, ensuring fairness among retirees, while also protecting those already receiving above-average amounts.
  ○ **Pension Revision:** The pension will be **re-fixed every five years** to account for changes in salaries and pensions of serving personnel. The first revision took place on **1st July 2019.**
  ○ **Financial Implications:** The estimated cost for implementing OROP revisions is approximately **Rs 8,450 crore annually**.
  ○ **Beneficiaries:** Over **25.13 lakh armed forces pensioners** and their families will benefit from this scheme.
    ● Includes provisions for **family pensioners, war widows, and disabled pensioners.**
    ● **Uttar Pradesh and Punjab** have the highest number of OROP beneficiaries.

➢ **Supreme Court Ruling on OROP:**
  ○ The **Supreme Court** in *Indian Ex-Servicemen Movement v Union of India Case*, **affirmed the constitutional validity of the OROP** scheme, determining that different pensions for personnel of the same rank based on their retirement dates are not arbitrary.
    ● It emphasized that differences in pensions arise from various factors such as **Modified Assured Career Progression (MACP)** and base salary calculations.

Note:

What are the Socio-Economic Implications of OROP?

➢ **Welfare Enhancement:** OROP significantly **improves the financial security of veterans** and their families, contributing to their overall well-being.

➢ **Economic Impact:** Increased pensions can lead to **higher disposable income** for veterans, stimulating local economies through increased spending.

➢ **Social Recognition:** Implementing OROP serves as a public acknowledgment of the sacrifices made by armed forces personnel, fostering a sense of pride and respect within society.

➢ **Uniform Pension:** Ensures equal pensions for personnel retiring in the same rank with the same length of service, irrespective of retirement date.

  ○ Pension is **re-fixed every five years** to keep up with current standards.

What are the Issues in Implementation of the OROP Scheme?

➢ **High Cost**: Implementation cost is significantly higher than initially estimated, impacting the exchequer.

  ○ **Example**: Initially estimated at Rs. 500 crore, the actual cost is between Rs. 8000-10000 crore.

➢ **Administrative Challenges**: Difficulties in retrieving and verifying past records for eligible personnel.

  ○ **Example**: Challenges in accessing historical service records to provide accurate benefits.

➢ **Complex Implementation**: Administrative, financial, and legal complications in executing the scheme effectively.

  ○ **Example**: Legal and logistical issues in ensuring seamless delivery of pension benefits to all eligible individuals.

NMCM and Monuments of National Importance

Why in News?

Recently, the Ministry of Culture highlighted the progress made under the **National Mission on Cultural Mapping (NMCM)** and India's efforts to protect **Monuments of National Importance (MNI).**

➢ These initiatives aim to document the country's rich cultural heritage, revitalize rural economies, and ensure the preservation of historical sites for future generations.

What is the National Mission on Cultural Mapping (NMCM)?

➢ **About:** The NMCM, launched in 2017 by the Ministry of Culture, aims to **document, preserve, and promote India's cultural heritage** by creating a comprehensive **database of cultural assets, artists, and art forms** to enhance cultural vibrancy nationwide.

➢ **Key Objectives:** Define and document the unique cultural characteristics of each village.

  ○ Launch cultural awareness programs like **"Hamari Sanskriti Hamari Pahchan" (Our Culture, Our Identity).**

  ○ Utilise cultural mapping to empower rural communities and boost economic development.

  ○ Establish a **National Cultural Working Place (NCWP) portal** for information sharing, participation, performance, and awards across all art forms.

  ○ Identify locations for **Kala Grams, Craft Melas, and other cultural hubs** for idea exchange and promotion of cultural tourism.

➢ **Implementation:** NMCM is administered by the Ministry of Culture and executed under the guidance of the **Indira Gandhi National Centre for the Arts (IGNCA).**

  ○ **Common Services Centres (CSC) e-Governance Services India Limited (CSC),** a special purpose vehicle (SPV) under the **Ministry of Electronics & IT (Meity),** is given the task by the Ministry of Culture to carry out the NMCM.

➢ **Mera Gaon Meri Dharohar (MGMD):** NMCM in 2023 as part of **Azadi Ka Amrit Mahotsav,** launched the **Mera Gaon Meri Dharohar (MGMD) portal** that documents the cultural heritage of 6.5 lakh villages in India.

  ○ Under the MGMD, information is collected in **seven broad categories.**

    ● Arts and Crafts Village,

    ● Ecologically Oriented Village,

    ● Scholastic Village linked with Textual and Scriptural Traditions of India,

Note:

drishti

- Epic Village associated with the Ramayana, Mahabharata, and/or Puranic legends,

- Historical Village connected to Local and National History,

- Architectural Heritage Village,

- Any other characteristics that may need highlighting, such as fishing villages, horticulture villages, shepherding villages, etc.

○ Currently, **4.5 lakh villages live on the portal**, showcasing elements like oral traditions, art forms, food, festivals, and local landmarks.

○ The initiative strengthens cultural identity, empowers rural communities, and promotes economic development through the documentation and promotion of cultural assets.

CSC e-Governance Services India Limited

➤ CSC e-Governance Services India Limited, SPV set up under the **Companies Act, 1956** oversees the implementation of the CSC scheme, providing a framework for service delivery to citizens.

○ The vision of CSC is to create an Information technology (IT)-enabled network connecting **local populations with essential services,** promoting a socially, financially, and digitally inclusive society, especially in rural areas.

Cultural Mapping

➤ Cultural mapping records the unique cultural aspects of a region, including **local stories, rituals, arts, languages, heritage, and cuisines, defining local culture.**

○ It documents both **tangible and intangible assets** to create cultural resource mapping.

What are Monuments of National Importance?

➤ **Monuments of National Importance:** Monuments are remnants of India's rich past, showcasing culture, art, and architecture.

○ They include a variety of sites such as **prehistoric locations, rock-shelters, temples, churches, mosques, tombs, forts,** and more, representing our diverse cultural heritage across the country.

○ The **Ancient Monuments and Archaeological Sites and Remains (AMASR) Act, 1958 (amended in 2010),** provides for the declaration, conservation, and protection of ancient and historical monuments, archaeological sites, and remains of national importance.

- A monument or site must **be at least 100 years old to be considered for this status.**

➤ **Process of Declaration:** The Central Government notifies its intention to declare a site of national importance, inviting public objections within two months. After considering objections, it may officially declare the site through a gazette notification.

➤ **MNI in India:** Currently, there are **3697 ancient monuments and archaeological sites and remains** declared as of national importance in the country.

➤ **Efforts to Protect MNI:**

○ **Directive Principles of State Policy: Article 49 of the Indian Constitution** mandates that the State should protect monuments, places, and objects of national importance from destruction, disfigurement, removal, or export, as per laws made by Parliament.

○ **Archaeological Survey of India (ASI) :** The **ASI** under the Ministry of Culture, is responsible for conserving and maintaining MNIs.

- A 100-meter radius around the monument is a **'prohibited area'** with a construction ban, while the **next 200 meters is a 'regulated area'** with construction restrictions.

- The **ASI can delist monuments (Section 35 of AMASR Act, 1958),** if it is no longer nationally important, which means they **will no longer be protected or maintained.**

➤ Once delisted, construction and urbanisation activities can proceed around the site.

○ **National Monuments Authority (NMA):** The **NMA,** established under the **AMASR Act, 2010,** grants permissions for construction in the prohibited and regulated areas around centrally protected monuments to ensure their protection and preservation.

Note:

India's Other Initiatives Related to Art and Culture:

➤ **Kala Sanskriti Vikas Yojana**

➤ **Scheme for Safeguarding the Intangible Cultural Heritage.**

➤ **Ek Bharat Shreshtha Bharat.**

➤ **Dekho Apna Desh Initiative**

➤ **Swadesh Darshan Scheme**

➤ **Pilgrimage Rejuvenation and Spiritual Augmentation Drive (PRASAD)**

➤ **Adopt a Heritage Programme**

➤ **Project Mausam**

Pardoning Powers of President in India

Why in News?

Recently, the US President Joe Biden issued a **'full and unconditional pardon'** for his son, Hunter Biden, who faced sentencing for illegally owning a firearm while using drugs and for tax-related offenses.

➤ This ignited discussions about the **pardon power of the president in India**.

What is the Pardon Power of the President in India?

➤ **Pardon Powers: Article 72 of the Indian Constitution** gives the **President of India** the power to **grant pardons, remit or commute sentences, grant respites or remissions of punishment, or reprieve the sentence** of any person convicted of an offense in cases where:

  ❍ The punishment is by a **Court Martial**.

  ❍ The sentence involves **capital punishment (death sentence)**.

  ❍ The conviction is for offenses under **Union laws**.

➤ **Significance**: This power ensures that the **president can remedy potential judicial errors or exercise clemency** in situations requiring humanitarian considerations.

➤ **Limitations:** The President cannot exercise this power independently. Decisions must align with the advice of the **Council of Ministers**.

  ❍ This principle was upheld by the **Supreme Court (SC) of India** in landmark cases such as:

● *Maru Ram vs Union of India, 1980*: The SC held that the power to grant pardons must be exercised fairly, reasonably, and without arbitrariness, ensuring justice and balance.

● *Kehar Singh v. Union of India, 1988:* The SC held that the President's pardoning power is independent of the judiciary, but it can be reviewed to ensure procedural fairness. The review focuses on adherence to constitutional principles and procedural requirements, not the merits of the decision.

Clemency Type	Definition
Pardon	Removes both the sentence and the conviction, absolving the convict from all punishments and disqualifications.
Commutation	Substitutes one form of punishment for a lighter one.
Remission	Reduces the period of a sentence without changing its nature.
Respite	Awards a lesser sentence due to special circumstances like physical disability or pregnancy.
Reprieve	Temporarily stays the execution of a sentence to allow time to seek pardon or commutation.

Note: The Governor of a state exercises pardoning powers under **Article 161,** though with limitations compared to the President's power.

➤ The Governor can pardon, reprieve, respite, remit, suspend, or commute the punishment or sentence of anyone convicted of an **offence under State law.**

➤ The Governor can suspend, remit, or commute a death sentence, **but cannot pardon it.**

➤ The President can grant pardon in cases involving a **Court Martial,** but Article 161 does not grant this power to the Governor.

Presidential Pardon of the US

➤ The US Constitution grants the president the power to "grant Reprieves and Pardons for Offences against the United States, except in Cases of Impeachment."

➤ This executive power applies exclusively to federal crimes and does not extend to state-level offenses or impeachment cases.

Interpreting the Places of Worship Act, 1991

Why in News?

The **Places of Worship (Special Provisions) Act, 1991,** which preserves the religious character of places of worship, remains contentious amid ongoing legal challenges.

➢ The **Shahi Jama Masjid dispute in Sambhal, Uttar Pradesh** has reignited debates over the Act's applicability.

What is the Shahi Jama Masjid Dispute?

➢ **Background of the Dispute:** Petitioners claim the 16ᵗʰ Century Jama Masjid in Sambhal was built on the **site of an ancient Hari Har Mandir(Hindu temple).**

  ❍ Constructed around 1528 by **Mir Hindu Beg, a general under Mughal Emperor Babur,** the mosque features **distinct stone masonry** with a dome and arches, differing from other Mughal mosques made of **red sandstone.**

   • Its history and architecture have led to speculation about ties to earlier structures, including a possible Hindu temple.

  ❍ This mirrors similar disputes in **Varanasi, Mathura, and Dhar.** Petitioners have sought a survey to determine the site's historical and religious character.

➢ **Judiciary Involvement:** A Sambhal district court ordered a peaceful survey to verify the claims. However, a second survey resulted in violent clashes.

➢ **Legal Status of the Mosque:** The Shahi Jama Masjid is a protected monument under the **Ancient Monuments Preservation Act, 1904.** It is listed by the **Archaeological Survey of India (ASI)** as a Monument of **National Importance.**

➢ **Shahi Jama Masjid and Places of Worship Act, 1991:** The Places of Worship (Special Provisions) Act, 1991, is at the center of this dispute.

  ❍ The Act stipulates that the religious character of places of worship as they existed on **15ᵗʰ August 1947, must be preserved, and prohibits** any changes to the religious identity of such places.

  ❍ The Shahi Jama Masjid dispute challenges the Act's provisions by seeking to alter the mosque's religious character.

What is the Places of Worship (Special Provisions) Act, 1991?

➢ **About:** The Places of Worship (Special Provisions) Act, 1991, aims to preserve the religious status of places of worship, preventing conversions between **different religious denominations or within the same denomination.**

  ❍ The Act seeks to **maintain communal harmony** by freezing the religious character of these places and preventing disputes over such conversions.

➢ **Key Provisions of the Act**

  ❍ **Section 3**: Prohibits the conversion of any place of worship, **either in full or in part,** from one religious denomination to another.

  ❍ **Section 4(1)**: Mandates that the religious identity of a place of worship must remain unchanged from its status on **15ᵗʰ August 1947**. Any attempt to alter the religious character is prohibited.

  ❍ **Section 4(2)**: Terminates all ongoing legal proceedings concerning the conversion of a place of worship's religious character prior to **15ᵗʰ August 1947,** and prevents the initiation of new cases challenging the religious status of such places.

  ❍ **Section 5 (Exceptions)**: The specific dispute at **Ayodhya (Babri Masjid-Ram Janmabhoomi)**, which was exempted from the Act.

   • Besides the Ayodhya dispute, the Act also exempted: Any place of worship which is an ancient and historical monument, or an archaeological site covered by the **Ancient Monuments and Archaeological Sites and Remains Act, 1958.**

   • Cases that have already been resolved or settled by mutual agreement.

   • Conversions that occurred before the Act's commencement.

  ❍ **Section 6 (Penalties)**: The Act establishes strict penalties for violations, including imprisonment of up to three years and fines for attempting to change the religious character of a place of worship.

➢ **Supreme Court's Interpretation:** In May 2022, the Supreme Court **noted that inquiries can be allowed into the religious character of places of worship,** as long as such inquiries don't lead to a change in the religious character.

Note:

What are the Concerns Regarding the Places of Worship Act, 1991?

➢ **Limits Judicial Review**: The Act has been challenged for **limiting judicial review**, potentially undermining the role of the judiciary in resolving disputes.

➢ **Retrospective Cutoff Date**: The Act's retrospective cutoff date of 15th August 1947, has been criticized as **arbitrary and irrational,** potentially infringing upon the rights of certain religious communities.

➢ **Legal Challenges:** Multiple petitions have been filed against the Act, with petitioners arguing that it prevents **Hindus, Jains, Buddhists, and Sikhs** from reclaiming places of worship they **believe were "invaded" or "encroached upon" by historical rulers.**

➢ **Exemption for Certain Disputes**: The exemption of the **Ram Janmabhoomi-Babri Masjid case** from the Act has raised concerns about inconsistency and the potential for **selective legal treatment of certain disputes.**

➢ **Rising Communal Tensions:** The legal and social debates surrounding the Act are often intertwined with broader **communal issues.**

  ○ Critics argue that challenges to the **Act may exacerbate communal tensions,** particularly when it comes to **sensitive sites like mosques, temples, and churches.**

➢ **Impact on Secularism:** The Act was intended to **protect India's secular nature by preserving religious harmony,** but its critics believe that it may inadvertently allow for the **suppression of certain religious communities' claims** to historical sites, thus undermining the **secular fabric of the nation.**

➢ **Political and Social Implications:** The Act is often invoked in political and religious debates, leading to concerns that religious issues could be used to **stoke division or mobilize support for political causes.**

  ○ Some of the ongoing disputes have led to social unrest, with protests and communal tensions erupting over religious site claims, reflecting the deep societal divide over such issues.

Note:

Economic Scenario

Highlights

- SC Panel Report on Agriculture Distress
- Changing Trends in Fertilizer Use
- Natural Pearl Farming in India
- SFBs to Offer UPI-Based Credit Lines
- Concerns Over Cess and Surcharges in India
- Dispute Between Government and RBI
- Surge in Agricultural Employment
- India's Strategy for Deregulation and Growth

- Rise in Forex Reserves
- India Lags in Leveraging China+1 Strategy
- DRI Report on Smuggling
- Decline in 10-Year Bond Yield
- International Debt Report 2024
- Rise and Challenges of India's Gig Economy
- WIPO World Intellectual Property Indicators 2024 Report

SC Panel Report on Agriculture Distress

Why in News?

Recently, the **Supreme Court (SC)**-appointed committee has submitted its **interim report on agrarian distress** in India. The report has highlighted the severe state of crisis in India's agriculture.

About SC-appointed High Level Committee:

➢ It was constituted by the **Supreme Court (SC)** in September 2024 under the chairmanship of former Punjab and Haryana **High Court** judge Nawab Singh to **resolve the grievances of farmers agitating** at the Shambhu border and **suggesting possible solutions** to this.

What are the Key Findings of the SC Committee Report on the State of Agricultural Farmers?

➢ **Income Crisis:** The report finds that farmers earn a mere **Rs 27 per day** from agricultural activities, highlighting the **stark poverty** within the sector.

   ○ The **average monthly income** of agricultural households is **Rs 10,218,** which is **far below the basic living standards** required for a decent life.

➢ **Escalating Debt:** Farmers in Punjab and Haryana are burdened with mounting debts, with **institutional loans reaching Rs 73,673 crore and Rs 76,630 crore**, respectively, in 2022-23.

   ○ **Non-institutional debt** adds to the burden, accounting for **21.3% in Punjab** and **32% in Haryana**, causing widespread financial distress and pushing many farmers to despair.

➢ **Farmer Suicides:** Since 1995, over 4 lakh farmers and farm workers in India have committed suicide, according to the **National Crime Record Bureau (NCRB).**

   ○ A house-to-house survey conducted by three public sector universities in Punjab recorded **16,606 suicides between 2000 and 2015,** primarily among **small and marginal farmers** and **landless worker**s, with **high indebtedness** being the major cause.

➢ **Stagnation in Agricultural Growth:** Punjab and Haryana have experienced **stagnation in agricultural growth**, with annual growth rates of **2% and 3.38%,** respectively, from 2014-15 to 2022-23, significantly below the national average.

   ○ This stagnation has contributed to **low income levels and declining living standards for farmers.**

➢ **Disproportionate Employment:** The report highlights that **46% of India's workforce is employed in agriculture,** yet it **contributes only 15% to the national income.**

   ○ Many agricultural workers are **underpaid** or face **disguised unemployment,** worsening **rural poverty**.

➢ **Impact of Climate Change:** Depleting **water tables, droughts, erratic rainfall, and extreme weather conditions** are aggravating the crisis, further threatening food security and agricultural productivity.

What are the Implications of the Findings of Report?

➢ **Impact on National Economy:** The declining state of agriculture, along with **high suicide rates** and **increasing debt**, poses a significant **threat to the nation's economy.**

   ○ Neglecting agriculture could lead to **long-term economic instability** and **increase rural-urban migration.**

➢ **Sustainability and Food Security**: If the current trajectory continues, India's **agricultural sector could face a crisis** in terms of **food security**.

   ○ With decreasing agricultural productivity, **climate change** challenges, and a lack of reform, India may struggle to meet the growing demands for food, **further exacerbating poverty and hunger** in rural areas.

➢ **Social Stability**: The persistent farmer suicides and growing despair within the farming community could also lead to **social unrest**.

What are Major Challenges Faced by the Agricultural Sector in India?

➢ **Limited Access to Credit and Finance:** As per **India's Agriculture Census 2015-16,** around **86%** of Indian farmers are small and marginal, and many face significant challenges in accessing institutional credit.

   ○ This limits their ability to invest in modern farming inputs like machinery, seeds, and fertilizers, affecting productivity.

➢ **Fragmented Landholdings:** The average landholding in India is around **1.08 hectares**, which is insufficient for large-scale, efficient farming.

   ○ This makes it **difficult for farmers to adopt modern agricultural techniques** and technologies. The lack of economies of scale results in lower agricultural output and productivity, contributing to financial instability.

➢ **Outdated Farming Practices:** A large number of Indian farmers still depend on **traditional farming techniques** that are inefficient and unsustainable.

   ○ The lack of access to modern technology and resistance to change further obstruct improvements in **farming productivity and sustainability**.

➢ **Water Scarcity and Irrigation:** India's agriculture **relies heavily on monsoon rainfall,** with **60% of cropped area being rainfed,** making it vulnerable to **droughts** and erratic rainfall.

   ○ According to NITI Aayog's data for 2022-23, only **52% of India's gross sown area** (73 million hectares) is **irrigated,** exacerbating water scarcity.

➢ **Soil Degradation and Erosion**: The **Food and Agriculture Organization (FAO)** reports that nearly **30%** of India's agricultural land is affected by soil degradation, primarily due to excessive chemical fertilizer use, poor irrigation practices, and deforestation.

   ○ This leads to reduced soil fertility, lower productivity, and increased vulnerability to pests and diseases.

➢ **Inadequate Agricultural Infrastructure**: India faces **15-20% post-harvest losses** due to **insufficient storage, cold chains, and rural road infrastructure** according to the Indian Council of Agricultural Research (ICAR)**)**.

   ○ This **increases production costs and limits farmers' access** to markets, hindering fair price realization.

What are the Government Schemes for Farmers Welfare?
➢ **PM Kisan Samman Nidhi Yojana**
➢ **Pradhan Mantri Kisan Maan-Dhan Yojana**
➢ **PM Fasal Bima Yojana (PMFBY)**
➢ **PM Krishi Sinchai Yojana (PMKSY)**
➢ **e-National Agricultural market (e-NAM)**
➢ **Agriculture Infrastructure Fund**
➢ **Formation & Promotion of 10000 FPOs**
➢ **Honey Mission and Sweet Revolution**
➢ **Market Intervention Scheme and Price support Scheme (MIS-PSS)**
➢ **Soil health card**
➢ **Neem-coated urea**

What Can be Done to Reduce Farmer Distress in India?

➢ **Loan Waivers: Debt relief for farmers**, including a loan waiver, as an immediate measure to alleviate their financial distress.

   ○ This would help in reducing the crushing burden of debt, which is one of the primary reasons behind farmer suicides.

Note:

➢ **Legal Recognition of MSP:** The Supreme Court-appointed panel has also recommended granting legal recognition to the **Minimum Support Price (MSP)** to protect farmers from market price fluctuations.

- ○ This would **guarantee farmers a fixed price for their produce,** ensuring income stability and reducing uncertainty in the agricultural sector.

➢ **Promotion of Organic Farming and Crop Diversification:** There is a need to promote **organic farming** and **crop diversification** to reduce dependency on a few staple crops.

- ○ This would ensure sustainability and would also reduce the environmental impact of conventional farming practices.

➢ **Agricultural Marketing Reforms:** To improve the efficiency of agricultural markets, reforms in the agricultural marketing system are needed which could include measures such as **establishing more farmer-friendly markets**, **reducing intermediaries,** and **improving infrastructure** for better price realisation for farmers.

➢ **Employment Generation in Rural Areas:** To address low agricultural income, policies must focus on **creating employment opportunities in rural areas**, promoting **diversification and sustainable development**.

- ○ This could include skill development programs, rural industrialization, and promoting agro-based industries.

➢ **Climate Resilience Measures:** There is a need for **urgent measures to address the impact of climate change** on agriculture, including better **water management** practices, promoting **drought-resistant crops**, and investing in **climate-resilient infrastructure.**
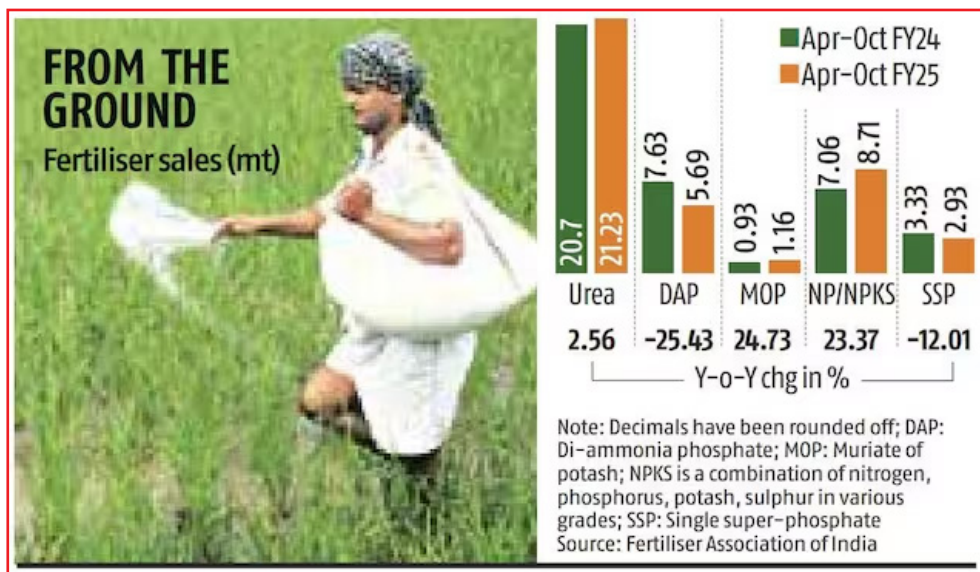
Changing Trends in Fertilizer Use

Why in News?

Recently, the sales of fertilisers **Di-Ammonium Phosphate (DAP),** a key fertiliser for rabi crops, have declined significantly by **25.4% during April to October FY25,** while that of NPKS **(Nitrogen, Phosphorus, Potassium, and Sulphur)** fertilizers **surged by 23.5%** in the same period.

➢ This shift is largely driven by reduced imports and higher costs of DAP, encouraging farmers to opt for alternatives like NPKS, which provide more balanced soil nutrition.

What are Factors Influencing the Shift in Fertilizer Usage Preferences?

➢ **Decline in DAP Usage:** The shift is largely driven by **rising costs and supply chain issues** associated with DAP, prompting farmers to seek alternatives.

- ○ Global challenges like the **Russia–Ukraine war** and **Belarus sanctions disrupted potash markets** leading to **rising Muriate of Potash(MOP) prices** in FY23. These countries are among **major producers of potash** in the world.

FROM THE GROUND
Fertiliser sales (mt)

	Urea	DAP	MOP	NP/NPKS	SSP
Apr–Oct FY24	20.7	7.63	0.93	7.06	3.33
Apr–Oct FY25	21.23	5.69	1.16	8.71	2.93
Y-o-Y chg in %	2.56	−25.43	24.73	23.37	−12.01

Note: Decimals have been rounded off; DAP: Di-ammonia phosphate; MOP: Muriate of potash; NPKS is a combination of nitrogen, phosphorus, potash, sulphur in various grades; SSP: Single super–phosphate
Source: Fertiliser Association of India

Note:

○ **DAP sales declined by 30%** to 2.78 million tonnes due to the **Persian Gulf** crisis which has led to **prolonged shipping delays,** extending transit times from the usual 20-25 days to nearly 45 days.

  • This led to prices for DAP rising to approximately USD 632 per tonne in September 2024.

➢ **Shift in Fertilizer Preferences:** Farmers are increasingly turning to NPKS fertilizers, which are considered **more beneficial than DAP** due to their **balanced nutrient composition.** The **20:20:0:13 NPKS grade,** offering balanced quantities of nitrogen, phosphorus, potash, and sulphur has seen significant sales growth.

> **Note: Improved fertilizer** use enhanced the **NPK ratio in Indian soils to 9.8:3.7:1** in kharif 2024 from **10.9:4.9:1 in kharif 2023,** though still below the ideal **4:2:1 r**atio recommended by Fertiliser Association of India (FAI).

What are the Benefits of Using NPKS Fertilizer?

➢ **Balanced Nutrient Supply**: NPKS fertilizers provide a comprehensive supply of essential nutrients- **Nitrogen (N), Phosphorus (P), Potassium (K), and Sulfur (S)**- which are critical for plant growth, enhancing the overall health and productivity of crops.

  ○ This balance ensures that plants receive adequate nutrients for various growth stages, from vegetative to reproductive phases.

➢ **Improved Soil Health and Sustainable Agriculture**: : Sulfur, an essential nutrient often deficient in soils, improves root development, enzyme activation, and resistance to diseases.

  ○ By including sulfur, NPKS fertilizers enhance soil health and fertility, promoting **more efficient nutrient uptake by plants.**

➢ **Enhanced Crop Yield**: It helps in **boosting crop yield by improving photosynthesis,** strengthening plant immunity, and promoting better flowering, fruiting, and seed formation. This leads to higher productivity, which is particularly beneficial for food security.

➢ **Optimal Plant Growth**: It is designed to support overall plant growth, improving root and stem development, increasing **chlorophyll production,** and enhancing drought resistance, which helps crops thrive in varying environmental conditions.

What are the Different Types of Chemical Fertilisers Used in Agriculture?

➢ **Nitrogenous Fertilisers:** Nitrogenous fertilizers like **Urea (46% nitrogen)**, **Ammonium Sulfate (21% nitrogen, 24% sulfur)**, and **Calcium Ammonium Nitrate (26% nitrogen)** are essential for plant growth, enhancing protein synthesis, chlorophyll formation, and rapid development.

➢ **Phosphatic Fertilisers:** These are vital for root development, flowering, and seed formation, include **Single Super Phosphate (16-20% P2O5, calcium, and sulfur)** and **Diammonium Phosphate (46% phosphorus, 18% nitrogen)**, both enhancing soil fertility and plant growth

➢ **Potassic Fertilisers:** These are essential for water regulation, enzyme activation, and disease resistance, include **MOP (60% potassium)**, commonly used in India, and **Sulphate of Potash (50% potassium, 18% sulfur)**, recommended for chloride-sensitive crops like tobacco, fruits, and vegetables.

➢ **Complex Fertilisers:** Complex fertilizers, formulated with multiple primary nutrients, include **NPK fertilizers** (e.g., 10:26:26, 12:32:16) for balanced nutrition, **NPKS** (containing nitrogen, phosphorus, potassium, and sulfur), and **Ammonium Phosphate Sulfate (APS)**, which is rich in sulfur, phosphorus, and nitrogen, ideal for sulfur-deficient soils.

### What are Government Initiatives Related to Fertilisers?

➢ **PM PRANAM Scheme**
➢ **One Nation One Fertilizer (ONOF)**
➢ **Direct Benefit Transfer (DBT)**
➢ **Nutrient Based Subsidy (NBS)**
➢ **Neem Coated Urea (NCU)**

What are the Challenges with Fertilizer Usage in India?

➢ **Imbalance in Fertilizer Use:** India's actual NPK ratio **(9.8:3.7:1 in Kharif 2024) deviates** significantly from the recommended **4:2:1 ratio,** leading to **nutrient deficiencies and soil degradation**.

  ○ This imbalance, with excessive nitrogen and insufficient phosphorus and potassium, leads to nutrient deficiencies, soil degradation, and reduced crop yields.

- ➢ **Excessive Use of Nitrogenous Fertilizers**: India is the **second-largest consumer** of urea in the world after China**,** but its overuse causes soil degradation, water pollution, and **greenhouse gas** emissions. Subsidies distort the fertilizer market and promote inefficiency.
- ➢ **Low Production and High Consumption:** Despite a slight increase in production in fertilizers from **385.39 LMT in 2014-15 to 503.35 LMT in 2023-24,** domestic fertilizer production **remains inadequate to fully meet the country's demand.**
- ○ In 2020-21, the total consumption of fertilizers was about **629.83 LMT**.
- ➢ **Dependence on Imports:** India imports around 20% of its urea, 50-60% of diammonium phosphate (DAP), and 100% of muriate of potash (MOP) fertilisers from nations such as **China, Russia, Saudi Arabia, UAE, Oman, Iran, and Egypt**.
- ○ This makes India **highly dependent on global supply chains** for key fertilizer nutrients and **exposed to global price fluctuations** and supply volatility.
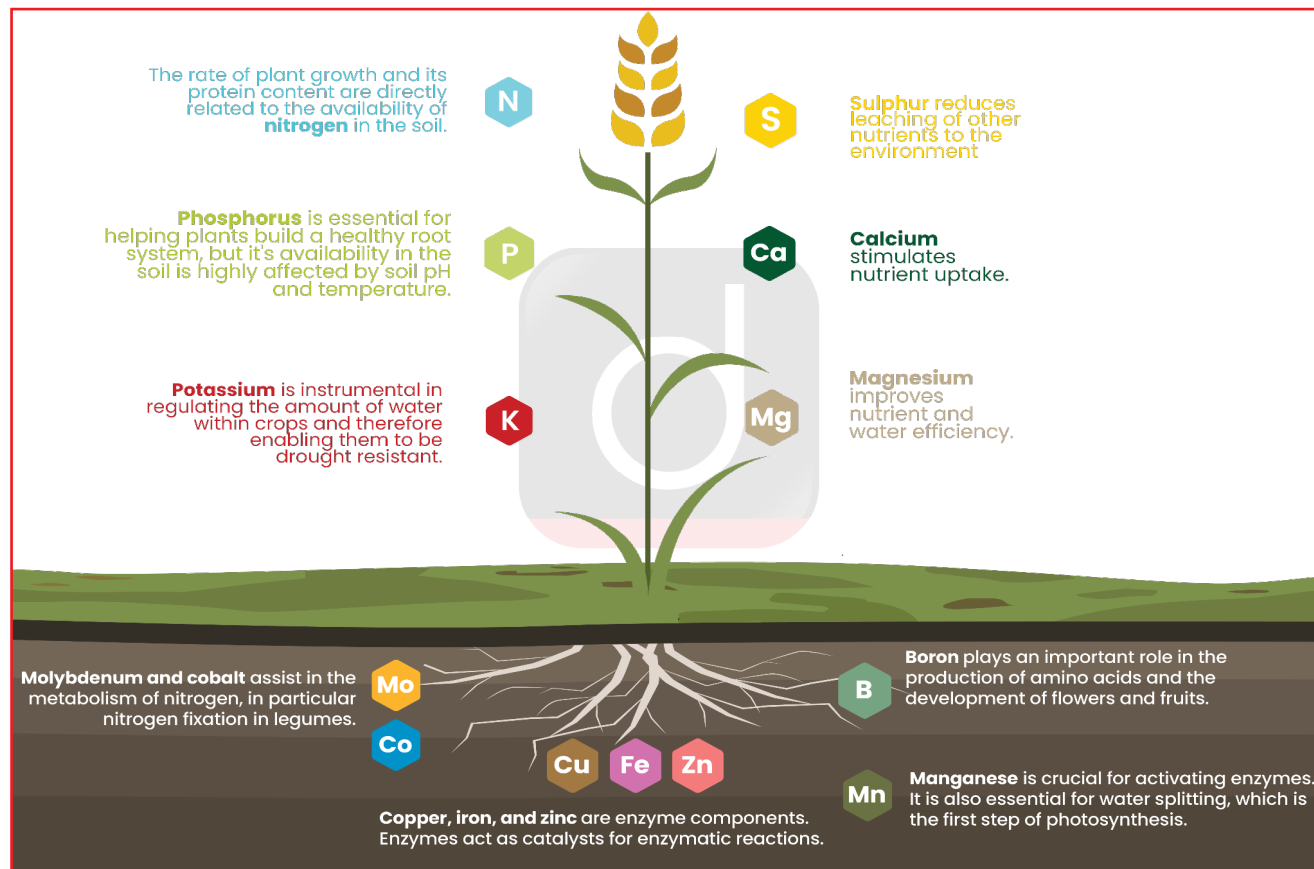
Natural Pearl Farming in India

Why in News?

The **Ministry of Fisheries, Animal Husbandry and Dairying** in collaboration with the State Governments, Research Institutes, and other concerned agencies has taken several initiatives to promote natural pearl farming in India.

What is Pearl Farming?

- ➢ **About:** Pearl farming is the **process of cultivating pearls** within freshwater or saltwater oysters **in a controlled environment.**
  - ○ It involves the process of cultivating pearls by inserting an **irritant (nucleus)** into the **body of a mollusk,** which

Note:

then secretes layers of nacre around it. Over time, these layers form a pearl.

- Nacre (the mother of pearl) is an organic-inorganic composite system, produced by some mollusks as an inner shell layer. The material is strong, resilient, and iridescent, and this is what the pearls are composed of.

○ This scientific and commercial practice leverages the **natural biological process** of mollusks to produce high-quality pearls in controlled conditions.

- **Mollusks** are **soft-bodied invertebrates** that inhabit marine, freshwater, brackish waters, or land environments such as **snails, octopi, oysters.**

➢ **Procedure:** Farming practice of the freshwater pearl culture operation involves six major steps sequentially:

○ Collection of mussels

○ Pre-operative conditioning (keeping mussels in crowded condition in captivity)

○ Implantation (Inserting nuclei or graft tissues into mussels)

○ Post-operative care (antibiotic treatment)

○ Pond culture (12-18 months)

○ Harvesting of pearls

➢ Pearl Production:

○ **Global – China leads global pearl production**, focusing on freshwater pearls, followed by **Japan, Australia, Indonesia,** and the Philippines.

○ **India –** Pearl culture practices are present in **Gujarat, Maharashtra, Bihar, Odisha, Kerala, Rajasthan, Jharkhand, Goa, and Tripura**.

- In 2022, **India was the 19th largest exporter of pearls** in the world, exporting USD 3.79 million worth of pearls.

➢ **Challenges in Pearl Farming in India:**

○ Limited freshwater pearl farmers and absence of an organized sector.

○ Lack of standardized protocols for broodstock management, breeding, and water quality tailored to diverse agro-climatic zones.

○ Scattered availability of mussel broodstock (reproductively mature adults that breed and produce more individuals) and inadequate research support.

○ Poor extension networks to disseminate existing technologies.

What are the Government Initiatives for Natural Pearl Production in India?

➢ **Pradhan Mantri Matsya Sampada Yojana (PMMSY):**

○ Under the **PMMSY**, the government has approved the establishment of **bivalve cultivation units**, encompassing **mussels, clams, and pearls,** with a total investment of Rs 461 lakh across various States and Union Territories.

○ Additionally, a **Standard Operating Procedure (SOP)** has been circulated to guide the development of fisheries and aquaculture clusters, including specialized pearl farming clusters.

➢ **Pearl Farming Clusters:**

○ Establishment of the first **pearl farming cluster** in Hazaribagh, Jharkhand. **TRIFED (Tribal Cooperative Marketing Development Federation of India)** has also inked an agreement with the Jharkhand-based Purty Agrotech for the promotion of pearl farming in tribal areas.

➢ **Support Under Blue Revolution:**

○ The Department of Fisheries has included a sub-component for pearl culture in the **Blue Revolution** scheme for encouraging the sector.

➢ **Training and Capacity Building:**

○ Training of over 1900 participants by **Indian Council of Agricultural Research (ICAR)** institutions on both freshwater pearl farming and marine pearl farming.

SFBs to Offer UPI-Based Credit Lines

Why in News?

Recently, the **Reserve Bank of India (RBI)** has decided to permit **Small Finance Banks (SFBs)** to extend **pre-sanctioned credit (loan) lines** through the **Unified Payments Interface (UPI).**

➢ It aims to deepen **financial inclusion** and enhance **formal credit**, particularly for **'new to credit' customers.**

Note: In **September 2023**, the scope of **UPI** was expanded by enabling **pre-sanctioned credit lines** to be linked through **UPI** and used as a funding account by <u>Scheduled Commercial Banks</u>.

➢ However, it excluded <u>Payments Banks</u>, **Small Finance Banks (SFBs)** and <u>Regional Rural Banks.</u>

What are Small Finance Banks (SFBs)?

➢ **About:** SFBs are **specialized financial institutions** regulated by RBI under the <u>Banking Regulation Act, 1949</u>.

  ○ It was announced in the **Union Budget 2014-15** to enhance **credit supply** using **high-technology and low-cost operations.**

  ○ It was set up based upon recommendations of the <u>Nachiket Mor Committee</u>.

➢ **Registrations:** SFBs are registered as a **public limited company** under the <u>Companies Act, 2013</u>.

➢ **Objective:** Its primary objective is to promote **financial inclusion** in **underserved and unserved sections** of society.

  ○ It caters to **small business units, small and marginal farmers, micro and small industries**, and other **unorganized sector** entities.

➢ **SFB's Mandate:** They must allocate **75% of their Adjusted Net Bank Credit (ANBC)** to **priority sectors**, including agriculture, MSMEs, and weaker sections.

  ○ At least **25% of SFB branches** must be located in **unbanked rural areas** to improve rural banking access.

➢ **Capital Requirement:** To set up an SFB bank, the minimum capital required is **Rs 200 crores.**

DIGITAL PAYMENT SYSTEMS IN INDIA

A digital or electronic payment refers to transferring money from one payment account to another using a digital device or channel (bank transfers, mobile money, QR codes etc.)

Payment Systems by NPCI

National Payment Corporation of India (NPCI) is an umbrella entity for retail payment (Payment and Settlement Systems Act, 2007).

Immediate Payment Service (IMPS)

- For retail customer
- **Limit:** ₹1-5 lacs (Fees+GST)
- 24/7 (Instant Settlement)
- **Provider:** Banks, PPI, Mobile Wallet Companies

Unified Payment Interface (UPI)

- Technology for digital payment apps based on IMPS
- Push and Pull Transaction
- Also adopted by other countries like France, UAE, Singapore
- **UPI-Lite+NFC:** For offline payment
- **BHIM-UPI:** Money transfer app

Rupay Card Payment Gateway (RuPay)

- **Works in 3 Channels:** ATM, Point of Sale Device, Online Portals
- Given free with PMJDY
- Adopted in foreign countries as well (e.g. Mauritius)

Miscellaneous Initiatives

- Bharat Bill Payment System (BBPS) & Unified Presentment Management System (UPMS)
- National Electronic Toll Collection (NETC)
- PAI Chatbot
- Bharat QR
- e-RUPI
- Aadhaar Payment Bridge (APB) System
- Aadhaar enabled Payment System (AePS)

RBI's Centralised Payment System (CPS)

Real Time Gross Settlement (RTGS)

- For high value transactions
- **Lower Limit:** ₹2 Lacs (No Upper ceiling) (No fees)
- 24/7 (Instant Settlement)
- Provided by banking & non-banking entities

National Electronic Fund Transfer (NEFT)

- For mid-range transactions
- No limit imposed by RBI (No fees)
- 24/7 (Settles net amount between banks @ 30 minutes intervals)
- Provided by banking & non-banking entities

Lightweight Payment and Settlement System (LPSS)

- RBI's emergency alternative to NEFT/RTGS
- Temporary, portable solution

Digital Payment Regulatory Bodies

- Digital Transactions Ombudsman
- Board for Regulation & Supervision of Payment & Settlements Systems (BPSS)

Drishti IAS

Concerns Over Cess and Surcharges in India

Why in News?

Arvind Panagariya, Chairman of the **16th Finance Commission,** recently called the issue of the **Centre's increasing reliance on cesses** and **surcharges** a "complicated issue."

What are Cess and Surcharges?

➢ **Cess:** A **cess** is a form of tax that is levied for a specific purpose. It is a **tax on tax,** imposed in addition to an existing tax like **excise** or **income tax,** and the revenue is **earmarked for a particular use.**

  ○ Cesses are typically charged for a **specific time period,** or until the government has gathered enough funds for the designated purpose.

  ○ The **80th Amendment formally amended Article 270,** explicitly excluding cesses and surcharges from the **divisible pool** (revenue from cesses is not shared with states).

   ● Cesses are recognized in the Constitution under **Article 277** and **Article 270** (which outlines the revenue-sharing framework between the Union and States).

  ○ **Examples: Education Cess** (for financing primary education), **Swachh Bharat Cess** (for cleanliness initiatives), and **Fuel Cess** (for road development).

➢ **Surcharge:** A surcharge is an **additional tax or levy imposed on existing duties or taxes.** It is essentially a **"tax on tax"** and is discussed under **Articles 270 and 271** of the Indian Constitution.

  ○ Surcharges are often applied to individuals, companies, and other taxpayers who fall within income brackets. The rate of **surcharge can vary based on income level.**

   ● They are designed to be **progressive,** ensuring that higher earners **contribute more,** promoting **social equity** and addressing **income disparity.**

  ○ Surcharge increases the **total tax liability of individuals or entities** who are already subject to

tax, particularly higher-income earners or certain sectors.

  ○ The funds collected from surcharges **go into the government's general fund and can be used for a variety of purposes,** such as financing infrastructure projects, social welfare programs, and other governmental activities.

  ○ **13th and 14th Finance Commissions** upheld exclusion of surcharges from the divisible pool; recommended reducing Centre's reliance on these levies.

➢ **Cess vs. Surcharge:** Cess and surcharge both go to the **Consolidated Fund of India (CFI)** but differ in usage. Surcharge is spent like other taxes, while cess must be allocated separately and used only for its specific purpose.

What are the Concerns Regarding Cess and Surcharges?

➢ **Centre's Fiscal Constraints:** The increase in the share of states in the **divisible tax pool** from **32% under the 13th Finance Commission** to **42% under the 14th** and **41% under the 15th Finance Commission** has reduced the **Centre's fiscal space**.

  ○ To counterbalance this, the Centre increasingly relies on cesses and surcharges, which are not shared with the States.

  ○ Originally envisioned as a **temporary measure,** surcharges and cesses have become a **permanent fixture in India's tax system,** which has raised concerns about their long-term impact on fiscal federalism.

➢ **State Concerns:** Cesses and surcharges increased from 10.4% in 2011-12 to 20% in 2021-22. This trend effectively **shrinks the pool of taxes** that are shared with States, limiting their **fiscal flexibility** and undermining the spirit of **fiscal federalism.**

  ○ States have consistently **demanded a cap on cesses and surcharges,** and the **inclusion of any excess collections into the divisible pool** to ensure fairer revenue distribution.

  ○ This issue underscores the challenge of **balancing power** and financial autonomy between the Centre

Note:

drishti

and States, **potentially impacting states' ability to fund critical programs** and achieve developmental goals.

➢ **Lack of Transparency and Vagueness**: Since cesses are collected for specific purposes, they **reduce transparency in the allocation and distribution** of tax revenues.

  ❍ States argue that this method of taxation **bypasses the principles of equitable revenue sharing.**

  ❍ Many cesses, like the **Swachh Bharat and Krishi Kalyan Cess,** are broadly defined. They aren't subject to the **same parliamentary oversight as general taxes**.

    ● There are discrepancies in how cess proceeds are used. For example, the **Research and Development Cess** was partly used to finance the Union's revenue deficit rather than its intended purpose.

➢ **Inequitable Taxation:** Cesses and surcharges tend to disproportionately affect the wealthier segments of society, as they are the primary contributors.

  ❍ Critics argue that this creates fairness issues and may drive **wealthy individuals and businesses to relocate to more tax-friendly countries.**

What is the Divisible Pool of Taxes?

➢ **About:** The **Divisible Pool of Taxes** refers to the portion of the total tax revenue collected by the Union government that is shared with the States in India.

  ❍ It is a key component of fiscal federalism, ensuring that both the Centre and the States have access to resources for their respective functions.

➢ **Key Features**:

  ❍ **Taxes:** The divisible pool includes taxes that are collected by the Union government such as **Corporation Tax, Personal Income Tax, Central and Goods and Services Tax (GST)**.

  ❍ **Finance Commission:** The distribution of the divisible pool is based on the recommendations of the **Finance Commission,** which is constituted every **five years.**

    ● The Commission suggests the percentage share for both the Union and the States.

    ● The **15th Finance Commission recommended** that states receive 41% of the divisible pool of central taxes for the period 2021–2026

  ❍ **Vertical and Horizontal Devolution**:

    ● **Vertical Devolution**: Refers to the proportion of the divisible pool allocated between the Union and the States.

    ● **Horizontal Devolution**: Refers to how the States' share of the divisible pool is distributed among the individual States, based on factors such as **population, income disparity, and tax efforts.**

➢ **Exclusion of Cesses and Surcharges**: Cesses and surcharges levied by the Union are **excluded** from the divisible pool.

International Practices on Cess and Surcharges

➢ **Surcharges:**

  ❍ **Germany:** The solidarity surcharge was introduced in 1991 to fund German reunification and Gulf War expenses. Initially temporary, it was reintroduced in 1995 and continues today.

  ❍ **France:** Surcharges are imposed temporarily to address fiscal challenges.

➢ **Cess Taxes:**

  ❍ **United States:** States like Alabama earmark substantial tax revenue for specific purposes.

  ❍ **Australia: Medicare Levy (introduced in 1984)** is a personal income tax to fund Medicare. Other temporary taxes, like the gun buyback and Ansett ticket levies, have been short-lived and contribute minimally to total revenue.

    ● Australia's constitutional structure limits consistent use of earmarked taxes.

Note:

Finance Commission

The Finance Commission is the balancing wheel of fiscal federalism in India

~ Indian Constitution

Article 280
(Indian Constitution Part XII)

Constitution of FC as a **Quasi Judicial Body**

Constituted by

President of India **quinquennially** (or earlier)

Members

- Chairman + 4 members **(including an HC judge)** – appointed by President
- Authority to **decide qualifications – Parliament**
- Tenure – as **specified by the President**
- **Reappointment – Eligible**

Makes Recommendations to President about

- Distribution of **net tax proceeds** between Centre and States
- Principles for **grants-in-aid** to the states by the Centre
- Evaluates the rise in the **Consolidated Fund of a state** to affix the resources of Panchayats/Municipalities
- Other **financial matters referred** to it by President

Powers of a Civil Court

As per Code of Civil Procedure 1908

*Recommendations of the FC are **only advisory and not binding** on the Government*

First FC ———●   **Second FC** ———● ... ———●   **Fifteenth FC** ———●   **Sixteenth FC**

Chairman - KC Neogy   Chairman - K Santhanam   Chairman - NK Singh   Chairman - Dr. Arvind Panagariya

State Finance Commission

- Constituted by **Governor** every 5th year **(Article 243)**
- Reviews the financial position of **Panchayats and Municipalities**

Drishti IAS

What Can be Done to Address Concerns Regarding Cess and Surcharges?

➢ **For Cesses:**
 ○ **Imposition**: The Union Government should refrain from levying cesses for issues under the **State List, such as health and education,** as it undermines federal principles.
  ● **Set a ceiling on cess collection and avoid exceeding it**.
 ○ **Transparency**: Ensure clear allocation of funds and transparency in cess collection. A **structured, periodic review** process should be instituted to evaluate the effectiveness and necessity of cesses.
  ● If **misuse occurs,** shift **cess funds to a general tax**, allowing states a **share based on Finance Commission recommendations.**
 ○ **Abolition**: Cesses that generate **very minimal revenue** can be abolished, as they are economically inefficient and add to tax complexity.
  ● **Impose cesses for a maximum of 5 years,** with one possible extension, after which they should be abolished. Include sunset clauses in cess legislation to limit indefinite continuation.

➢ **For Surcharges:**
 ○ **Rationalization of Income Tax**: Surcharges often act as a **proxy for progressive income tax.** This can be addressed by **rationalizing the income tax structure** itself, rather than adding surcharges, especially on higher income slabs.
 ○ **Temporary Nature of Surcharges**: Surcharges can be made temporary, used only during **financial distress,** with sunset clauses to prevent their perpetual use and become permanent tax instruments.

Dispute Between Government and RBI

Why in News?

Recently, the tenure of **Reserve Bank of India (RBI) Governor Shaktikanta Das** concluded in December 2024, characterized by some friction with the government towards the end of his second term.

➢ The disagreement between the **RBI and the government** arose from the central bank's decision to **refrain from cutting policy rates**, despite the economic slowdown and the government's appeal for steps to boost **GDP growth.**

Note: The **Appointments Committee of the Cabinet** has approved the **appointment of 56-year-old Sanjay Malhotra,** currently serving as Revenue Secretary in the Finance Ministry, as the **26th Governor of the Reserve Bank of India**.

What are the Key Issues Between RBI and the Central Government?

➢ **Easing Norms of Prompt Corrective Action (PCA):** The government urged RBI to exempt power companies and ease lending rules under **PCA** to boost credit for MSMEs, but the RBI has often opposed such measures.
 ○ Arguing that relaxing norms under PCA could undermine the efforts to address the **Non-Performing Asset (NPA) crisis**, which had become a significant challenge for the **Indian banking system.**

➢ **Section 7 of RBI Act, 1934:** The government, under **Section 7 of the RBI Act**, can direct the RBI in public interest, but its rare invocation has raised concerns about undermining RBI's autonomy.
 ○ While the government prioritizes short-term growth through measures like **lowering interest rates**, the RBI focuses on **inflation control, price stability,** and long-term financial stability, leading to occasional policy tensions.

➢ **RBI Surpluses:** RBI earns income from **bonds and retains part of the surplus** for buffers like the **Contingency Fund and Asset Reserve.**
 ○ It is seen that the government often demands higher dividends, arguing excess reserves, while the RBI warns of inflation risks and threats to macroeconomic stability.
 ○ Surpluses also act as a safeguard against currency value fluctuations and gold depreciation.

➢ **Regulatory Authority and Institutional Turf**: The creation of bodies like the **Financial Stability and Development Council (FSDC)** has raised concerns within the RBI about its **diminishing role in financial regulation**.

Note:

○ Moreover, there is conflict over the issue of government influence in the appointment of key RBI officials, with the central bank expressing concerns that such **interference challenges its independence.**

➢ **Issue over Forex:** The RBI has resisted the government's calls to use <u>foreign exchange reserves</u> for <u>fiscal deficits</u> or loan write-offs, fearing it could **undermine financial stability** and weaken the rupee, leading to disagreements on reserve management.

○ RBI opposes this demand by citing risks to **financial stability and the rupee's strength**. Additionally, the government's push for <u>financial inclusion</u> and <u>priority sector lending</u> often conflicts with RBI's focus on maintaining overall financial stability.

What Were the Previous Conflicts Between RBI Governors and the Government?

➢ **RBI governor YV Reddy (2003-2008):** He had differences with the then Finance Minister (FM) **over rate cuts** and <u>financial market</u> **development.** He opposed proposals for writing off farmer loans and using foreign exchange reserves without guarantees.

➢ **D Subbarao (2008-2013):** His tenure saw **conflicts over anti-**<u>inflation</u> **policies,** with government officials pushing for lower rates despite high inflation.

➢ **Raghuram Rajan (2013-2016):** He also faced challenges when the government sought to regulate money markets through the <u>Securities and Exchange Board of India (SEBI)</u> without consulting the RBI. He raised concerns about the **potential costs and benefits of** <u>demonetization</u>, which the government pursued without his endorsement.

➢ **Urjit Patel (2016-2018):** His tenure was marked by significant **disagreements over surplus transfers and lending norms**. The government invoked <u>Section 7 of the RBI Act</u> to engage in discussions about the RBI's policies.

○ He resigned amid escalating tensions, particularly regarding the government's attempts to access the RBI's capital reserves.

Surge in Agricultural Employment

Why in News?

The number of <u>Indians working in agriculture</u> has risen significantly by **68 million between 2017-18 and**

2023-24, reversing the earlier trend of workforce decline in the sector.

➢ This shift, driven primarily by **women workers** and concentrated in **economically weaker states**, raises concerns about structural challenges in the labor market.

What are the Factors Driving the Surge in Agricultural Employment?

➢ **Economic Reversal:** After a decline of **66 million** agricultural workers between 2004-05 and 2017-18, India has witnessed a significant increase of **68 million** agricultural workers between 2017-18 and 2023-24, signaling a reversal of this trend.

➢ **Impact of Covid-19 Pandemic:** Many workers, especially from <u>urban informal sectors,</u> returned to family farms during the <u>lockdowns.</u> Despite economic recovery, the trend of increased <u>agricultural employment</u> persisted.

➢ **Employment Dynamics:** Agriculture remains a fallback option due to the lack of sufficient non-agricultural job opportunities.

○ The increase in agricultural employment is largely driven by **women,** with their numbers rising by **66.6 million between 2017-18 and 2023-24**, indicating a significant shift in gender dynamics.

➢ **Economic Conditions in Key States:** The surge in agricultural employment is most notable in economically weaker states like **Uttar Pradesh, Bihar, and Madhya Pradesh**, where limited employment opportunities have **driven higher demand for agricultural labor.**

The number of agricultural workers has risen by about a third since 2017-18

Number of workers in agriculture (million)

Year	Workers
2017-18	~190
2018-19	~190
2019-20	~222
2020-21	~235
2021-22	~228
2022-23	~233
2023-24	~258

drishti
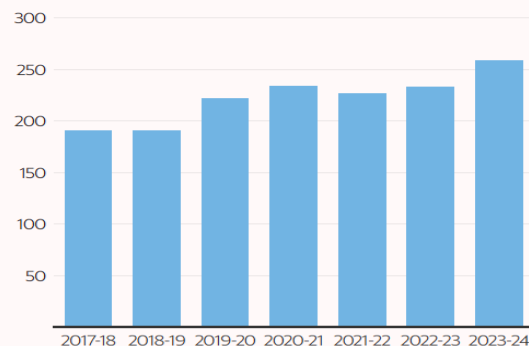
What are the Concerns Regarding the Surge in Agricultural Employment?

➢ **Reversal of Economic Transition:** As economies grow, the workforce **generally transitions from agriculture to manufacturing and services** due to higher productivity and better wages.

❍ India's reversal of this trend highlights **economic mobility issues,** with workers unable to move from agriculture to more productive sectors.

● In 2023-24, **agricultural productivity was significantly lower,** with output 4.3 times lower than services and 3 times lower than manufacturing.

❍ This indicates that workers are **stuck in low-productivity, low-wage jobs** with limited advancement opportunities.

Agricultural productivity is a fraction of services and manufacturing

Gross value added per worker, 2011-12 prices (₹ lakh)

	Agriculture	Manufacturing	Services
2017-18	1.12	3.04	4.32
2018-19	1.14	3.11	4.38
2019-20	1.03	2.96	4.46
2020-21	1	2.77	3.93
2021-22	1.08	2.97	4.22
2022-23	1.1	2.88	4.46
2023-24	1.02	3.06	4.46

➢ **Economic Inefficiency:** The rise in agricultural employment, even during periods of **Gross Domestic Product (GDP) growth,** highlights insufficient job creation in higher productivity sectors.

❍ The inability of manufacturing and services to absorb surplus labor reflects structural flaws in India's economic policies.

➢ **Underemployment in Agriculture:** Many agricultural jobs are **seasonal and low-paying, often indicating underemployment** where people work out of necessity, earning less and working fewer hours than in other sectors.

❍ This reliance perpetuates rural **poverty** and **inequality.** With more people employed than needed, labor is **inefficiently utilized, hindering innovation and mechanization.**

➢ **Increased Informality:** The surge may increase **informality** in the labor market. Informal workers lack legal protections, healthcare, and **social security,** making them vulnerable to economic shocks and poor conditions.

➢ **Gender Disparity and Unequal Wages:** The surge in agricultural employment worsens **gender inequalities,** with women **earning less than men in informal, low-paid roles.**

❍ This deepens the **gender pay gap,** weakens **rural income stability,** and **reduces women's participation in urban jobs.**

❍ Additionally, rural wages have not kept pace with inflation, eroding the purchasing power of agricultural workers.

What Factors Contribute to India's Insufficient Non-Agricultural Employment?

➢ **Stagnant Manufacturing Sector:** Developed economies traditionally transitioned from **agriculture to manufacturing and then to services** (e.g., China, Korea).

❍ India, however, deviated by **highly relying on service sector growth,** with **manufacturing output and employment stuck at 20%,** constraining job creation.

❍ While the **Production Linked Incentive (PLI) scheme** aims to generate 60 lakh jobs over five years, it is production-focused rather than employment-focused.

➢ **Service Sector Growth Challenges:** India's service sector is **polarized,** with high-tech services **(Artificial intelligence,** and **Data analytics)** generating output growth but **low-skilled services(customer service roles) creating most jobs.**

❍ Domestic demand for high-tech services is low due to sluggish industrial growth.

❍ The **Economic Survey 2023-24** notes that **Generative AI (GenAI),** is poised to disrupt sectors like **Business process outsourcing (BPO)**, potentially reducing employment opportunities over the next decade.

❍ Around **10 million jobs must be added annually from 2024-25 to 2029-30 for India to sustain a 6.5%** year-on-year **Gross Value Added(GVA)** growth.

➢ **Skill Deficit and Education Quality:** India produces 2.2 million **Science, Technology, Engineering and Mathematics (STEM) graduates** annually, yet many remain unemployable due to poor educational quality.

Note:

○ Approximately **8-10 million new workers enter the job market annually, with aspirations unmet by available job opportunities.**

○ With a **median age of 28,** India faces mounting **pressure to create high-value jobs** to avoid turning its demographic dividend into a burden.

➢ **Informal Economy:** The rise in **informal sector** workers post-pandemic reflects economic distress, where workers likely turned to informal work due to the absence of formal employment options.

India's Initiatives for Non-Agricultural Employment
➢ **Prime Minister's Employment Generation Programme (PMEGP)**
➢ **Pradhan Mantri Mudra Yojana (PMMY)**
➢ **Atmanirbhar Bharat Rojgar Yojana (ABRY)**
➢ **e-Shram Portal**
➢ **National Career Service (NCS)**
➢ **Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA)**
➢ **Pradhan Mantri Garib Kalyan Rojgar Abhiyaan (PMGKRA)**

India's Strategy for Deregulation and Growth

Why in News?

Recently, the **Chief Economic Advisor (CEA)**, Dr. **V. Anantha Nageswaran**, has announced that **deregulation** will be a major theme in the **Economic Survey** for 2024-25.

➢ This announcement underscores the government's intention **to ease restrictive regulations in various sectors** to spur economic growth, and enhance the productivity of **Small and Medium Enterprises (SMEs).**

Note: Deregulation refers to the process of **reducing or eliminating government controls over industries** or sectors to foster **competition and enhance market efficiency** by encouraging the entry of new players.

➢ It has been a significant aspect of **Economic Reforms (LPG Reforms)** initiated post-1991, transitioning the country from a highly regulated, state-controlled economy to a more liberalized and globally integrated one.

➢ For Example, in **1978,** India passed the **Airline Deregulation Act,** which gave more control to airline companies and changed the landscape of the industry.

What are the Key Focus Areas for Economic Growth of India?

➢ **Deregulation as a Catalyst for Growth:** The upcoming **Economic Survey** for 2024-25 highlights **deregulation, particularly at state and local levels**, as a key growth catalyst.

○ Citing outdated restrictions on **118 occupations deemed "risky" for women**, and to **reform female labour force participation** and promote entrepreneurship, unlocking greater economic potential.

➢ **Wage Growth and Consumption:** CEA highlighted the **stagnation of wages, especially for contractual employees**, which has **failed to keep up with inflation,** reducing purchasing power. Despite rising corporate profits, **wage disparity** persists.

○ A **correction in corporate wage structures** is needed to align earnings with living costs, stimulating demand and economic growth.

➢ **Informalisation of the Workforce:** The Covid-19 pandemic accelerated the shift from regular to informal employment, weakening job security and benefits. While beneficial for companies, this trend hampers consumption and economic growth by limiting workers' ability to save and invest.

➢ **Small and Medium Enterprises (SMEs):** India's **Small and Medium Enterprises (SMEs)** sector is crucial for economic growth, especially in manufacturing. However, it faces challenges due to the **"micro"** category, **limiting access to resources and support**.

○ Learning from Germany and Switzerland, India must end concessions that keep SMEs small. A vibrant SME sector can help achieve India's goal of a 25% share of GDP from manufacturing.

➢ **Job Creation and Labour Force Participation:** India needs to create around **8 million jobs annually** to absorb its growing workforce. CEA emphasized **balancing capital and labour-intensive growth**, with the **private sector** playing a key role.

Note:

○ Policies like **cash incentives and provident fund contributions** for first-time hires aim to boost job creation.

What are the Implications of Deregulation for the Indian Economy?

➢ **Boost to Private Sector Growth:** Deregulation allows businesses to operate with **greater autonomy, reducing bureaucratic delays and enabling faster decision-making**. This has led to the flourishing of industries such as telecommunications, aviation, and IT.

➢ **Innovation and Entrepreneurship:** Deregulation has created a **conducive environment for startups and innovation** by reducing compliance burdens and fostering ease of doing business.

○ With the growth of industries due to deregulation, there has been a corresponding **increase in job opportunities** across various sectors, contributing to economic empowerment.

➢ **Attraction of Foreign Investments:** By removing restrictions on **foreign direct investment (FDI)** in various sectors, deregulation has helped India become a preferred destination for global investors, enhancing capital inflows and technology transfer.

➢ **Increased Efficiency and Competition:** A deregulated market fosters healthy competition, ensuring **better quality goods and services** at competitive prices, benefiting consumers while driving industrial growth.

LPG Reforms

➢ PM Rao along with Finance Minister Manmohan Singh, initiated the **LPG reforms (Liberalization, Privatization, and Globalization)** that were introduced as a cornerstone of India's economic strategy to overcome the crisis and promote sustainable growth.

○ **Liberalisation:**

● **New Trade Policy:** Introduced to boost exports by revamping the licensing process and linking non-essential imports to exports.

● **Exim Scrips:** The government removed export subsidies and instead introduced tradeable exim scrips for exporters based on the value of exports. The policy ended the monopoly of state-owned firms over imports, enabling the private sector to import goods independently.

● **Ending Licence Raj:** The new industrial policy dismantled the licence raj, relaxing Monopolies and Restrictive Trade Practices Act provisions to facilitate business restructuring and mergers. The policy abolished industrial licensing for all but **18 industries, irrespective of investment levels.**

○ **Privatisation:**

● **FDI Reforms:** Automatic approval for **foreign direct investment (FDI)** up to 51% was introduced, compared to the previous cap of 40%.

● **Public Sector Monopoly Restriction:** Restricted public sector monopoly to sectors critical for national security.

● **Opening Markets:** These changes made it easier to do business in India, attracting a deluge of foreign goods and investments in subsequent years.

○ **Globalisation:**

● **Economic Policies:** The reforms aimed at integrating India's economy with the global market, encouraging international trade and investment.

● **Boosting Exports:** With the massive devaluation of the rupee and new trade policies, Indian exports became more competitive globally.

What is the Importance of Deregulation for the Indian Economy?

➢ **Reviving Economic Growth:**

○ The Covid-19 pandemic triggered a significant **contraction in India's economy** in 2020. While the economy rebounded strongly in **2021 with a** GDP **9% growth,** which has now slowed down to **5.4% in July-September FY25,** below **RBI's 7% projection.**

○ By reducing **bureaucratic hurdles and empowering market forces**, deregulation fosters entrepreneurship, investment, and innovation, driving sustainable economic recovery and growth.

➢ **Addressing Unemployment and Underemployment:**

○ The pandemic worsened unemployment, with over **1.8 crore** salaried jobs lost between April and July 2020.

Note:

○ By **promoting ease of doing business and fostering private sector growth, deregulation creates** employment opportunities, particularly in sectors that were adversely impacted by the pandemic

➤ **Reinvigorating Agriculture and Allied Sectors:**

○ Despite some recent growth, the **agricultural sector** which employs over 50% of the workforce has not kept pace with overall economic growth.

○ The **sector's contribution to GDP** has **declined** from **35% in 1990-91** to **15% in FY23** and its growth rate **declined to 1.4% in 2023-24** from **4.7% in 2022-23.**

➤ **Bridging Infrastructure Deficit:**

○ According to the **World Bank**, India faces an infrastructure gap estimated at USD 1.5 trillion, with significant deficiencies in **transportation, energy, and healthcare**.

○ Private investment remains low, falling to **19.6% of GDP in 2020-21,** and **Gross Fixed Capital Formation (GFCF)** declined by **14.5% in FY 2020-21.**

➤ **Enhancing Export Competitiveness and Geopolitical Tensions:**

○ Geopolitical issues, such as the **Russia-Ukraine war**, have disrupted global trade, impacting sectors like textiles and footwear, where exports have contracted.

○ Additionally, India's **pharmaceutical sector**, despite its global aspirations, has struggled to keep pace with growing demand, lagging behind global growth in the sector.

MSME Sector

➤ **About:**

○ MSMEs (Micro, Small, and Medium Enterprises) are businesses involved in the production, processing, and preservation of goods and services.

➤ **Classification:**

○ They are classified based on investment in plant and machinery for manufacturing or equipment for service enterprises, as well as their annual turnover as:

CLASSIFICATION	MICRO	SMALL	MEDIUM
Manufacturing Enterprises and Enterprises rendering Services	Investment in Plant and Machinery or Equipment: Not more than Rs.1 crore and Annual Turnover ; not more than Rs. 5 crore	Investment in Plant and Machinery or Equipment: Not more than Rs.10 crore and Annual Turnover ; not more than Rs. 50 crore	Investment in Plant and Machinery or Equipment: Not more than Rs.50 crore and Annual Turnover ; not more than Rs. 250 crore

➤ **Contribution in Indian Economy:**

○ The MSME sector is crucial to India's economy, driving employment, innovation, exports, and inclusive growth.

○ It accounts for 45% of industrial production, 40% of exports, and contributes 37.54% to India's GDP.

○ The manufacturing segment within MSMEs contributes 7.09% to GDP, while the services sector adds 30.50%.

What are the Key Initiatives to Accelerate the Growth of the Indian Economy?

➤ **New Economic Policy (NEP), 2020**

➤ **Strategic Disinvestment**

➤ **Comprehensive Labour Codes**

➤ **Production-Linked Incentive (PLI) Scheme**

➤ **PM Gati Shakti - National Master Plan**

➤ **Bharatmala Project**

➤ **Start-up India**

➤ **Make in India 2.0**

Note:

drishti

What Strategies Can India Adopt to Make Deregulation Impactful?

➢ **Encourage PPP and Competition:**
- ❍ For making deregulation successful and impactful there is a need to foster **partnerships between the government and private sector** to ensure effective implementation of reforms while encouraging **fair competition** to **break monopolies** and foster innovation.

➢ **Leverage Technology and Simplify Compliance:**
- ❍ Use **digital platforms** to enhance **governance transparency, reduce compliance** burdens, and streamline approval processes. The **Digital India initiative** and single-window clearance systems under the Ease of Doing Business reforms.

➢ **Promote Financial Inclusion and Support SMEs:**
- ❍ Ensure deregulation benefits marginalized populations by **expanding access to banking and credit facilities**, while supporting SMEs to adapt to market dynamics. Example: **Pradhan Mantri Jan Dhan Yojana (PMJDY)** and **Startup India** initiatives.

➢ **Learn from Global Examples:**
- ❍ There is a need to **adapt global best practices to local contexts** and engage **stakeholders in participatory decision-making** to build trust and address resistance.
- ❍ **Singapore's deregulation** has fostered economic growth and improved living standards, benefiting the financial sector, telecommunications, transportation, and electricity market.

➢ **Sector-Specific Reforms:** Sector-specific reforms should address unique challenges while ensuring **strong regulatory oversight** in critical areas like finance, environment, and defense.
- ❍ For example, allowing **100% FDI in defense promotes modernization** but requires stringent regulations for security, while the **Insolvency and Bankruptcy Code (IBC)** streamlines financial resolution while maintaining accountability and preventing risks.

Rise in Forex Reserves

Why in News?

India's **foreign exchange** rose to **USD 658.09 billion** in November 2024 after **eight weeks** of decline, following the peak of **USD 704.89 billion** in September 2024.

➢ In another development, RBI has planned **several initiatives** for a robust banking system.

What are Key Developments in India's Forex Reserves?

➢ **Forex Reserves Movement:** The movement in forex reserves is intrinsically linked to India's merchandise trade deficit and service exports.
- ❍ **Merchandise Trade Deficit:** India has historically run a **merchandise trade deficit,** with imports (USD 683.55 billion in 2023-24) exceeding exports (USD 441.48 billion), resulting in a trade deficit of **USD 242.07 billion in 2023-24**.
- ❍ **Services and Remittances:** Software service exports increased from USD 60.96 billion in 2011-12 to **USD 142.07 billion in 2023-24**, boosted by global digitization post-COVID.
  - ● Private **remittances** rose from USD 63.47 billion in 2011-12 to USD **106.63 billion in 2023-24.**

➢ **Current and Capital Account Position:** The **Current Account Deficit (CAD)** narrowed from USD **78.16 billion** in 2011-12 to **USD 23.29 billion in 2023-24**, despite a consistent merchandise trade deficit.
- ❍ Capital flows include **Foreign Direct Investment (FDIs), Foreign Portfolio Investors (FPIs) , external commercial borrowings (ECBs), and NRI deposits**.
- ❍ Out of these, **FDI** flows are considered more **stable** while the other three sources are either **fickle (FPI) or short-term (ECB and NRI deposits)** and prone to sudden outflows and withdrawals.

➢ **FDI and FPI Trends:** FDI flows into India have dropped from **USD 56.01 billion** in 2019-20 to **USD 26.47 billion in 2023-24.**
- ❍ Net FPI flows stand at a record **USD 44.08 billion in 2023-24**.

➢ **Future Outlook:** Despite fluctuating FDI and uncertain geopolitical scenario, the situation isn't too bad.
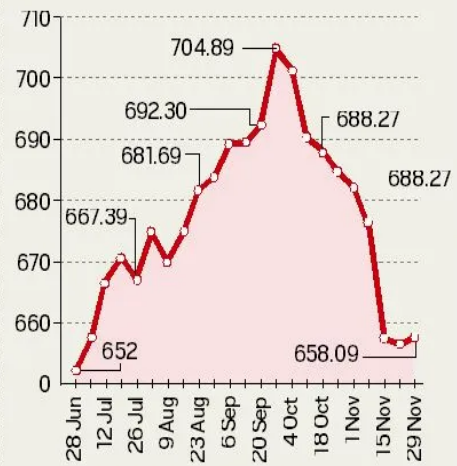
Note:

drishti

○ In 2011-12 and 2012-13, the US Federal Reserve's reduction of **bond purchases (tapering)** led to reduced capital flows, causing the rupee to drop and forex reserves to shrink.

## KEY COMPONENTS OF INDIA'S BALANCE OF PAYMENTS ($ BILLION)

Year (Apr-Mar)	Trade Deficit (1)	Invisibles Surplus (2)	CAD (1−2)(3)	Capital Inflows (4)	Reserves Increase (4−3)
2011-12	189.76	111.6	78.16	65.32	-12.83
2012-13	195.66	107.49	88.16	91.99	3.83
2013-14	147.61	115.31	32.3	47.8	15.51
2014-15	144.94	118.08	26.86	88.26	61.41
2015-16	130.08	107.93	22.15	40.05	17.9
2016-17	112.44	98.03	14.42	35.97	21.55
2017-18	160.04	111.32	48.72	92.29	43.57
2018-19	180.28	123.03	57.26	53.92	-3.34
2019-20	157.51	132.85	24.66	84.15	59.5
2020-21	102.15	126.06	-23.91	63.37	87.29
2021-22	189.46	150.69	38.77	86.27	47.5
2022-23	265.29	198.24	67.05	57.92	-9.13
2023-24	242.07	218.78	23.29	86.99	63.7

Note: Figures are for fiscal (April-March); CAD: Current Account Deficit.

INDIA'S FOREIGN EXCHANGE RESERVES ($ BILLION)

Source: Reserve Bank of India.
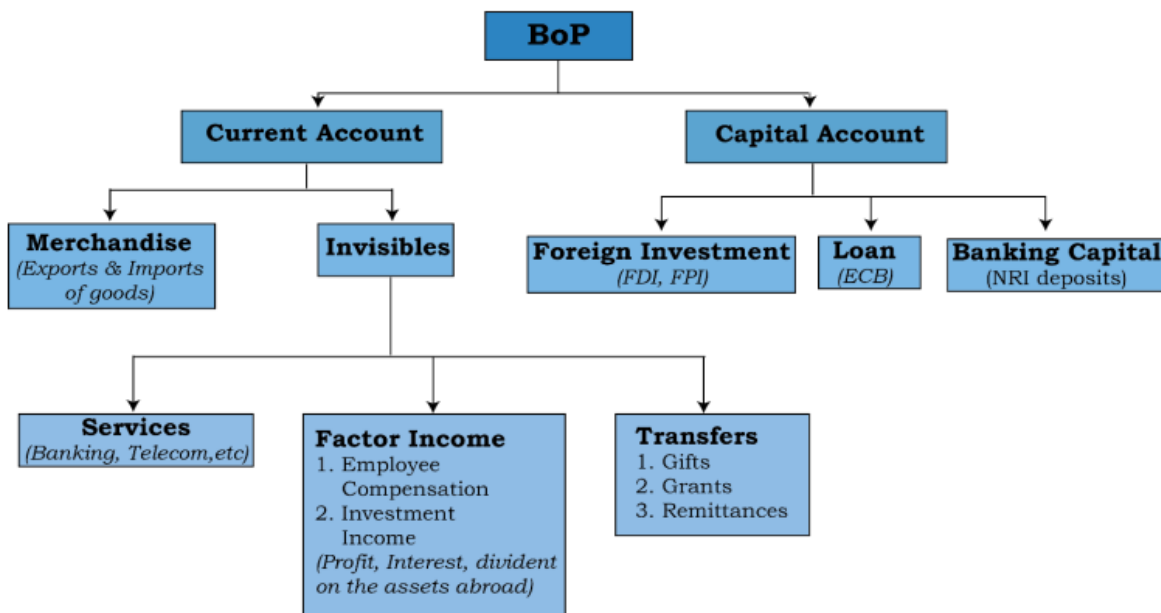
Note: The **"invisibles" account**, including **services and remittances,** has consistently shown a surplus, helping offset the merchandise trade deficit.

➢ **Tapering** is a term used in finance to describe a **reduction of monetary stimulus** provided by central authorities to the capital markets. It is the **reversal of quantitative easing policies,** intended to stimulate economic growth.
○ Financial markets may experience a **downturn** in response to tapering, known as a **"taper tantrum."**

Note:

What are Foreign Exchange Reserves?

➢ **About:** Foreign exchange reserves are **assets** held on reserve by a central bank in **foreign currencies**.

   ○ It can include **banknotes, deposits, bonds, treasury bills**, and other government securities.

   ○ Following the **1990-91 economic crisis**, **C. Rangarajan and Y.V. Reddy committee** recommended maintaining forex reserves to **cover 12 months of imports.**

➢ **Components:** India's Forex Reserve include:

   ○ **Foreign Currency Assets (FCA): FCA** predominantly composed of major global currencies like the **US Dollar, Euro, and Japanese Yen**.

   ○ **Gold Reserves: Gold** has long been valued as a **key reserve asset** offering both stability and universal acceptance.

   ○ **Special Drawing Rights (SDRs): SDRs**, created by the **International Monetary Fund (IMF)**, are reserve assets that **supplement** member countries' official reserves.

   ○ **Reserve position with IMF:** It is a portion of the **required quota of currency** each member country must provide to the **IMF.**

What is the Role of Forex Reserves in Economic Stability?

➢ **Economic Buffer:** Reserves help countries manage **downturns, stabilize currency, and maintain investor trust.**

➢ **Trade Equilibrium:** Reserves enable countries to **address trade imbalances** when imports exceed exports.

➢ **Monetary Strategy:** Reserves allow central banks to **control currency value, manage inflation**, and implement monetary policies.

➢ **Fulfilling External Obligations:** Sufficient reserves help countries **meet external debt,** boosting international credibility.

➢ **Exchange Rate Management:** Central banks use reserves to **intervene in the foreign exchange market,** ensuring competitiveness and reducing volatility.

➢ **Liquidity Provision:** Reserves ensure a country can meet financial obligations, like **debt and imports, during crises.**

What are the RBI's Recent Initiatives to Create a Robust Banking System?

➢ **FCNR(B) Deposits:** In order to attract more capital inflows, the RBI has decided to increase the interest rate ceilings on **Foreign Currency Non-Resident Bank (FCNR (B))** account deposits.

   ○ FCNR (B) accounts are **foreign currency term deposits** that non-resident Indians can open with Indian banks.

➢ **SORR Benchmark:** RBI is planning to introduce the **Secured Overnight Rupee Rate (SORR)** as a new benchmark based on **all secured money market transactions**, including **overnight market repos** and **TREPS** (Treasury Bills Repurchase Agreement).

   ○ It will help develop the **interest rate derivatives market** and enhance the **credibility of interest rate benchmarks** in India.

➢ **Collateral-Free Agriculture Loans:** The RBI has decided to **increase the limit for collateral-free agricultural loans** from **Rs 1.6 lakh to Rs 2 lakh per borrower**.

➢ **Panel on AI:** The RBI will set up a **committee** of experts to recommend a **Framework for Responsible and Ethical Enablement of AI (FREE-AI)** in the financial sector to ensure ethical use and minimize risks.

   ○ The RBI has developed an **AI/ML-based model called MuleHunter.AI** to help banks manage and combat **mule bank accounts**.

India Lags in Leveraging China+1 Strategy

Why in News?

The recently released **NITI Aayog's Trade Watch report** highlights India's trade prospects, challenges, and growth potential, especially in light of the **US-China trade conflict** and the **'China Plus One' strategy**.

➢ It stated that India has had **"limited success so far"** in capitalizing on the 'China Plus One' strategy adopted by multinational companies to diversify and de-risk their supply chains.

Why has India Seen "Limited Success" in China+1 Strategy?

➢ **Competitive Disadvantages and Regulatory Challenges:**
  ○ Countries like **Vietnam, Thailand, Cambodia, and Malaysia** have leveraged **cheaper labor, simplified tax laws, and lower tariffs** to attract multinational corporations looking to diversify away from China.
  ○ India's **complex regulations, bureaucratic hurdles, inconsistent policies** and **higher labor costs** deter investment, with slow administration and unpredictable reforms reducing business competitiveness.
    ● Additionally, **corruption** has eroded investor confidence, increased transaction costs, and undermined India's appeal as an investment destination, despite ongoing anti-corruption efforts.

➢ **Free Trade Agreements (FTAs):**
  ○ South-Asian countries like **Vietnam, Thailand, Cambodia, and Malaysia** have been **more proactive in signing Free Trade Agreements (FTAs),** which has **helped them expand their export shares**.
  ○ India's slower pace in negotiating and finalizing FTAs has put it at a disadvantage.

➢ **Geopolitical Tensions and Limited Market Share:**
  ○ **India's limited share in global trade** (less than 1% in 70% of global trade) highlights **untapped potential.**
  ○ While geopolitical tensions, like the **US-China trade conflict,** offer opportunities for India to emerge as a **neutral alternative**, they also **create uncertainty, complicating trade strategies** and **hindering market expansion.**

➢ **Supply Chain Disruptions:**
  ○ US export controls and tariffs on China have **fragmented supply chains**, offering India an opportunity. However, **poor infrastructure, inefficient ports,** and **high logistics costs** have limited India's ability to attract foreign investment.

➢ **Carbon Tax Risks and Land Acquisition Issues:**
  ○ The EU's **Carbon Border Adjustment Mechanism (CBAM)** risks raising costs for India's iron and steel exports, reducing competitiveness.

  ○ Additionally, India's **complex tax regime and slow land acquisition processes** increase business costs, delaying industrial projects and hindering growth.

What is the 'China Plus One' Strategy?

➢ **About:**
  ○ The **China Plus One (or China+1) strategy** refers to the **global trend of companies diversifying their manufacturing and supply chains** by setting up operations in **countries beyond China**.
  ○ This strategy aims to r**educe risks from over-dependence on a single country**, particularly due to geopolitical tensions and supply chain disruptions.

➢ **Background of China+1 Strategy:**
  ○ **China as "World's Factory":**
    ● For decades, China has been the hub of global supply chains, earning the title of "World's Factory" due to its **favorable production factors** and **strong business ecosystem.**
    ● In the 1990s, companies from the **US and Europe** shifted production to China, attracted by **low manufacturing costs** and **access to its large domestic market.**
  ○ **Disruptions During the Pandemic:**
    ● However, the **Covid-19** pandemic caused significant disruptions, with **China's zero-Covid policy** leading to industrial lockdowns, **inconsistent supply chain** performance, and container shortages.
  ○ **Evolution of the China+1 Strategy:**
    ● The confluence of factors, including China's zero-Covid policy, supply chain disruptions, high freight rates, and longer lead times, has led many global companies to adopt a "China-Plus-One" strategy.
      ■ This involves relocating manufacturing to alternative countries such as India, Vietnam, Thailand, Bangladesh, and Malaysia to mitigate dependency on China.

What are the Key Growth Drivers for India under the China+1 Strategy?

➢ **Large Domestic Market and Demographic Advantage:**
  ○ India's **1.3 billion population,** with a **youthful demographic** and **rising incomes,** creates a growing consumer base and a strong workforce.

drishti

○ With India's **real GDP** is projected to grow between **6.5-7%** in 2024-25 and **around half of the population under 30**, India is poised for **sustained economic growth,** positioning it as a key driver of global trade and an attractive investment destination.

➢ **Cost Competitiveness and Infrastructure Advantage:**

○ India's production sector benefits from **lower labour and capital costs** compared to competitors like Vietnam, with **manufacturing wages 47% lower than China's.**

○ The government's infrastructure initiatives, such as the **National Infrastructure Pipeline (NIP)**, aim to **reduce manufacturing costs and improve logistics by 20%**, enhancing India's global competitiveness.

➢ **Business Environment and Policy Initiatives:**

○ Recent reforms, including the **Production Linked Incentive (PLI) scheme, tax changes**, and relaxed **FDI norms**, have improved India's business climate.

○ The **Make in India** initiative and simplified business processes further attract foreign investments through incentives for global companies.

➢ **Strategic Economic Partnerships:**

○ India's focus on strategic partnerships, such as the **India-UAE Comprehensive Economic Partnership Agreement (CEPA)**, enhances its global trade position. These agreements are projected to **boost bilateral trade** by **200% in five years,** opening new markets while **reducing dependence on any single economy**.

➢ **Dynamic Diplomacy and Global Influence:**

○ India's active role in forums like **QUAD, I2U2, G20,** and **Shanghai Cooperation Organisation** strengthens its diplomatic and economic ties. By leading global discussions, India influences **trade trends, attracts investments, and facilitates technology transfer** and **financial cooperation.**

Potential Indian Sector Having Advantage Under the China+1 Strategy

➢ **Pharmaceuticals:** With a valuation of Rs 3.5 lakh crore in 2024, India is the world's **third-largest pharmaceutical producer**, supplying **70%** of WHO's vaccine needs and offering **33% lower manufacturing costs** than the US.

➢ **Metals and Steel:** India's **natural resource wealth** and the **PLI scheme** for specialty **steel**, expected to draw Rs 40,000 crore by 2029, strengthen its position as a major steel exporter, further boosted by China's export policy changes.

➢ **Information Technology (IT/ITeS):** India is a key player in **IT services exports,** supported by initiatives like **"Make in India"** and a focus on manufacturing IT hardware, attracting global technology firms.

DRI Report on Smuggling

Why in News?

The **Directorate of Revenue Intelligence (DRI)** recently released a report highlighting a significant increase in drug seizures, contraband cigarettes, and illicit currency in India.

➢ The report underscores the **evolving landscape of smuggling in India**, with Dubai emerging as a major transit hub for cigarette smuggling.

What are the Key Highlights of the DRI Report on Smuggling?

➢ **Spike in Drug Seizures:** The DRI reported a significant increase in drug seizures in FY24, with cocaine seizures more than doubling from the previous year and cocaine smuggling rising by 9%**.**

○ **Methamphetamine** seizures have also increased, particularly in northeastern states like **Assam and Mizoram**,

➢ **Contraband Cigarettes:** The first half of FY25 saw a **19% rise in contraband** cigarette seizures, primarily smuggled through free trade warehousing zones in **Dubai**.

➢ **Illicit Currency Seizures:** DRI officials seized **Rs 13.8 crore in foreign currency** during the first half of FY25, surpassing the total of Rs 12.4 crore seized in all of FY24.

➢ **Gold Seizures Decline:** Gold **seizures fell by 9% in FY24**.

○ Land routes from **Myanmar, Bangladesh,** and **Nepal** accounted for **55% of gold seizures**.

➢ **Wildlife Smuggling Operations:** DRI seized **53.5 kg of elephant tusks** and various other wildlife items, highlighting ongoing issues with wildlife trafficking.

Note:

What are Some Key Facts About DRI?

➢ **About:**
  ○ The **DRI, apex anti-smuggling agency of India,** was established on **4th December 1957, and has evolved from the Central Revenue Intelligence Board formed in 1953**.
  ○ The DRI, under the **Central Board of Indirect Taxes & Customs**, **Ministry of Finance,** investigates and enforces Customs and indirect tax laws.
  ○ The **Directorate General of GST Intelligence** (formerly the **Directorate General of Anti-Evasion/Central Excise Intelligence**) and the **Narcotics Control Bureau** were created from the DRI before becoming specialized agencies.

➢ **Operations:**
  ○ The DRI's cross-border operations target small arms trafficking, money laundering, terrorism financing, and illegal wildlife trade.
    • Its role has expanded to include **commercial fraud, money laundering, and counterfeit currency trafficking**.
    • **In the fiscal year 2023-24,** DRI recorded seizures valued at approximately Rs 3,573 crore.

➢ Since 2013, the **DRI's annual regional Customs enforcement meeting** on Foundation Day has fostered international cooperation among global Customs enforcement heads and organisations.

What are the Challenges in Controlling Smuggling?

➢ **Corruption and Collusion:** Smugglers often **exploit corruption and collusive practices to facilitate their operations**, undermining legal frameworks and enforcement mechanisms.
  ○ Despite amendments to the **Wildlife Protection Act empowering customs officers to seize illegally traded wildlife**, wildlife trafficking continues to be a persistent issue.

➢ **Misuse of Trade Agreements:** The **exploitation of free trade agreements** allows smugglers to **misdeclare goods**, **complicating enforcement** and enabling the influx of illicit products into the market.
  ○ This misuse poses a threat to domestic industries and the economy.

➢ **Lack of Comprehensive Data:** Inadequate data collection on smuggling activities limits the ability of authorities to respond effectively.
  ○ For instance, while the **National Crime Records Bureau (NCRB)** provides some statistics, **comprehensive data on all smuggling incidents is lacking**, hindering strategic planning and resource allocation.

➢ **Increased Use of Technology by Smugglers:** The rise of **cyber-enabled drug trafficking** through the **dark web** and **cryptocurrencies** presents new challenges for enforcement agencies.
  ○ The **Narcotics Control Bureau (NCB)** has reported a **growing number of cases involving these technologies**, complicating traditional smuggling detection methods.

➢ **Geographical Challenges:** India's **extensive borders with multiple countries** make it difficult to monitor and control smuggling activities effectively.
  ○ The **diverse terrain and varying levels of enforcement** across states further complicate efforts to combat smuggling comprehensively.

➢ **Changing Smuggling Tactics:** Smuggling syndicates have evolved their methods, employing **"mules" and using international departure gates** to facilitate gold smuggling, reflecting a shift towards more sophisticated techniques

What are the Actionable Strategies to Address Smuggling Challenges?

➢ **Strengthening Law Enforcement:** Enhancing collaboration between various law enforcement agencies at national and international levels can improve the effectiveness of anti-smuggling operations.
  ○ The **Ministry of Home Affairs** has initiated **capacity-building programs** for **law enforcement to combat trafficking** and smuggling more effectively.
  ○ The **US Customs and Border Protection (CBP)** works closely with the **Canadian Police** to combat smuggling across borders,

➢ **Regulatory Frameworks:** Implementing **stricter regulations on free trade zones** and improving monitoring systems can help curb contraband activities.
  ○ **Regular audits and inspections** should be conducted to ensure compliance with trade laws.

Note:

drishti

- The **European Union (EU)** has **stringent regulations governing free trade zones** to prevent misuse for smuggling activities.

➤ **Investment in Technology:** Utilising **advanced technologies such as data analytics**, drones, and surveillance systems can enhance detection capabilities at borders and ports.

  - **Australia has invested in advanced surveillance technologies,** such as drones and automated detection systems, to effectively monitor borders and ports.

➤ **Public Awareness Campaigns:** Educating the public about the dangers of drug abuse and the impact of smuggling on society can foster community involvement in reporting suspicious activities.

  - Example: **In the UK, campaigns like "Crimestoppers"** urge citizens to report suspicious drug trafficking and smuggling activities.

Decline in 10-Year Bond Yield

Why in News?

Recently, Indian **government bond yields** witnessed a significant decline, with the **10-year benchmark** yield dropping to its **lowest level since 2021.**

➤ This shift is attributed to rising optimism about the **Reserve Bank of India (RBI)** potentially easing interest rates in its upcoming monetary policy review.

What Factors Have Contributed to the Decline in the Bond Yields?

➤ **Economic Growth Slowdown**: India's **GDP** growth slowed to **5.4%** in the September 2024 quarter, marking the **lowest growth in 7 quarters**.

  - The economic slowdown has raised concerns, driving **expectations of RBI monetary easing**, **through rate cuts or liquidity measures** leading to increased demand for bonds and a consequent decline in yields.

➤ **Measures Taken by RBI:** Anticipations of **liquidity infusion** through **Open Market Operations (OMO)** or a cut in the **Cash Reserve Ratio (CRR)** of around **50 basis points** by the **RBI** could release approximately **Rs 1.1 lakh crore** into the banking system.

  - This move would likely reduce shorter-term bond yields and boost liquidity.

➤ **Foreign Investments:** Increased **foreign investments in Indian bonds**, including Rs **7,700 crore in net purchases** in a short period and Rs 20,200 crore by foreign lenders, have boosted demand, contributing to declining yields and signaling investor confidence in the economy.

What is Bonds and Bond Yield?

➤ **Bonds:** A bond is an **instrument to borrow money.** It is like an **IOU (I owe you)**.

  - A bond could be floated/issued by a **country's government** or by a **company to raise funds**.

  - Since **Government Bonds** (referred to as G-secs in India, Treasury in the US, and Gilts in the UK) come with the **sovereign's guarantee**, they are considered one of the **safest investments.**

➤ **Bond Yield:**

  - Bond yield represents the **return an investor can expect from a bond**, expressed as a percentage.

  - However, **this return is not fixed** and **varies with changes in the bond's market price**. It is **inversely related to bond prices** i.e. when bond prices rise, yields fall, and vice versa.

  - **Every bond has:**

    - **Face Value:** The nominal value of the bond, typically repaid at maturity.

    - **Coupon Payment:** The fixed annual payment made to the bondholder.

    - **Coupon Rate:** The annual interest rate expressed as a percentage of the bond's face value.

  - For example, a **10-year government security (G-sec)** with a face value of Rs. 100, a coupon payment of Rs. 5, and a coupon rate of 5% offers a 5% yield. The investor receives **Rs. 5 annually for 10 years and the Rs. 100 face value** at maturity, representing the return for lending Rs. 100 today.

Note:

Relationship between Bond Price and Interest Rates
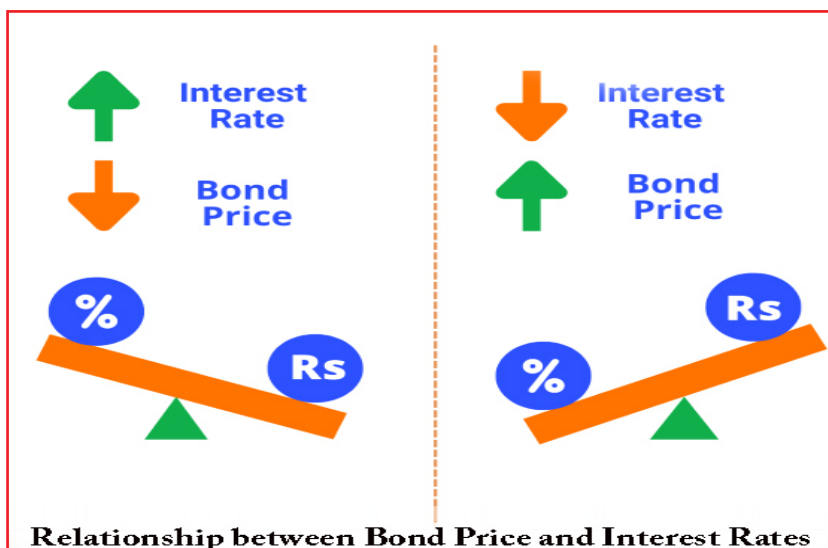
International Debt Report 2024

Why in News?

Recently released, **World Bank**'s **"International Debt Report 2024"** highlights a worsening debt crisis for **developing nations,** with 2023 marking the highest debt servicing levels in two decades, driven by rising interest rates and economic challenges.

➢ Also, earlier in June 2024, a **UNCTAD** report, *"A World of Debt 2024: A Growing Burden to Global Prosperity"*, highlighted a severe global debt crisis impacting the world.

What are the Key Findings of the International Debt Report, 2024?

➢ **Rising Debt Levels:**
  ❍ The total external debt of **Low- and Middle-Income countries (Developing or LMICs)** reached a record **USD 8.8 trillion** by the end of 2023, marking an **8% increase** since 2020.
  ❍ **External debt** for the **International Development Association (IDA)**-eligible countries rose by nearly **18%**, reaching **USD 1.1 trillion.**
    ● IDA, established in 1960,is a **World Bank Group** institution providing **concessional loans and grants** to the **world's poorest nation**s with low income and poor creditworthiness.

➢ **Rising Debt Servicing Costs:**
  ❍ **LMICs** incurred a record **USD 1.4 trillion in debt servicing costs** (principal plus interest

Note:

payments) in **2023**, with **interest payments increasing by 33% to USD 406 billion**, placing immense pressure on national budgets.

○ The sharp rise in interest payments has **curtailed investments in vital sectors** like health, education, and environmental sustainability, **exacerbating developmental challenges.**

➢ **Rising Borrowing Costs:**

○ In 2023, **interest rates on loans** from **official creditors doubled to over 4%**, while rates from **private creditors rose to 6%**, the highest level in 15 years.

● This surge in interest rates significantly **increased the financial burden on developing countries**, exacerbating their **debt servicing challenges.**

➢ **Role of Private and Official Creditors:**

○ As global credit conditions worsened, private creditors cut lending to IDA nations, leading to **USD 13 billion more in debt servicing** than new loans.

○ In contrast, multilateral lenders, like the **World Bank**, supported these economies by providing USD 51 billion more than they collected in debt payments.

➢ **Impact on IDA-Eligible Countries:**

○ IDA-eligible countries faced severe financial strain in 2023, paying **USD 96.2 billion in debt servicing,** including **USD 34.6 billion in record-high interest costs**- 4 times higher than in 2014.

○ On average, nearly **6% of their export earnings go to interest payments**, with some allocating **up to 38%**.

Global Debt:

➢ It refers to the **total amount of money owed by governments, businesses, and individuals worldwide**, including both **public** and **private debt.**

○ **Public Debt**: This is the **money owed by governments** to domestic and foreign creditors. It is usually financed through the issuance of bonds, treasury bills, or loans from international organizations.

○ **Private Debt:** This pertains to the **money owed by businesses and individuals to banks, lenders, and financial institutions**. It includes mortgages, corporate bonds, student loans, and credit card debts.

What is the State of the Global Debt Crisis as per UNCTAD World of Debt Report 2024?

➢ **Rapid Increase in Global Public Debt:** **Global debt**, encompassing borrowings by households, businesses, and governments, is projected to reach **USD 315 trillion in 2024**, **3 times the global GDP**.

○ **Public debt** is rising rapidly due to factors like the **Covid-19 pandemic, rising food and energy prices**, **climate change**, and a sluggish global economy marked by slowing growth and rising bank interest rates.

➢ **Regional Disparities in Debt Growth: Developing nations' public debt,** now USD 29 trillion (30% of global debt, up from 16% in 2010), is **growing twice as fast as in developed countrie**s.

➢ **Impact on Debt Servicing and Climate Initiatives:** Around **50% of developing countries now allocate at least 8% of their government revenues to debt servicing**, a figure that has doubled in the past decade.

○ Currently, developing nations spend a higher percentage of GDP on **servicing debts (2.4%)** than on **climate initiatives (2.1%),** restricting their ability to address climate change.

○ To meet the **Paris Agreement goals**, climate investments need to rise to 6.9% of GDP by 2030.

➢ **Shifts in Official Development Assistance (ODA): ODA**, which supports economic development and welfare in developing countries, is facing a **significant decline** and **loans now form 34% of aid**, **up from 28% in 2012**, **increasing debt burdens**.

○ Debt relief funding has dropped drastically from USD 4.1 billion in 2012 to USD 300 million in 2022, worsening debt management for developing nations.

Note:

➢ **Official Development Assistance (ODA)** refers to the financial aid provided by donor countries to support the development of poorer nations.

○ The **International Development Association (IDA),** a part of the **World Bank**, is a **key multilateral institution within the ODA framework**. It offers **concessional loans and grants with favorable terms to the world's poorest countries**, thus playing a crucial role in supporting development efforts in these nations.

Note:

> The **G20 Common Framework for Debt Treatment**, launched in 2020 and endorsed by the G20 in collaboration with the **Paris Club**, aims to provide structural support to **Low-Income Countries (LICs)** grappling with unsustainable debt levels.
>> The framework offers a **coordinated and comprehensive approach** to address the severe debt challenges faced by LICs, which have been exacerbated by the **Covid-19 pandemic**.

What Measures have been Taken to Reduce the Global Debt Crisis?

> **Debt Management and Financial Analysis System (DMFAS) Programme**: The DMFAS programme has been implemented by **UNCTAD** which **assists developing countries in improving their debt management** practices.
>> It provides **training and technical support** to enhance debt recording, risk assessment, and negotiations, thereby **promoting sustainable borrowing** practices and preventing future debt crises.

> **Heavily Indebted Poor Countries (HIPC) Initiative**:
>> HIPC was launched by the **IMF** and **World Bank** in 1996. It provides **debt relief and low-interest loans** to **world's poorest nations** which are facing **unsustainable debt**, with eligibility based on strict criteria such as a track record of reforms and development of a **Poverty** Reduction Strategy Paper (PRSP).
>> Countries that complete the program receive debt-service relief and additional financial resources.
>> The **Multilateral Debt Relief Initiative (MDRI)**, introduced in 2005, supplements the HIPC Initiative, helping countries achieve the **Sustainable Development Goals**.
>>> For example, Somalia saved USD 4.5 billion in debt service after completing the program in December 2023.

> **Global Sovereign Debt Roundtable (GSDR)**:
>> The GSDR brings together **debtor countries and official and private creditors** with the objective to **build common understanding** among key stakeholders on **debt sustainability and debt restructuring challenges**, and ways to **address them.**
>> It is co-chaired by the **IMF**, **World Bank**, and the **G20.**

Rise and Challenges of India's Gig Economy

Why in News?

According to a white paper by the **Forum for Progressive Gig Workers,** the **gig economy in India** is projected to grow at a **compounded annual growth rate (CAGR) of 17%**, reaching **USD 455 billion by 2024**, driving significant economic growth and employment opportunities.

What is the Gig Economy?

> **About:** The gig economy refers to a labor market characterized by **short-term, and flexible jobs** often facilitated through digital platforms.
>> It involves individuals or companies offering **services on a temporary** or task-by-task basis, rather than through traditional full-time employment contracts.
>> In the gig economy, **gig Workers** (also known as independent contractors or freelancers) are paid for each task or gig they complete.
>> Popular gig economy activities include **freelance work**, food delivery services, and freelance digital work.

> **Key Features:** The gig economy offers flexibility, allowing workers to choose their schedules and work location.
>> Digital platforms connect service providers with consumers for short-term, task-based jobs.

> **Perspectives on Gig Economy :**
>> **For Gig Workers**: Gig work offers diverse opportunities, and the ability to balance personal and professional lives, **especially benefiting women in the labor market.**
>>> It allows for skill enhancement, with workers able to take on various tasks that broaden their expertise and increase income potential.
>> **For Businesses**: Companies benefit from cost-effective labor, with the ability to scale the workforce as needed based on demand.
>>> Gig work enables businesses to select workers with specific skill sets for short-term projects, optimizing productivity without long-term commitments.

Note:

drishti

GIG ECONOMY PROS AND CONS

Workers in a gig economy can enjoy a number of advantages, but there also are potential disadvantages. The pros and cons include:

Pros
- Greater flexibility
- More variety
- Increased independence
- Better work-life balance

Cons
- Irregular income
- Complex taxes
- No benefits
- Fewer connections
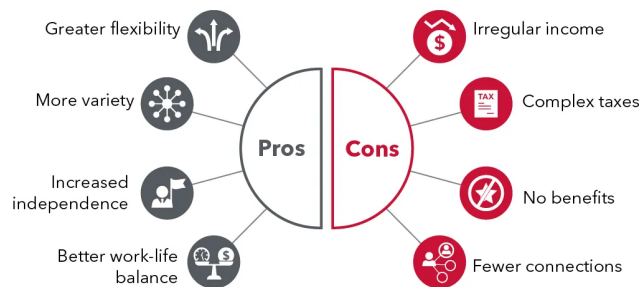
What is the Status of the Gig Economy in India?

➤ **Market Size:** The gig economy in India is rapidly expanding. In **2020-21, there were about 7.7 million gig workers**, projected to grow to **23.5 million by 2029-30**.

  ○ This sector includes a **mix of low, medium, and high-skilled jobs,** with a significant portion in medium-skilled roles.

  ○ Key sectors driving the growth of the gig economy include **e-commerce, transportation, and delivery services**, all benefiting from the increasing demand for flexible work arrangements.

➤ **Driving Factors:**

  ○ **Digital Penetration:** India has over **936 million internet subscribers in India,** with rapid growth in rural areas. This widespread internet access provides a strong foundation for the gig economy.

    ● Around **650 million smartphone users,** with decreasing smartphone prices making it accessible to lower-income groups and expanding internet usage.

  ○ **Startup and E-commerce Growth:** The rise of **startups and e-commerce** requires flexible workers for content creation, marketing, logistics, and delivery, fueling gig economy growth.

  ○ **Consumer Demand for Convenience:** Increased demand for quick services like **food delivery and e-commerce** in urban areas creates opportunities for gig workers in delivery and customer service roles.

  ○ **Low-Cost Labor:** A **large pool of semi-skilled and unskilled labor** willing to take gig work, driven by a **lack of formal employment opportunities**, allows platforms to offer low wages and poor working conditions.

    ● High unemployment, underemployment, income disparities, **rising living costs, and limited social security** drive people towards gig work as a **survival and growth strategy.**

  ○ **Changing Work Preferences:** Younger generations prefer work-life balance and flexibility, **opting for gig work that allows project selection, flexible hours, and remote work.**

What Role Does the Gig Economy Play in Employment Generation in India?

➤ By 2030, the Gig Economy is expected to **contribute 1.25% to India's GDP and generate around 90 million jobs** in the long term.

  ○ By 2030, gig workers are expected to make up **4.1% of the total workforce,** becoming a crucial segment of India's labor market.

➤ The gig economy offers alternate revenue streams for workers, especially in **Tier-II and Tier-III cities, where growth is accelerating.**

➤ **Women stand to benefit** from **increased earnings opportunities,** providing them with greater financial independence and workforce integration.

➤ Initially Gig Economy was dominated by high-income earners and consultants, **gig work has become increasingly popular among entry-level workers and freshers** seeking flexible work options and skill development.

➤ The gig economy is poised to be a major driver of job creation and economic growth, particularly through the integration of **Artificial Intelligence (AI),** predictive analytics, and digital innovation.

Note:

Gig worker segments in India

Perceived level of skill

High-skill

Purpose Fulfillers: *Hair and beauty professional, cook, tutor.* Jobs chosen on the basis of **flexible hours, nearby location and safe work environment. Personality development** is a key driver too

Aspiring Entrepreneurs: *Mechanic, technician, carpenter, electrician.* Having trust in their skill set, they seek **job regularity or continuity and learning opportunities** to master skill sets

Moderate-skill

Ambitious Hustlers: *Data entry operator, telecaller, LIC agent.* Determined to make a career in their current field of work, they aspire for **growth** in terms of **learning** and **rising in designation** with promotions

Hopeful Balancers: *Cab driver, auto driver.* Though driven by the need to earn a **good pay, salary growth potential** and **non-monetary benefits like medical/life/vehicle insurance** too play a key role

Semi-skill

Financial Contributors: *Domestic help, health care worker.* Motivated to earn a **good salary** to provide a helping hand to fund household expenses and also build a savings corpus. **Flexible schedule** and **nearby work location** are also critical

Financially Strapped Solo Earners *Construction worker, food delivery agent.* With low-skill level and high dependency for household income, their key job choice drivers are a **good salary** and **regularity or continuity of job.** Also seek **non-monetary benefits** like **health insurance** to save money in long term

Life stage

Student

Earn to Burn: *Telecaller, data entry operator.* Students seeking to **earn salary** for discretionary spending. Job choice primarily driven by a **flexible schedule**, potential for **personality development** (soft skills, confidence, etc.) and **respectable job title**

Millennial Providers: *Food delivery agent, package delivery agent, data entry operator.* Students financially supporting families as well as funding own education look for jobs that **pay well.** A **flexible schedule** is important too

What are the Challenges Faced by Gig Workers in India?

➢ **Job Insecurity**: Lack of work stability is a major concern, with **20% of dissatisfied gig workers identifying it as the top issue.** This is particularly prominent among unskilled workers, with over 30% citing it as their most critical job driver. Workers like security guards face financial instability due to irregular income.

➢ **Income Volatility**: Earnings are unpredictable, dependent on demand, competition, and seasonal trends, making financial planning difficult and limiting access to loans or credit.

➢ **Regulatory Gaps**: Absence of a comprehensive legal and regulatory framework, leaving gig workers vulnerable to exploitation without protection for fair wages, rights, or working conditions.

Note:

drishti

○ Gig workers often find themselves in a **grey zone between organized and unorganized labor,** limiting access to benefits like healthcare, pensions, and insurance.

➢ **Timely Payments**: Over 25% of gig workers face dissatisfaction due to delayed payments, stressing the need for timely, transparent, and shorter payment cycles to avoid financial strain.

➢ **Learning and Personality Development**: Gig workers, especially Ambitious Hustlers and Earn to Burn, report a lack of skill-building opportunities, expressing a desire for jobs that help advance their careers.
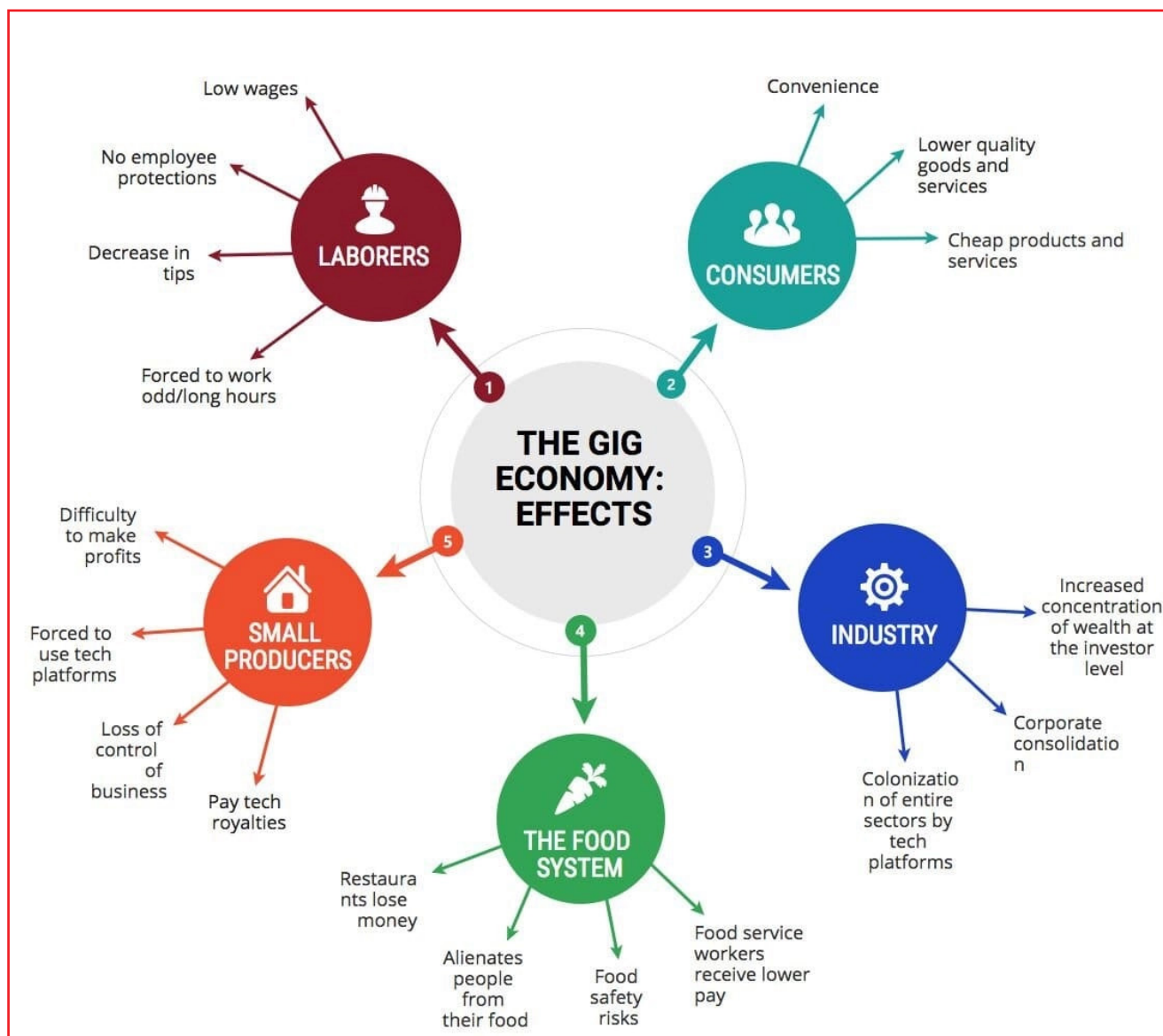
India's Initiatives Related to Gig Workers in India

➢ **Code on Social Security, 2020**: This act recognizes gig workers as a separate category and envisages extension of social security benefits to them.

○ However, it has been criticized for lacking legal mandates, universal coverage, and accountability mechanisms for gig workers.

➢ e-Shram Portal

➢ Pradhan Mantri Shram Yogi Maandhan Yojana

Note:

➢ <u>Pradhan Mantri Jeevan Jyoti Bima Yojana (PMJJBY)</u>
➢ **State-level initiatives**:
  ○ <u>**Rajasthan's Platform-Based Gig Workers (Registration and Welfare) Act, 2023**</u>.
  ○ **Karnataka's Bill on Gig Workers**: This bill mandates formal registration, grievance mechanisms, and transparent contracts, though it has issues such as the classification of gig workers as independent contractors, which excludes them from key labor protections.

WIPO World Intellectual Property Indicators 2024 Report

Why in News?

Recently, India has gained notable recognition in the global <u>**intellectual property (IP)**</u> arena, ranking among the top 10 nations for patents, trademarks, and industrial designs, as per the <u>**WIPO**</u> **World Intellectual Property Indicators (WIPI) 2024 report**.

➢ The report highlights continued growth in **global IP filings**, reflecting innovation resilience despite economic challenges. This increase was largely driven by residents in **China, the US, Japan, South Korea, and India.**

What is WIPO?

➢ The **World Intellectual Property Organisation (WIPO) is one of the oldest specialized United Nations agencies**, was established in 1967 to promote creative activity and protect intellectual property globally. It administers 26 international treaties and is headquartered in **Geneva, Switzerland.**
  ○ WIPO has 193 member states.
➢ **India joined WIPO in 1975.** India is also a member of the following important **WIPO-administered International Treaties and Conventions relating to IPRs:**
  ○ **Budapest Treaty, 2001**, on the International Recognition of the Deposit of Microorganisms for the Purposes of Patent Procedure
  ○ **Paris Convention 1998**, for the Protection of Industrial Property
  ○ **Berne Convention, 1928**, for the Protection of Literary and Artistic Works
  ○ Patent Cooperation Treaty, 1998

  ○ Protocol Relating to the Madrid Agreement Concerning the International Registration of Marks, 2013
  ○ **Washington Treaty on Intellectual Propert**y in respect of Integrated Circuits
  ○ **Nairobi Treaty, 1983**, on the Protection of the Olympic Symbol
  ○ Convention for the Protection of Producers of Phonograms Against Unauthorized Duplication of Their Phonograms, 1975
  ○ **Marrakesh Treaty, 2016**, to facilitate Access to Published Works by Visually Impaired Persons and Persons with Print Disabilities.
➢ **Reports Published by WIPO:**
  ○ <u>**Global Innovation Index**</u>
  ○ World Intellectual Property Indicators
  ○ WIPO Technology Trends report

How has India Performed in the World Intellectual Property Indicators 2024?

➢ **Double-Digit Growth in Patents:** India recorded the fastest growth in patent applications in 2023 among the top 20 origins, marking the **fifth consecutive year of double-digit growth**. India ranks **sixth globally for patents applications**.
➢ **Industrial Designs:** Between 2018 and 2023, **patent and industrial design applications** more than doubled.
  ○ The **top three sectors - Textiles and Accessories, Tools and Machines, and Health and Cosmetics**—made up almost half of all design filings.
➢ **Patent-to-GDP Ratio:** India's patent-to-GDP ratio – a measure of the economic impact of patent activity – also saw significant growth indicating that IP activity is scaling alongside economic expansion.
➢ **Trademarks:** India ranked **fourth globally** in trademark filings with nearly 90% of these filings made by domestic entities. Key sectors include health (21.9%), agriculture (15.3%) and clothing (12.8%).

Note:

○ India's trademark office holds the **second-largest number of active registrations worldwide.**

➢ **Geographical Indication:**

○ **India (530) has fewer GIs in force, as its GIs lack protection by international agreements**. In contrast, countries like China, Germany, Hungary, and the Czech Republic have significantly higher numbers of GIs in force within their territories**.**

● Hungary and the Czech Republic are party to the **Lisbon system.**

○ Over 90% of GIs in Brazil (92.4%), China (96.2%), India (93.6%), Türkiye (99.8%), and Viet Nam (91.5%) were national GIs.

5.1. Geographical indications in force for selected national and regional authorities, 2023
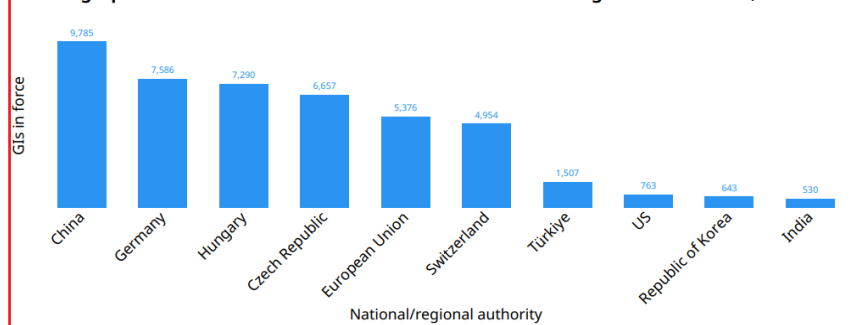
What are IP, Patents,Trademarks, GIs and Industrial Designs?

➢ **Intellectual Property:** It includes intangible creations of the human intellect, **primarily copyrights, patents, and trademarks.**

○ The importance of intellectual property was first recognized in the **Paris Convention for the Protection of Industrial Property (1883)** and the **Berne Convention for the Protection of Literary and Artistic Works (1886). Both treaties are administered** by the World Intellectual Property Organization (WIPO).

○ Rights related to IP are outlined in **Article 27** of the **Universal Declaration of Human Rights.**

➢ **Patents:**

○ A patent is an exclusive right granted for an invention. It provides the inventors the legal protection of their inventions.

● The patent owner has the exclusive right to prevent or stop others from commercially exploiting the patented invention for a limited period within the country or region in which the patent was granted.

➢ **Trademarks:**

○ **A 'trademark', or simply a 'mark',** is a sign capable of distinguishing the goods or services produced or provided by one enterprise from those of other enterprises

● Trademark registration confers an exclusive right to the use of the registered trademark implying that the trademark can be exclusively used by its owner, or licensed to another party for use in return for payment.

➢ **Industrial Designs:**

○ An industrial design refers to the **ornamental or aesthetic aspects of a product**, including **3D features like shape and configuration, or 2D elements like images, patterns**, lines, and colors.

● The owner of a registered industrial design has the right to prevent third parties from making, selling or importing articles bearing or embodying a design which is a copy, or substantially a copy, of the protected design, when such acts are undertaken for commercial purposes.

➢ **Geographical Indication:**

○ A geographical indication (GI) is a sign identifying a good as having originated from a specific geographical area and possessing a given quality, reputation or other characteristic essentially attributable to that geographical origin.

● A GI tag identifies goods whose quality, reputation or other characteristics are connected to their territory of origin.

Note:

INTELLECTUAL PROPERTY RIGHTS *(IPRs)*

IP refers to intangible assets owned/legally protected by an individual/company from outside use or implementation without consent.

NEED FOR IPR

→ Encourages Innovation → Economic growth → Safeguard rights of creators → Enhances ease of doing business

RELATED CONVENTIONS/TREATIES (INDIA SIGNATORY TO ALL)

→ WIPO Administered (first recognised IPR under):
  → Paris Convention for the Protection of Industrial Property 1883 (**Patents, Industrial Designs**)
  → Berne Convention for the Protection of Literary and Artistic Works 1886 (**Copyrights**)

→ WTO - TRIPS Agreement:
  → Ensures adequate standard of protection
  → Argues for incentives for technology transfer to developing countries

→ Budapest Treaty 1977:
  → International recognition of the deposit of micro-organisms for the purposes of patent procedure

→ Marrakesh VIP Treaty 2016:
  → Facilitate access to published works by visually impaired persons and persons with print disabilities

→ IPR also outlined in **Article 27** (Universal Declaration of Human Rights)

INDIA AND IPRS - INITIATIVES

→ National IPR Policy 2016:
  → **Motto:** "Creative India; Innovative India"
  → Compliant with TRIPS Agreement
  → Brings all IPRs to single platform
  → Nodal Dept - Department of Industrial Policy & Promotion (Ministry of Commerce)

→ National (IP) Awareness Mission (**NIPAM**)

→ Kalam Program for Intellectual Property Literacy and Awareness Campaign (**KAPILA**)

World Intellectual Property Day: 26th April

Intellectual Property	Protection	Law in India	Duration
Copyright	Expression of Ideas	Copyright Act 1957	Variable
Patent	Inventions- New Processes, Machines, etc.	Indian Patent Act 1970	20 years Generally
Trademarks	Sign to distinguish business goods or services	Trade Marks Act 1999	Can last Indefinitely
Trade Secrets	Confidential Business Information	Protected without Registration	Unlimited time
Geographical Indication (GI)	Sign used on specific geographical origin and possess qualities due to site of origin	Geographical Indications of Goods(R & P) Act, 1999	10 years (Renewable)
Industrial Design	Ornamental or aesthetic aspect of an article	Design Act, 2000	10 years

Drishti IAS

Note:

What are India's Initiatives to Drive Innovation?

➢ **Legislative Framework:**
   ○ **The Copyright Act, 1957**
   ○ The Designs Act, 2000
   ○ **The Geographical Indications of Goods (Registration and Protection) Act, 1999**
   ○ **The Patents Act, 1970**
   ○ **The Protection of Plant Varieties and Farmers' Rights Act, 2001**
   ○ The Trade Marks Act, 1999
   ○ **National Intellectual Property Rights (IPR) Policy, 2016**

➢ **Government Initiatives:**
   ○ **Make in India program**
   ○ **National (IP) Awareness Mission (NIPAM)**
   ○ **Kalam Program for Intellectual Property Literacy and Awareness Campaign (KAPILA)**

➢ **Rank in Global Innovation Index (GII):**
   ○ India ranked **39th among 133 global economies** in the **Global Innovation Index 2024**. In **2023**, India ranked **40th rank out of 132 economies**.
   ○ India was ranked **46th position in 2021**, and **81st rank in 2015**.

What are the Socio-Economic Implications of India's IP Growth?

➢ **Economic Empowerment:** Increased IP filings can boost local businesses by protecting innovations, leading to enhanced competitiveness and economic growth.

➢ **Job Creation:** The growth of the IP sector is likely to create new job opportunities in research, development, and legal services related to intellectual property.

➢ **Global Positioning:** As India strengthens its IP framework, it enhances its reputation as a global innovation hub, attracting foreign investment and partnerships.

What are the Challenges in India's Innovation Ecosystem and Way Forward?

Challenges in India's Innovation Ecosystem	Way Forward
➢ **Administrative Delays:** Lengthy bureaucratic procedures in IP registration, patent approvals, and dispute resolution hinder innovation.	➢ **Streamlined Processes:** Digitize and expedite IP-related processes to reduce delays and ensure efficient patent and trademark filings
➢ **Limited Awareness of IP Rights:** Many entrepreneurs, especially in MSMEs and informal sectors, lack knowledge about the importance of protecting intellectual property.	➢ **Public Awareness Campaigns:** Conduct nation-wide campaigns targeting startups, MSMEs, and educational institutions to promote IP literacy.
➢ **Weak R&D Ecosystem:** India faces challenges in its innovation landscape due to a weak R&D ecosystem, characterized by low investment and limited collaboration between academia, industry, and government. Additionally, startups struggle with fragmented support, lacking access to financial resources, mentorship, and necessary infrastructure for innovation.	➢ **Boosting R&D Investment:** To strengthen the innovation landscape, it is crucial to boost R&D investment by increasing public and private sector funding, with a focus on cross-sectoral innovations and indigenous technologies. Additionally, creating a holistic startup ecosystem by providing grants, incubation centers, and mentorship programs can empower startups across all sectors.
➢ **Limited Access to Global Markets:** Indian innovators face challenges in protecting IP internationally due to complex and costly global filing processes.	➢ **International Collaboration:** Enhance participation in global IP treaties and offer subsidies for international patent filings by Indian entities.

■■■

Note:

International Relations

Highlights

- BRICS Nations Explore Alternative Currencies
- India-Australia CECA
- Syrian Civil War and Future of Syria
- India-Japan Forum 2024
- 40th Charter Day of SAARC

BRICS Nations Explore Alternative Currencies

Why in News?

At the **16th BRICS summit in October 2024, BRICS countries** discussed increasing the **use of local currencies in trade or to create a new BRICS currency,** to reduce reliance on the **US dollar.**

➢ In response, **US President-elect Donald Trump** stated that **BRICS nations could face 100% import tariffs if they support a currency to replace the US dollar** as the global reserve currency.

➢ India reaffirmed its commitment to strong economic ties with the US, emphasizing **no intention to weaken the US dollar.**

Why are BRICS Nations Exploring Alternative Currencies?

➢ **Reducing Transaction Costs**: Trading in local currencies eliminates the need for **intermediary foreign currencies,** which can lower transaction costs and make trade more efficient between **BRICS countries.**

➢ **Dominance of the Dollar:** The US dollar currently dominates over **90% of global trade and is central to international reserves.** Relying heavily on the US dollar means that countries are significantly affected by **US monetary policies.**

   ○ This can lead to **economic instability** in their own economies, prompting them to seek more control by using their own or other currencies.

   ○ Many BRICS countries, particularly from the **Global South**, struggle to access major currencies like the dollar, hindering their ability to import goods, repay debts, and trade internationally.

- Using local currencies can bypass these challenges, **fostering growth in local markets and boosting trade within the bloc.**

➢ **Political Motivations**: One of the primary reasons for exploring local currencies is to escape the influence of financial sanctions by the US.

   ○ For example, the US blocked Russia and Iran from the **SWIFT (Society for Worldwide Interbank Financial Telecommunication) network,** a vital system for international financial transactions, which left these countries searching for alternatives to maintain trade.

   ○ Avoiding the reliance on the US dollar also grants these countries more sovereignty in global trade and **reduces vulnerability to external economic pressures.**

➢ **Geopolitical Reasons**: Nations like Brazil, Russia, are **seeking greater autonomy from US influence** by promoting currencies like the **yuan and ruble, or even considering a unified BRICS currency,** to reduce vulnerabilities tied to dollar dependency.

   ○ As emerging economies like China grow, they are becoming major trading partners for many countries. This shift encourages the use of alternative currencies for trade settlements.

Trade in Local Currencies

➢ **China's Approach**: China has promoted the use of its currency through **bilateral currency swap agreements as seen in China's trade with Ethiopia**.

   ○ A bilateral currency swap agreement is a **financial contract between two central banks** to exchange a specific amount of one currency for the same amount of another currency.

Note:

○ China's **barter trade model** bypasses traditional currencies by exchanging goods with African countries for local currencies.

● These currencies are then used to buy goods from those countries, which are exported back to China and converted into renminbi, supporting its currency internationalization efforts.

➢ **Southern Africa:** The currency of **South Africa (South African Rand)** is essential for cross-border trade in the Southern African Customs Union, where Namibia, Botswana, Lesotho, and Eswatini use it alongside their own currencies, promoting economic integration and reducing reliance on the US dollar or euro.

➢ **India-Russia**: In response to US sanctions, **India and Russia have been trading in their local currencies (rupee and rouble)**, with 90% of bilateral trade now conducted in these currencies or alternate currencies.

What are the Potential Risks of Moving Away from the US Dollar?

➢ **Chinese Domination**: Reducing reliance on the US dollar raises concerns about **increasing Chinese economic dominance.** China is pushing for greater use of the **yuan in international trade,** especially with Russia and other BRICS nations.

○ Within BRICS, **China's dominant economy could lead to disproportionate influence,** potentially overshadowing the interests of other members like India, Brazil, and South Africa, who seek a **multipolar financial system.**

➢ **Implementation Challenges**: The adoption of a BRICS currency or local currencies faces challenges, as seen in **India-Russia trade,** where banking concerns over US sanctions hinder **large-scale implementation.**

○ Many of the BRICS currencies are **not widely used internationally,** limiting the effectiveness of trading with local currencies.

○ Countries that **primarily export more than they import face** the challenge of accumulating foreign

currencies for trade, making the use of local currencies difficult.

➢ **Liquidity Issues:** The US dollar is **highly liquid** and widely accepted. Alternatives **may not offer the same level of liquidity**, complicating international transactions.

➢ **Volatility and Exchange Rate Risks:** During the transition away from the dollar, countries may **experience increased exchange rate volatility.**

○ This is especially true for nations with **less established financial markets.** Such volatility can disrupt commerce, investment, and capital movements, creating further economic uncertainty.

What are the Potential Impacts of a 100% US Tariff on BRICS Imports?

➢ **Impact on Global Trade:** Such tariffs could force BRICS countries to deepen intra-bloc trade, accelerating de-dollarization.

○ Import diversification to non-US markets could reduce US influence over global trade systems.

○ This can lead to a rise in non-traditional reserve currencies like the **Australian dollar,** Chinese renminbi, and others reflecting a gradual move towards a **multipolar global financial system.**

● This transition **reduces US financial leverage** but increases competition among emerging currencies.

➢ **Impact on US**: A blanket 100% tariff on imports from BRICS countries would likely hurt the US economy by driving up the cost of imports.

○ The US may see shifts in trade routes, with **imports potentially moving to third-party countries.** This could lead to **higher costs for American consumers** without significantly boosting domestic manufacturing.

○ BRICS countries might retaliate with their **own tariffs on US goods,** further escalating trade tensions and impacting global trade dynamics.

○ US economic dominance stems from the dollar's central role in trade. Growing adoption of alternatives could **dilute its financial influence,** pushing the US to adapt to a diversified global system.
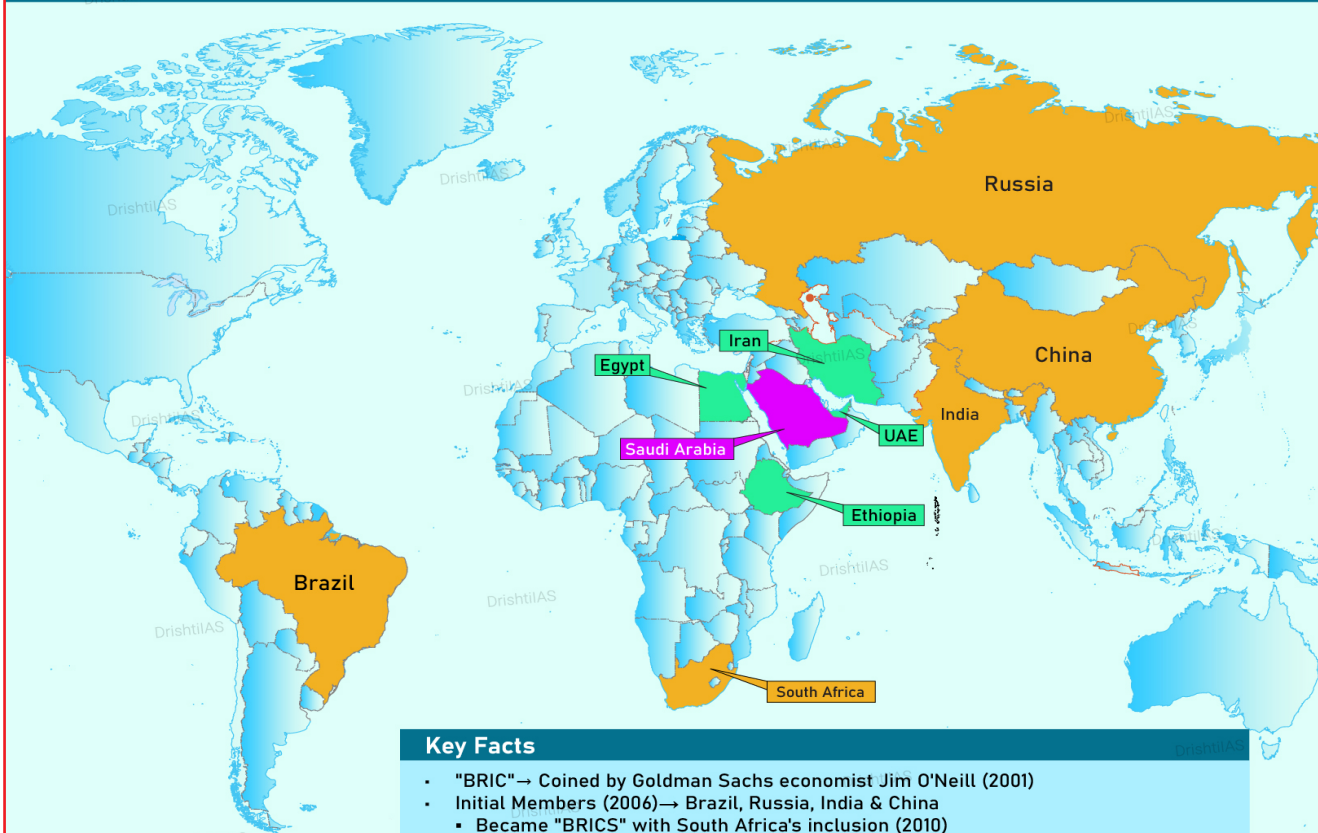
Note:

drishti

BRICS

Initial Members 🟧   **New Members (added in 2024)** 🟩

Invited to join BRICS (not an Official Member yet) 🟪

Russia

China

Iran

Egypt

India

UAE

Saudi Arabia

Ethiopia

Brazil

South Africa

Key Facts

- "BRIC"→ Coined by Goldman Sachs economist Jim O'Neill (2001)
- Initial Members (2006)→ Brazil, Russia, India & China
    - Became "BRICS" with South Africa's inclusion (2010)
    - 4 New Members added in January 2024 → Egypt, Ethiopia, Iran, & UAE
- First Informal BRIC Meeting→ 2006 (Sidelines of UNGA)
- First Formal BRIC Summit→ 2009 (Russia)
- Financial Institution & Mechanism→ New Development Bank (NDB) & **Contingent Reserve Arrangement (CRA)** (set up by **Fortaleza Declaration – 6th BRICS Summit 2014**)

What are India's Initiatives to Improve Trade in Local Currencies?

➢ **Internationalizing the Rupee**: In 2022, the **Reserve Bank of India (RBI)** allowed invoicing and payments for international trade in Indian rupees, especially with countries like Russia.

  ○ This move was in response to US sanctions and aimed at reducing the dependence on the dollar.

  ○ Initiatives like digital payment systems like **UPI** aim to **internationalize the rupee.**

➢ **Bilateral Trade Agreements:** India has been actively negotiating bilateral trade agreements that include provisions for using local currencies, such as with the **India-UAE Local Currency Settlement System.**

  ○ This strategic move is part of broader efforts to enhance economic autonomy and reduce dependence on the US dollar.

Note:

INTERNATIONALISATION OF RUPEE

MEANING
- Increasing the use of Indian rupee in cross-border transactions

INVOLVES
- Rupee for import and export
- Rupee for current and capital account transactions

> Indian Rupee is fully convertible in current account, but partially in capital account (BoP)

NEED
- Weaponisation of USD by US (for sanctions)
- Wave of de-dollarisation
- Increasing internationalisation of Chinese Renminbi
- India's minimal share in global forex market turnover (1.7%)

RBI'S EFFORTS
- Indian currency in cross-border trade - key component in Foreign Trade Policy 2023
- Mechanism introduced for rupee trade settlement with 18 countries
  » Banks from these countries allowed to open Special Vostro Rupee Accounts (SVRAs)
- Circular on "International Trade Settlement in Indian Rupees" (2022)
- External commercial borrowings in INR enabled

SIGNIFICANCE
- Reduced dependency on USD
- Lesser need for holding forex reserves
- Better bargaining power of Indian business
- Less exposure to currency volatility

CHALLENGES
- Rupee not fully convertible
- Less need for other countries to hold INR; India's low share in global exports
- Rupee may become more vulnerable to external shocks
- India's lesser control on Rupee supply

STEPS THAT CAN BE TAKEN
- More liberalised settlements in INR (in India and overseas)
- India to expand its reach in the global financial market
- Transition to an export-oriented economy to reduce trade deficit

Drishti IAS

> **Foreign Exchange Reserves:** The RBI has been diversifying its **foreign exchange reserves** by including other major currencies like the euro and yen, reducing the proportion held in US dollars.

India-Australia CECA

Why in News?

India and Australia have "outlined a path forward for the early conclusion" of the **Comprehensive Economic Cooperation Agreement (CECA)** between both nations.

> During a three-day stocktake meeting between the two nations, discussions covered several critical areas of the CECA, including trade in goods, services, mobility, agri-tech cooperation, and more.

Note:

© Encyclopædia Britannica, Inc.

What is the Australia-India Comprehensive Economic Cooperation Agreement (CECA)?

➢ **About:**
- ❍ The CECA is a **free trade agreement (FTA)** aimed to **eliminate tariffs** on **goods traded and liberalise services sectors** to facilitate business opportunities and cooperation.
- ❍ India-Australia CECA aims to address **five key areas**: Goods, services, digital trade, government procurement, and Rules of Origin/Product Specific Rules.
  - In the recent negotiations, both sides have shown interest in the inclusion of new areas in the comprehensive trade deals, such as **competition policy, MSMEs, gender, innovation, agri-tech, critical minerals, and sports.**

➢ **Background:**
- ❍ Negotiations for CECA **began in May 2011**, were suspended in 2016, and re-launched in September 2021.
- ❍ The India-Australia **Economic Cooperation and Trade Agreement (ECTA)**, a foundational agreement, was **signed** and **came into force in 2022**. It is a limited trade agreement and is less comprehensive than CECA.

➢ **Current Trade Statistics:**
- ❍ Trade between Australia and India has grown significantly, with **India being Australia's fifth-largest trading partner**.

- ❍ During 2023-24, in value terms, India's imports from Australia were $16.2 billion, while exports were almost $8 billion, (compared to $19 billion in imports and nearly $7 billion in exports in the previous fiscal).

➢ **Other Similar Initiatives between India and Australia:**
- ❍ Indo-Pacific Economic Framework for Prosperity (IPEF)
- ❍ **Trilateral Supply Chain Resilience Initiative (SCRI)** (India, Australia and Japan)

➢ **India's CECA with Other Countries:**
- ❍ **India-Singapore CECA**
- ❍ **India-Malaysia CECA**
- ❍ **India-Thailand CECA**
- ❍ India -New Zealand CECA

Read More: 2ⁿᵈ India-Australia Annual Summit

Syrian Civil War and Future of Syria

Why in News?

Recently, Syrian rebels, led by the **Islamist militant group** Hayat Tahrir al-Sham (HTS), have claimed control of **Homs, Syria's third-largest city,** in a significant blow to President Bashar al-Assad's regime.

➢ This development, amidst the **ongoing civil war,** has raised concerns about the future of Syria, as it **faces a growing challenge from rebel factions.**

Note:

What are the Key Factors Shaping the Syrian Civil War?

➢ **Syria and the Civil War:**

○ **Historical Context**: Since 1971, Syria has been ruled by the **Assad family, with Hafez al-Assad** serving as the authoritarian leader until his death in 2000.

● His son, Bashar al-Assad, succeeded him, continuing the family's grip on power.

○ **Arab Spring Uprising**: In 2011, amidst the wave of the **Arab Spring,** protests erupted against Assad's rule.

● Arab Spring, wave of **pro-democracy protests** and uprisings that took place in the **Middle East and North Africa** beginning in 2010 and 2011, challenging some of the region's entrenched authoritarian regimes.

● The grievances were manifold, including rising **unemployment,** economic inequality, and **corruption.**

● The Assad regime, dominated by the **Alawite minority(a minority Muslim sect in Syria),** was accused of marginalizing the **Sunni majority.**

○ **Civil War Escalation**: Arab Spring began as peaceful protests were met with violent repression, leading to **armed conflict.**

● Multiple rebel factions rose up, backed by foreign powers, all aiming to **oust Assad.** Ultimately led to the **fall of the Assad regime in Syria.**

➢ **Rise of Rebel Factions:**

○ **Hayat Tahrir al-Sham**: The primary group responsible for capturing and controlling most parts of Syria, including **Damascus, Aleppo, Homs, and Hama,** is **Hayat Tahrir al-Sham (HTS),** originally the **al-Qaeda** branch in Syria.

● This group aims to establish **Sunni-Islamic rule** and has been a major opponent of Assad.

○ **Syrian Democratic Forces (SDF)**: A **Kurdish(Iranic ethnic group)-led militia,** the SDF has been primarily focused on **securing autonomy and rights for Syria's Kurdish population.**

● While not a direct enemy of Assad, they are part of the wider opposition forces.

○ **Free Syrian Army (FSA)**: This faction, supported by **Turkey,** opposes both the Assad regime and Kurdish forces, mainly due to concerns over Kurdish separatism.

➢ **Foreign Influence**:

○ **Russia and Iran**: These countries have been Assad's primary allies, providing military support and strategic backing.

○ **US and Turkey**: Both have supported anti-Assad factions, but Turkey's main concern is the Kurdish influence within Syria.

○ **Israel**: Given Syria's historic support for Palestine, Israel has conducted strikes against Assad's forces, further complicating the geopolitical dynamics.

➢ **Fall of Assad's Regime:** Bashar al-Assad's regime was heavily reliant on external support from key allies like Russia, Iran, and **Hezbollah**. Over time, however, these alliances weakened due to shifting geopolitical dynamics.

○ During the **Israel-Hamas War in 2023**, Israel's airstrikes in Syria weakened Assad's military strength. Russia diverted its focus to the **war in Ukraine,** and Iran scaled back its involvement after losing key personnel in Syria.

Note:

Turkish-backed forces and Kurdish forces
clash for control over Manbij

TURKEY

Rebels entered the
city of Deir el-Zour

Idlib   Aleppo

Hama

SYRIA   IRAQ

Homs

LEBANON

Rebels seize control of
Syria-Iraq border crossing
in Albu Kamal

Damascus

Israeli forces seize
a buffer zone along
Golan Heights

ISRAEL   Daraa

Golan
Heights

JORDAN

© OpenStreetMap contributors

| Rebel control | No longer in government control | Israeli forces | Turkish-backed forces | Kurdish forces | Other opposition |

Areas of control as of 9 p.m. on Dec. 8 and are approximate.

Source: Institute for the Study of War and AEI's Critical Threats Project / Graphic: Phil Holm

Hayat Tahrir al-Sham

➤ The HTS was founded in 2011 as **Jabhat al-Nusra,** the al-Qaeda's branch in Syria. In 2016, it broke away to form the **Jabhat Fateh al-Shaam (JFS),** standing for the liberation of **Shaam or the Levant** (the sub-region of the Middle East lying near the Mediterranean Sea, including Jordan, Syria, Lebanon, Israel and Palestine).

➤ By 2017, after merging with a **number of other groups, the JFS became the HTS.**

What is India's Approach Towards Syria?

➤ **Historical Ties**: India has long maintained friendly relations with Bashar al-Assad's Syria, based on shared historical and civilizational ties.

Note:

○ Syria has historically been an important member of the Nehru- championed **Non-Aligned Movement (NAM).**

○ India's stable relations with **Syria and key Middle Eastern players** are vital for **countering Pakistan's narratives** in Muslim-majority nations.

➢ **Recent Diplomatic Engagement**: Syria, a Muslim-majority country, has consistently supported **India's position on the Kashmir issue,** unlike many other **Organisation of Islamic Cooperation (OIC)** countries that often oppose it, particularly Pakistan.

○ India has invested in projects like the **Tishreen power plant** and the **Hama iron and steel plant.**

○ India sent humanitarian aid to Syria following an earthquake in February 2023 as part of **Operation Dost (friend).**

○ In late 2024, India hosted the **6th Round of India-Syria Foreign Office Consultations,** reinforcing the bilateral relationship.

➢ **Caution Amid Crisis**: India has called for a **peaceful, inclusive, Syrian-led political process** while emphasizing the need to preserve Syria's unity, sovereignty, and territorial integrity.

○ It has also expressed concerns over the safety and protection of minorities, including Alawites, Druze, Kurds, and Christians, amidst the ongoing conflict.

○ The Indian Ministry of External Affairs issued a caution for Indians in Syria, advising them to leave if possible, as the situation in the capital escalated.

➢ **Future of India- Syria Relations:** India's ties with **Syria may be shaped by Turkey,** as its involvement with the Regional Militias. Additionally, Turkey's opposition to India on matters of Kashmir and its close relations with Pakistan **add another layer of complexity to their interactions.**

○ **US support for a post-Assad transition in Syria,** along with its close strategic partnership with India, can positively influence Syria-India relations.

○ Meanwhile, **Iran, a key ally of Assad, maintains a strong relationship with India,** particularly in areas of economic and strategic cooperation.

○ India's **neutral stance on Syria's internal matters** can ensure diplomatic flexibility, enabling it to **engage constructively** with any future leadership and foster relationships based on **mutual interests and regional stability.**

What are the Implications of Syrian Rebellion?

➢ **Impact on Syria and Middle East:**

○ **HTS's Influence**: Despite the HTS's claims of inclusivity toward minorities, its violent history and fundamentalist ideology raise concerns that Syria could face a future similar to **Taliban-ruled Afghanistan.**

● Syria's ethnic and sectarian diversity, including **Sunni Arabs, Alawites, Kurds, Shias, and Christians,** complicates efforts to unify the **country under one governance model.**

● If HTS adopts a radical path like **Islamic State of Iraq and Syria (ISIS),** it could trigger a new wave of extremism.

○ **Regional Instability:** The rebellion has **destabilized the Middle East,** affecting neighboring countries and contributing to regional tensions.

● The involvement of various international actors has turned Syria into a battleground for **proxy wars.**

● The rebellion in Syria continues to affect **Kurds,** especially along the **Turkish-Syrian border.**

■ Turkey views Kurdish groups as a security threat, and the instability could lead to **increased displacement and conflict, further destabilizing the region.**

➢ **Global Impact:**

○ **Humanitarian Crisis:** The conflict has displaced millions of Syrians, creating one of the largest refugee crises in modern history.

● The **United Nations** reports approximately **5.5** million Syrian refugees live , primarily in Turkey, Lebanon, Jordan, and Europe.

○ **Terrorism and Extremism:** The chaos in Syria has allowed extremist groups like **ISIS to gain a foothold,** posing a **global security threat.**

○ **Economic Impact:** The conflict has disrupted trade routes and economic activities in the region. It has also affected **global oil prices,** as instability in the **Middle East often leads to fluctuations in the energy market.**

■ Instability in Syria could impact the **Gulf region,** crucial for India's energy security and trade.

Note:

○ **Human Rights Violations:** The war has seen widespread **human rights abuses**, including the use of chemical weapons, targeting of civilians, and destruction of infrastructure. These actions have drawn international condemnation and calls for accountability.

India-Japan Forum 2024

Why in News?

Recently, at the **India-Japan Forum** in New Delhi, External Affairs Minister (EAM) of India underscored the potential for a strategic **semiconductor alliance** between India and Japan.

What are the Key Highlights of the India-Japan Forum 2024?

➢ **Semiconductor Collaboration:** India and Japan are revitalizing their **semiconductor industries** to enhance global supply chain resilience.

  ○ India and Japan are collaborating with **Taiwan, a key semiconductor hub,** to mitigate supply chain risks and reduce dependence on China. This partnership supports **India's semiconductor mission** and Japan's revitalization efforts, aiming to reduce strategic vulnerabilities and foster technological autonomy.

  ○ Such cooperation aligns with broader **Indo-Pacific strategies** to counter **Chinese dominance in critical supply chains** and enhance strategic autonomy for both nations.

➢ **Quad's Growth:** The EAM of India credited the Trump administration (2017 to 2021) for reviving and expanding the **Quad (India, Japan, Australia, US)**

  ○ The Quad's inclusive **"fair share" approach** to burden-sharing enhances its resilience to alliance and commitment concerns. It has evolved into a platform for extensive intergovernmental cooperation, with regular high-level meetings and annual summits.

India-Japan Forum

➢ The India-Japan Forum provides a platform for Indian and Japanese leaders to shape the future of bilateral and strategic partnerships through deliberation and collaboration.

○ The forum is convened by the **Ananta Centre** and the **Ministry of External Affairs, Government of India.**

  ● Ananta Centre is a non-partisan (free from political party affiliation) organization dedicated to leadership development and fostering open dialogue on key issues to drive India's transformation.

➢ The **aim** of the forum is to bolster cooperation, leverage opportunities, exchange ideas, build mutual trust and develop a joint agenda for future cooperation. The discussions will be held under **Chatham House rules.**

  ○ Under the Chatham House Rule, participants can use the information received but must not disclose the identity or affiliation of speakers or other participants

What are the Key Facts About Quadrilateral Security Dialogue (Quad)?

➢ **About:** The **Quadrilateral Security Dialogue (Quad)** is a strategic forum focused on promoting regional security and economic cooperation in the Indo-Pacific.

  ○ The Quad aims to strengthen regional security, **counter China's assertiveness, promote economic growth, and improve maritime security.**

➢ **Origins:** The Quad originated after the **2004 Indian Ocean tsunami,** where the US, Japan, India, and Australia provided humanitarian aid.

  ○ It was formally established in **2007 by Japan's Prime Minister Shinzo Abe but went dormant in 2008**. The group was revived in 2017 amid changing regional attitudes toward China's influence, culminating in its **first formal summit in 2021.**

➢ **Functions:** It functions through summits, joint military drills, and economic initiatives but lacks a formal structure like **North Atlantic Treaty Organization (NATO).**

➢ **Quad and India:** For India, it offers strategic and economic benefits, particularly in **countering China** and enhancing security.

  ○ However, challenges include imbalanced cooperation, lack of a decision-making body, and geopolitical tensions with China.

  Read more: India Japan 2+2 Foreign and Defence Ministerial Meeting

Note:

40th Charter Day of SAARC

Why in News?

On 8th December 2024, the <u>South Asian Association for Regional Cooperation (SAARC)</u> **marked its 40th Charter Day.** This day is commemorated annually to honor the establishment of **SAARC.**

What is the South Asian Association for Regional Cooperation?

➢ **Origins of SAARC:** Regional cooperation in South Asia was first discussed at the Asian Relations Conference (1947), the Baguio Conference (1950), and the Colombo Powers Conference (1954).

SAARC
South Asian Association for Regional Cooperation

- **Members:** 8
- Estd. by signing **SAARC Charter in Dhaka** (Dec 1985)
- **HQ:** Kathmandu, Nepal
- **9 Permanent Observers to SAARC:** Australia, China, EU, Iran, Japan, S. Korea, Mauritius, Myanmar and US
- Comprises **3% of the world's area, 21%** of the world's **population** and **3.8% of the global economy**
- Agreements under SAARC: **SAPTA, SAFTA, SATIS, SAARC University**

AFGHANISTAN
- It is India's gateway to the oil and mineral-rich Central Asian republics.
- Salma Dam in Afghanistan is aka Afghanistan-India Friendship Dam.
- From 2002 to 2021, India spent USD 4 bn in development assistance in Afghanistan, building high-visibility projects (highways, hospitals, Parliament building, rural schools, and electricity transmission lines).
- Afghanistan becoming a safe haven for terrorism is direct threat to India's national security.

NEPAL
- Shares border with 5 Indian states (Uttarakhand, Uttar Pradesh, West Bengal, Sikkim and Bihar)
- Bharat Gaurav Tourist Train connecting India's Ayodhya and Nepal's Janakpur
- Major Issues: Territorial Disputes (Kalapani, Limpiyadhura and Lipulekh)
- Military Exercise: Surya Kiran (Army)

BHUTAN
- India is Bhutan's largest trade partner.
- Mutually Beneficial Hydropower Cooperation: Mangdechhu, Kholongchhu, Chukha hydropower Projects.
- India's grant assistance to Gyalsung Project.
- Integration of Bhutan's DrukRen with India's National Knowledge Network

PAKISTAN
- Indo-Pak diplomatic relations are quite limited with periodic attempts to improve relations often failing.
- India revoked Pakistan's Most Favoured Nation (MFN) status following the Pulwama terrorist attack (2019).
- Indus Water Treaty 1960 is often cited as one of the most successful intl. treaties in South Asia.
- Major issues: Cross-border terrorism, Kashmir issue, CPEC affecting India's Sovereignty

BANGLADESH
- Shares the longest border of over 4,096 km with India.
- Largest trading partner in South Asia.
- Water Sharing Agreements: Kushiyara river (2022), Ganga Water Treaty (1996).
- Major Issues: Teesta River Water Dispute.
- Military Exercises: SAMPRITI-X (Military Training), Bongosagar (Naval).

MALDIVES
- India is Maldives 2nd largest trading partner.
- Exercises with India - Ekuverin, Dosti, Ekatha and Operation Shield.
- Greater Male Connectivity Project by an Indian company is the largest-ever infra project in Maldives.
- Major Issues:
  - Maldives an important 'pearl' in China's String of Pearls.
  - Increasingly Maldivian drawn towards Pak-based terrorist groups.
  - India being projected as the bully and a big brother – 'India Out' Campaign

SRI LANKA
- India is Sri Lanka's third largest export destination.
- India is the first country to officially back Sri Lanka's debt restructuring programme at IMF.
- Major Issue: Fishermen crossing maritime boundary.
- Important Exercises: Mitra Shakti (Army), SLINEX (Naval)

Note:

○ The SAARC concept took shape in 1980 when Bangladesh's President Ziaur Rahman proposed regional cooperation to promote peace and stability.

○ SAARC was officially established on **8th December 1985, in Dhaka,** Bangladesh, with **7 founding members:** Bangladesh, Bhutan, **India,** Maldives, Nepal, Pakistan, and Sri Lanka.

- Afghanistan joined as the 8th member in 2007.

➢ **Objectives:**

○ Promote welfare and improve quality of life in South Asia.

○ Accelerate economic growth, social progress, and cultural development.

○ Strengthen self-reliance and mutual trust among member states.

○ Enhance collaboration in economic, social, cultural, technical, and scientific fields.

○ Cooperate with other developing countries and international organizations.

➢ **Key Principles:** Sovereign equality, territorial integrity, non-interference, and consensus-based decision-making.

➢ **Significance of SAARC:** SAARC comprises **3% of the world's land area,** 21% of the world's population and 5.21% (USD 4.47 trillion) of the global economy, as of 2021.

➢ **Scope of Cooperation:** SAARC's agenda includes the **South Asian Free Trade Area (SAFTA),** established in 2004 and effective from 2006, aimed at reducing tariffs and promoting free trade in South Asia.

○ The **SAARC Agreement on Trade in Services (SATIS)** came into force in 2012, to enhance **intra-regional investments and liberalize trade** in services.

What is the Relevance of SAARC in Today's Context?

➢ **Platform for Dialogue:** Despite its dysfunction, SAARC remains the one of the few platforms where **South Asian countries, including India and Pakistan, can engage in dialogue.**

○ Periodic summits provide opportunities to address pressing regional issues, such as **climate change** and **poverty,** even if **no concrete outcomes emerge.**

➢ **Shared Regional Solutions:** Issues like **cross-border terrorism**, and **pandemics** demand a collective regional response.

○ SAARC has previously coordinated initiatives, such as the establishment of a **Covid-19 Emergency Fund,** highlighting its utility during crises.

➢ **Potential for Economic Integration:** With a combined GDP of over **USD 4 trillion** and a population of nearly **1.8 billion**, South Asia has significant untapped potential.

○ SAARC's frameworks, such as **SAFTA** and the **SAARC Agreement on Trade in Services**, can still be revitalized to enhance trade and economic cooperation.

➢ **Avoiding Overdependence on External Frameworks:** Ignoring SAARC may force member nations to rely heavily on external platforms like **ASEAN** or China-led initiatives such as the **BRI**.

○ SAARC provides a means for South Asia to control its developmental trajectory.

What is India's Contribution to SAARC?

➢ **SAARC Summits:** India has hosted three out of the eighteen SAARC Summits: the 2nd summit in Bengaluru (1986), the 8th summit in New Delhi (1995), and the 14th summit in New Delhi (2007).

➢ **Technological Cooperation:** India has extended its **National Knowledge Network (NKN)** to countries such as Sri Lanka, Bangladesh, and Bhutan, fostering educational and technological exchange.

○ Additionally, India launched the **South Asian Satellite (SAS)** in 2017, providing satellite-based services to SAARC countries.

➢ **Currency Swap Arrangement:** In 2019, India approved the incorporation of a **'Standby Swap' in the Currency Swap Arrangement** for SAARC members, amounting to USD 400 million, aimed at enhancing financial cooperation.

➢ **Disaster Management:** India hosts the Interim Unit of the **SAARC Disaster Management Center** in Gujarat.

○ This center provides policy advice, technical support, and training for disaster risk management across SAARC countries.

➢ **South Asian University (SAU):** India is home to the **South Asian University, established through an Inter-Governmental Agreement** at the 14th SAARC.

Note:

○ It provides world-class education and research opportunities for students and scholars from SAARC nations.

Role India Can Play in Strengthening SAARC

➢ **Leadership Role**: As the largest economy, India constitutes over **70% of the area and population among the SAARC nations** and is strategically connected to almost all the member nations.

  ○ Initiatives like the **SAARC satellite and support for infrastructure development underscore** India's commitment.

➢ **Proposed Measures**: India must continue offering unilateral concessions, such as **duty-free access for least developed SAARC nations.**

  ○ Smaller nations should reciprocate by leveraging **India's growth for their own development** rather than **perceiving it as a threat.**

  ○ Strengthen regional connectivity projects like the **BBIN Motor Vehicle Agreement** and integrate them with global value chains.

  ○ It is essential for India to counter China's growing influence in South Asia, while managing the **"Big Brother" perception among smaller neighbors.**

    ● Utilizing platforms like **QUAD** and **Indo-Pacific partnerships** can help counterbalance external pressures and ensure regional cooperation.

  ○ India also can utilize BIMSTEC to engage with South and Southeast Asian nations, **bypassing Pakistan.**

  ○ **Promote People-to-People contact** through Scholarships, cultural exchanges, and tourism-focused initiatives.

What are the Key Challenges Facing SAARC?

➢ **Political Tensions and Bilateral Conflicts**: **India and Pakistan** dominate SAARC in terms of **Gross Domestic Product (GDP)** and population, but their strained relations, including issues like **terrorism and territorial disputes**, have hindered cooperation.

  ○ Pakistan's refusal to address cross-border terrorism led to India boycotting the 19th SAARC Summit in 2016, resulting in its postponement.

○ The 18th SAARC summit was held in Kathmandu in 2014, and its outcome was a **36-point Kathmandu declaration.**

○ Many member states, including **Bangladesh, Afghanistan, and Pakistan,** face political instability and governance issues that disrupt long-term regional planning.

➢ **Low Economic Integration**: Intra-regional trade in SAARC is a mere **5% of its total trade,** compared to **65% in the European Union (EU)** and **26% in Association of Southeast Asian Nations.**

  ○ Limited implementation of the SAFTA and lack of product diversification have stymied economic growth.

➢ **Asymmetric Development**: India's dominance often leads to the **"Big Brother Syndrome,"** causing mistrust among smaller nations.

  ○ Smaller member states often perceive **India as overly dominant, leading to resistance against Indian initiatives.** This perception discourages collective action and **fosters reliance on external powers like China.**

  ○ Nepal, Bhutan, and Maldives struggle with infrastructure deficits and limited resources.

➢ **Institutional Weaknesses**: SAARC's charter requires **unanimous agreement** for decisions, **enabling any member to veto progress** on critical issues.

  ○ Pakistan has frequently used this mechanism to block agreements like the **SAARC Motor Vehicles and Railways pacts.**

  ○ Observers like **China, the EU, and the US lack clarity on their roles,** limiting external support.

  ○ The exclusion of **contentious bilateral matters limits SAARC's ability** to address underlying causes of regional tensions. This provision undermines the organization's relevance in resolving disputes.

➢ **External Influences**:China's growing presence through the **Belt and Road Initiative (BRI)** and its strategic investments in Sri Lanka, Bangladesh, and Pakistan complicates intra-SAARC dynamics.

  ○ The **China-Pakistan Economic Corridor (CPEC)** and **Hambantota port** developments amplify China's influence.

Note:

Social Issues

Highlights

- *Inequality and the Role of Charitable Organizations*
- *Bal Vivah Mukht Bharat Abhiyan*

Inequality and the Role of Charitable Organizations

Why in News?

Warren Buffett (considered to be the greatest investor of all time) has donated over USD 52 billion to charities, emphasizing his belief that wealth should help equalize opportunities rather than perpetuate inequality.

➢ His philosophy aligns with **luck egalitarianism** and has sparked debates about the role of **charitable organizations** in addressing inequality.

> **Note:** A charitable organization is an organization whose primary objectives are **philanthropy and social well-being** (e.g. educational, religious or other activities **serving the public interest or common good).**

How Does Buffett's Philosophy Align with Luck Egalitarianism?

➢ **Luck Egalitarianism:** Warren Buffett's philosophy aligns with **luck egalitarianism,** which argues that **inequalities from unchosen circumstances, like birthplace or socio-economic status, are unjust and should be mitigated.**

- ❍ Buffett credits his success to both personal effort and structural advantages, like being born a white male in a prosperous US economy, believing his opportunities came from being in the **"right place at the right time."**

- ❍ Researchers support this view, noting that **birthplace and national economic conditions** significantly influence individual wealth potential.

➢ **Philanthropy as Moral Responsibility:** Philanthropy, as a practical application of luck egalitarianism, redistributes resources to equalize opportunities.

- ❍ Accumulating wealth across generations **perpetuates inequality and undermines meritocracy.** Using

surplus wealth to create opportunities for the disadvantaged ensures fairness in societal outcomes.

What are the Factors Contributing to Inequality?

➢ **Economic Factors:**

- ❍ **Neoliberal Policies**: Since the 1980s, deregulation, **privatization,** and reduced state intervention have **concentrated wealth among a small elite,** leaving wages stagnant for the majority.

  - In India, **LPG (Liberalization, Privatization, Globalization) reforms** have boosted growth but also led to wealth concentration and stagnant wages.

➢ The **'World Inequality Report 2022'** shows India's extreme inequality, with the **top 10% and 1% holding 57% and 22%** of national income, while the **bottom 50% share is just 13%.**

- Globally, **71% of the population lives in countries with worsening inequality.**

- ❍ **Monopolies**: Dominance by a few corporations stifles competition, leading to **higher profits for a few** and limited opportunities for others.

  - Companies like **Amazon, Microsoft, and Google** have amassed significant wealth through **near-monopolistic power,** often **undermining fair competition.**

- ❍ **Financialization**: Growth in financial markets benefits investors and shareholders while sidelining wage earners.

  - Since the **2008 financial crisis,** the number of billionaires has nearly doubled.

➢ Rising incomes for the wealthiest drive inequality. In 2018, the **26 richest people owned as much wealth as the poorest 3.8 billion (half of the global population).**

➢ **Technological Factors:** Technological advances **benefit high-skilled workers, displacing low-skilled ones.**

Note:

drishti

Limited access to technology and the internet restricts opportunities for marginalized communities.

➢ **Social Factors:** Women face wage gaps, limited leadership roles, and a heavy burden of **unpaid care work.**

○ Minority groups encounter racial and ethnic discrimination in employment.

○ In India, **caste, religion, and class hierarchies** hinder upward mobility for marginalized groups. **People with disabilities** face discrimination, limited job opportunities, and higher healthcare costs.

➢ **Health Inequalities:** Limited healthcare access, **chronic illness**, and **malnutrition** hinder productivity and development, perpetuating **poverty** in low-income and marginalized communities.

➢ **Governance:** Policy choices on taxation, welfare, and market regulation shape wealth distribution. **Corruption** diverts resources, worsening inequality, while weak labor rights contribute to wage stagnation and poor working conditions.

➢ **Environmental Factors:** **Climate change** and resource scarcity disproportionately harm poorer communities, while **environmental injustice** leaves marginalized groups exposed to pollution and poor health outcomes.

What is the Role of Charitable Organization in Addressing Inequality?

➢ **Providing Immediate Relief:** Charitable organizations provide essential services like **food, shelter, healthcare, and education** to those affected by poverty and inequality, offering **short-term relief** and helps bridge the gap where government programs or markets are insufficient, and support marginalized communities.

➢ **Social Awareness and Advocacy:** Charitable organizations advocate for **policy changes by raising awareness about social injustices,** helping to inform the public and encourage reforms.

○ For example, they may campaign for **gender equality,** **workers' rights, or access to healthcare,** influencing public opinion and policy.

➢ **Wealth Redistribution:** Charitable organizations help redistribute wealth by funding programs that address inequality, such as **poverty alleviation, education, and healthcare.**

○ For example, Bill and Melinda Gates have donated billions to global health and education initiatives to reduce inequality.

➢ **Supporting Long-Term Development:** Some charitable organizations focus on long-term solutions like **sustainable agriculture**, **microloans**, **and local entrepreneurship,** empowering women and communities.

○ Tata Trusts' Lakhpati Kisan Initiative empowers tribal farmers with improved agricultural practices to create **sustainable livelihoods.**

Laws Governing Charitable Organizations in India

➢ **Income Tax Act, 1961**: Provides **tax exemptions** for charitable donations and defines "charitable purposes."

➢ **Constitution of India (Article 19(1)(c))**: Citizens have the freedom to form social, cultural, economic, or political associations or unions.

➢ **Indian Trusts Act, 1882**: Governs private charitable trusts.

➢ **Societies Registration Act, 1860**: Regulates charitable societies.

➢ **Companies Act, 1956 (Section 25)**: Allows **non-profit companies** to operate as charities.

➢ **Foreign Contribution (Regulation) Act, 2010**: Charitable organizations can receive foreign funds, but they must be registered under the **Foreign Contribution (Regulation) Act, 2010 (FCRA)** to ensure that donations are used for legitimate, non-political purposes.

What are the Limitations of Charitable Organization in Addressing Inequality?

➢ **Temporary Solution**: Charitable organizations alleviate immediate suffering **but don't address root causes** of **wealth inequality like deregulation and monopolistic practices.**

○ Wealth accumulation by the rich often results from systemic policies. Charity doesn't challenge issues like **stagnant wages and poor working conditions.**

➢ **Dependency on Individual Will**: Charitable organizations rely on the **voluntary generosity of the wealthy,** making it **inconsistent and insufficient** to address widespread inequality.

➢ **Perpetuates Status Quo:** Charitable organizations can perpetuate the status quo by giving the **wealthy social legitimacy** without addressing root causes of inequality. It may **reduce pressure for structural reforms,** serving the interests of the rich and maintaining existing power dynamics, delaying **necessary systemic changes.**

➢ **Lack of Accountability:** Charitable organizations may not be held accountable for the effectiveness of their programs or the long-term impact of their initiatives on reducing inequality.

➢ **Misuse of Charitable Donations:** Some individuals and organizations use donations to **trusts as a way to evade taxes**.

     ○ By making large donations to charitable trusts, they can claim tax deductions without the funds being used effectively for the intended charitable purposes.

India's Initiatives to Address Inequality
➢ **Pradhan Mantri Jan Dhan Yojana (PMJDY)**
➢ **Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA)**
➢ **Deendayal Antyodaya Yojana- National Urban Livelihoods Mission (DAY-NULM)**
➢ **Pradhan Mantri Awas Yojana (PMAY)**
➢ **Ayushman Bharat**
➢ **Direct Benefit Transfers (DBT)**
➢ **Swachh Bharat Mission**

Bal Vivah Mukht Bharat Abhiyan

Why in News?

Recently, the **Ministry of Women and Child Development** launched the **Bal Vivah Mukht Bharat Abhiyan**, a national campaign aimed at **eradicating child marriage** in India.

➢ The campaign aligns with India's commitment to gender equality and the broader vision of a **developed nation (Viksit Bharat) by 2047**.

What are the Key Highlights of the Bal Vivah Mukht Bharat Abhiyan?

➢ **Child Marriage Free Bharat Portal:** An innovative online platform that allows citizens to report child marriage incidents, file complaints, and access information about **Child Marriage Prohibition Officers (CMPOs)** across the nation.

     ○ The launch coincides with the **16 Days of Activism** against **Gender-Based Violence**, a global movement running from **25th November** (**International Day for the Elimination of Violence Against Women**) to **10th December** (**Human Rights Day**).

         ● **CMPOs** prevent child marriages, collect prosecution evidence, counsel against such marriages, raise awareness of their harmful effects, and sensitize communities.

➢ **Pledge Against Child Marriage:** This campaign aims to eliminate child marriage and empower every daughter in the nation, highlighting its profound significance in fostering a fair and just society.

     ○ The campaign will target states with higher-than-average child marriage rates namely **West Bengal, Bihar, Jharkhand, Rajasthan, Tripura, Assam**, and **Andhra Pradesh**.

➢ **Acknowledging Achievements:**

     ○ During the launch of the campaign, the Minister highlighted the significant strides made in the empowerment of women, citing the improvement in the **sex ratio at birth from 918 in 2014-15 to 930 in 2023-24.**

     ○ The portal is a significant step in empowering citizens and enforcing the **Prohibition of Child Marriage Act, 2006,**

         ● Under this act, marriages involving girls under 18 and boys under 21 are strictly prohibited.

➢ **Significance:**

     ○ **Support for Girls' Education and Empowerment:** Aligned with the **National Education Policy 2020,** this campaign reflects ongoing government efforts to **promote gender equality** through initiatives supporting girls' education and social empowerment.

Note:

❍ **Eradication of Child Marriage:** The campaign acknowledged the significant role of **Beti Bachao Beti Padhao** and **Sukanya Samriddhi Yojana** in raising awareness.

What are the Legislative Framework Related to Child Marriage in India?

➢ **Legislative Framework:** India enacted the Prohibition of **Child Marriage Act in 2006**, establishing the legal age for **marriage at 21 for men and 18 for women**.

   ❍ **Section 16** of the **Prohibition of Child Marriage Act** allows **State Governments** to appoint '**Child Marriage Prohibition Officers (CMPO)**' for specific areas.

   ❍ Government has introduced a bill namely 'the **Prohibition of Child Marriage (Amendment) Bill, 2021** for raising the age of marriage of women to 21 years to make it at par with the men. The Bill **ultimately lapsed** with the dissolution of the 17th Lok Sabha.

➢ **Laws Related:**

   ● **POCSO Act:** The men who married girls below 14 years of age would be booked under the **Protection of Children From Sexual Offences (POCSO)** Act and those marrying girls between the age of 14 and 18 years would be booked under the **Prohibition of Child Marriage Act (PCMA), 2006**.

■■■

Science & Technology

Highlights

- *Climate Footprint of Space Exploration*
- *Innovative Strategies in Malaria Prevention*
- *ecDNA Challenging Genetics Principles*

- *Axiom-4 Mission*
- *Biomedical Waste Management in India*
- *Global Cooperation in Space Debris Management*

Climate Footprint of Space Exploration

Why in News?

Space exploration is expanding rapidly, but its environmental impact from rocket emissions to satellite debris is largely ignored by global sustainability frameworks like the Paris Agreement. Urgent action is needed to address these growing concerns.

How are Space Activities Affecting the Environment?

- ➤ **Rocket Emissions:** Rocket launches emit carbon dioxide (CO_2), black carbon, and water vapor. Black carbon absorbs sunlight 500 times more effectively than CO_2, exacerbating global warming.
  - ❍ Additionally, chlorine-based rocket propellants deplete the ozone layer, increasing ultraviolet (UV) exposure and disrupting atmospheric circulation.
- ➤ **Space Debris:** As of September 2024, 19,590 satellites have been launched, with 13,230 still in orbit, of which 10,200 are operational.
  - ❍ The total mass of space objects exceeds 13,000 tonnes, contributing to pollution by Space Debris due to overcrowding in low Earth orbit (LEO).
    - Non-functional satellites and debris from collisions add to the growing problem of space junk and making **space increasingly inaccessible.**
  - ❍ This debris can disrupt radio waves and sensor accuracy, affecting critical systems for **disaster tracking, climate monitoring, and communication.**
- ➤ **Satellite Manufacturing:** The production of satellites involves energy-intensive processes that contribute significantly to their carbon footprint, particularly through the use of metals and composites.
  - ❍ Satellite propulsion systems also release additional emissions during orbital adjustments. Furthermore, satellites **burn up during re-entry,** releasing **metallic "satellite ash"** that could alter atmospheric dynamics and harm the climate.
- ➤ **Emerging Threats:** Space mining, although not yet operational, poses a potential **threat to both Earth and space environments**.
  - ❍ Increased industrial activity in orbit could intensify environmental impacts, compounding the challenges posed by current space operations.

What are the Barriers to Sustainable Space Exploration?

- ➤ **Lack of Regulations:** Space activities are not covered by agreements like the **Paris Accord,** leaving emissions and debris largely unregulated.
  - ❍ Without clear guidelines, the **rapid increase in satellites and debris led to overcrowded orbits,** making future missions more costly and riskier.
  - ❍ While the Outer Space Treaty, 1967 **emphasizes responsible use,** it lacks binding provisions for environmental sustainability.
  - ❍ In 2019, **the United Nations Committee on the Peaceful Uses of Outer Space (COPUOS)** adopted 21 voluntary guidelines for the long-term sustainability of space activities.
    - However, the **lack of binding regulations** and **conflicting national and commercial priorities** hinder the implementation of these guidelines, making it challenging to achieve a **unified approach to space sustainability.**

Note:

➢ **Commercial Exploitation of Space:** It involves generating revenue through space-related technologies and services, such as **space resource recovery from asteroids, developing commercial space stations**, and offering space tourism, driven by profit-focused companies, may undermine sustainability efforts.

➢ **High Costs:** Developing and implementing **sustainable technologies for space exploration is expensive.**

  ○ This includes **costs related to debris mitigation,** sustainable fuel alternatives, and long-term missions, all of which require significant investment.

  ○ Achieving sustainability in space requires advanced technologies for debris removal, efficient propulsion systems, and life support systems for long-duration missions.

    ● **Many of these technologies are still in development** and demand substantial investment.

➢ **Data-Sharing Issues:** Security and commercial interests often **hinder real-time satellite and debris tracking,** which is essential for coordinated space traffic management.

Where Does India Stand on Space Sustainability?

➢ **Private Sector Engagement**: The formal establishment of the **Indian National Space Promotion and Authorization Centre (In-SPACe)** is expected to boost the role of private companies.

  ○ Startups like **Agnikul, Skyroot, and Dhruva Space** are developing sustainable satellite launch vehicles and technologies.

  ○ Manastu Space Technologies has delivered the **iBooster Green Propulsion System** to the **Defence Research and Development Organisation**.

    ● The system uses a **hydrogen peroxide-based fuel for safer, cost-effective satellite** operations like orbit raising and deorbiting.

➢ **Space Debris Management**: **Indian Space Research Organisation (ISRO) Network for Space Objects Tracking and Analysis (NETRA) project** aims to track space debris, providing critical data to protect space assets and help manage risks.

  ○ This initiative helps manage risks and **prevent Kessler Syndrome,** where collisions create more debris.

○ India has also collaborated with the US on space object monitoring under a pact signed in 2022.

➢ **In-Orbit Servicing**: ISRO is developing the **SPADEX (Space Docking Experiment)** to dock satellites for refueling and other services, which will enhance satellite longevity and mission flexibility.

United Nations Committee on the Peaceful Uses of Outer Space
➢ COPUOS was established in 1958, following the launch of the **first artificial satellite, Sputnik I, in 1957**. Initially created as an ad hoc intergovernmental committee, it was later made a **permanent body by the** UN General Assembly in 1959. **India was one of the 18 founding members.**
➢ COPUOS oversees the exploration and use of space for humanity's benefit, focusing on peace, security, and development.
○ It reviews international cooperation, encourages space research, and addresses legal issues related to outer space.
➢ **India and COPUOS:**
○ **Dr. Vikram K. Sarabhai,** the **Father of Indian Space Program**, served as Vice-President and Scientific Chairman of the **United Nations Conference on the Exploration and Peaceful Uses of Outer Space (UNISPACE-I)** in 1968.
○ In 2021, India was elected as Chair of the new Working Group on the Long-term Sustainability of Outer Space Activities.

Innovative Strategies in Malaria Prevention

Why in News?

Recent advancements in **malaria prevention** have shifted focus from genetically modified mosquitoes to **genetically modified malaria-causing parasites.** This innovative approach aims to enhance immune system priming during the liver stage of the parasite's life cycle, potentially leading to more effective **malaria** vaccines.

How do Genetically Modified Parasites Help Prevent Malaria?

➢ **Genetically Modified Parasites:** Malaria causing parasites were genetically altered to study their

behavior, prevent diseases, or deliver treatments. They are designed to **prime the immune system** in the liver, preventing disease before entering the bloodstream.

- ○ Malaria-causing parasites cause infection and symptoms begin to show only when they move into the bloodstream from the liver stage.
- ○ This method allows for better protection against malaria when exposed to unaltered parasites later, improving overall vaccine efficacy.
  - Additionally, genetically modified mosquitoes can spread resistance to malaria by mating with wild mosquitoes.
- ○ **Immune priming** is a process by which a host improves its immune defences following an initial pathogenic exposure, leading to better protection after a subsequent infection with the same – or different – pathogens.

➢ **Trial Efficacy:** In the trial conducted, 89% of participants exposed to late-arresting genetically modified parasites (*p falciparum*, in this case) were protected from malaria compared to only 13% for early-arresting parasites.
- ○ Early-arresting refers to killing the parasite on day 1 of entering the liver whereas late-arresting refers to killing it on day 6.

➢ **Comparison with Traditional Methods:** Traditional methods, such as radiation-sterilized mosquitoes and radiation-attenuated **sporozoites** (the infective stage of malaria parasites), require significantly higher exposures (up to 1,000 mosquito bites) for similar protection levels.

What is Malaria?

➢ **About:**
- ○ Malaria, a life-threatening disease caused by **Plasmodium parasites**, is transmitted by **female Anopheles mosquitoes**. Of the five species infecting humans, *P. falciparum* and *P. vivax* are the most dangerous.
- ○ After biting an infected person, a **mosquito transmits malaria parasites to the next person** it bites. The parasites travel to the **liver**, mature, and then **infect red blood cells**.

➢ **Highlights of Malaria in India:**
- ○ According to the **National Vector Borne Disease Control Programme (NVBDCP)**, malaria remains a significant public health challenge in India, with approximately **1 million cases reported annually.**
- ○ Approximately 95% of the population lives in malaria-endemic regions, with 80% of cases occurring in tribal, hilly, and inaccessible areas that house 20% of the population.
- ○ **In 2022, India** represented **66% of malaria cases** in the **WHO South-East Asia** Region, with *Plasmodium vivax* responsible for nearly **46% o**f these cases.

➢ **Treatment:**
- ○ **WHO**-recommended malaria vaccine like **RTS,S/ AS01** and **R21/Matrix-M**

➢ **Global Initiatives:**
- ○ **World Malaria Day** – 25th **April** (launched in **2007**)
- ○ **WHO Global Malaria Programme (GMP)** (launched in **2015**)

➢ **Government Initiatives Related to Malaria:**
- ○ **National Malaria Control Programme (NMCP) – 1953**
- ○ **National Vector-Borne Disease Control Programme – 2003**
- ○ **Malaria Elimination Research Alliance-India (MERA-India)** – Launched on the eve of **'World Malaria Day' in 2019.**
- ○ **National Strategic Plan: Malaria Elimination 2023-27**

ecDNA Challenging Genetics Principles

Why in News?

Recently, a study published in *Nature* has revealed that **extrachromosomal DNA (ecDNA)**, a previously overlooked component of **genetic material**, plays a significant role in **cancer progression and drug resistance**.

➢ These findings challenge the conventional understanding of genetics and open new avenues for understanding and treating cancer.

What is ecDNA and How It Challenges Conventional Genetic Principles?

➢ **About: ecDNA** is a type of **DNA** that **exists outside of chromosomes** in the nucleus of cells.

- ○ **DNA** stores **genetic information** crucial for an organism's growth, function, and reproduction. In eukaryotic cells, it is coiled into **chromosomes**.
- ○ Humans have **23 pairs of chromosomes**, with genes on them encoding proteins and determining traits.

➤ **Formation:** ecDNA forms when **portions of DNA break away from chromosomes** due to processes like **chromothripsis** (chromosomes are broken and rearranged) or **errors** in DNA replication, creating **circular structures** that exist independently within the nucleus.

➤ **Significance:** ecDNA is commonly **found** in **cancer** cells, where it can contain **multiple copies of oncogenes**, contributing to **tumor growth, genetic diversity**, and **drug resistance.**

➤ **Challenges to Conventional Law of Genetics:** The conventional principles of genetics are primarily based on **Mendelian inheritance** and the **chromosomal theory of inheritance**, which is challenged by **ecDNA in following ways:**

- ○ **Disruption of Random Gene Distribution:** Traditional genetics holds that genes are distributed randomly and independently during cell division. ecDNA **defies this principle by forming clusters of multiple genes** that are passed as intact packages, allowing cancer cells to inherit advantageous genetic combinations reliably.

- ○ **Facilitated Inheritance of Oncogenes:** ecDNA clusters often contain **oncogenes (genes promoting cancer growth)** and other regulatory elements that support tumor survival. This grouping ensures that **cancer cells can inherit and amplify beneficial traits** in a non-random, purpose-driven manner, enhancing their adaptability and resistance to treatments.

- ○ **Preservation of Favorable Genetic Combinations:** Chromosomes undergo crossing over and recombination during meiosis, leading to genetic diversity. In contrast, **ecDNA preserves specific advantageous** combinations without recombination, maintaining traits critical for tumor progression.

A. ecDNA lacks centromeres, which causes unequal segregation in progeny cells, resulting in higher ec DNA copy number in progeny cells than in parent cells.

B. Local aggregation of ecDNA at ecDNA hubs promotes intermolecular enhancer-gene interactions and oncogene overexpression.

C. ecDNA-containing cancer cells express high levels of non-homologous end joining (NHEJ) related proteins, which can promote the repair of DNA double-strand breaks (DSBS) induced by radiotherapy and chemotherapy, leading to the development of therapeutic resistance.

D. EcDNA can be used as a new target for cancer therapy.

Note:

How ecDNA Contributes to Cancer and Drug Resistance?

- ecDNA can carry **multiple copies of oncogenes**, leading to **increased expression of cancer-promoting genes** and **tumor growth.**
  - It can take **regulatory elements (enhancers)** from other parts of the **genome**, causing **abnormal gene activity** that promotes cancer.
- The **non-Mendelian inheritance of ecDNA** creates **genetic diversity within tumors**, complicating targeted treatments.
- ecDNA can **increase the number of genes that help cancer cells pump out drugs** or **change their targets,** making it harder for chemotherapy to work.
  - It allows **cancer cells to quickly develop new mutations**, helping the **tumor resist treatment** and adapt to drugs.

Mendel's Laws of Genetics on Inheritance of Traits

- **Law of Dominance:** Dominant traits always express if present; recessive traits appear only when both gene copies are recessive.
- **Law of Segregation:** Each parent passes one gene copy to offspring during gamete formation.
- **Law of Independent Assortment:** Genes for different traits are inherited independently, unless located close on the same chromosome.

Axiom-4 Mission

Why in News?

Recently, the **Indian Space Research Organisation (ISRO)** announced that two Indian astronauts selected for the **Axiom-4 mission** (scheduled to launch in 2024) to the **International Space Station (ISS)** have completed the initial phase of training.

- These two Indian astronauts are **Prime-Group Captain Shubhanshu Shukla and Backup-Group Captain Prasanth Balakrishnan Nair.**

What is the Axiom-4 Mission?

- **About:**
  - **Axiom Mission 4 (Ax-4)** is a **private spaceflight to the ISS** operated by **Axiom Space** (US-based space-infrastructure development company), using the **SpaceX Crew Dragon spacecraft**.
  - The **SpaceX** Crew Dragon is a reusable spacecraft that carries astronauts to and from the ISS.
  - It is the **fourth flight in collaboration with** the **National Aeronautics and Space Administration (NASA),** following **Axiom Missions 1, 2, and 3.**
- **Mission Objectives:**
  - **Commercial Space Initiatives:** Axiom-4 focuses on enabling commercial activities like **space tourism** in **Low Earth Orbit (LEO)**.
    - It aims to **demonstrate the feasibility of commercial space stations** as platforms for **business and research.**
  - **International Collaboration:** The mission features a **diverse multinational crew**, emphasising **global cooperation in space exploration**.
    - It aims to **strengthen international partnerships** and promote joint efforts in advancing space science.
  - **Research and Development:** The mission supports s**cientific experiments and technological advancements** in **microgravity.**
    - Research areas include **materials science, biology,** and **Earth observation**, offering potential breakthroughs.
- **Key Features:**
  - **Spacecraft and Crew:** The mission will deploy a **SpaceX Dragon spacecraft** launched by a **Falcon 9 rocket**, carrying professional **astronauts, researchers, and private individuals**.
  - **Mission Duration and Activities:** With an **expected duration of 14 days**, the crew will **conduct experiments, technology demonstrations,** and educational outreach aboard the ISS.
  - **Commercial Space Station Development:** Axiom-4 is part of Axiom Space's vision to **establish the first commercial space station**, transitioning from ISS operations to an independent orbital platform.
- **Significance for India:**
  - The Ax-4 marks a pivotal **collaboration between the ISRO and NASA,** highlighting India's **growing presence in space exploration**.
  - This mission will facilitate Indian astronauts' participation in activities aboard the ISS, enhancing India's capabilities in **human spaceflight** and international cooperation in space science.

Note:

Drishti IAS

About Axiom-4 Mission

- **NASA and Axiom Space**, an american privately funded space infrastructure developer signed an order for the **fourth private astronaut mission** to the ISS, aiming to launch in August 2024 from **Kennedy Space Center in Florida**.
- The mission aims to dock with the ISS for a **fourteen-day duration**.
- **Indian astronauts will receive training from NASA**, international partners, and SpaceX, focusing on spacecraft systems and emergency preparedness, as part of India-US space cooperation goals.

Note:

➤ During the Prime Minister's 2023 visit to the US, a joint statement confirmed that **NASA** would provide advanced astronaut training to India under the **Artemis Accords**.

➤ India's **Gaganyaan human spaceflight mission** is planned for post-2025, following two successful unmanned missions.

What is the ISS?

➤ **About:** The **International Space Station (ISS)** is a **large, permanently crewed laboratory orbiting Earth** at an **altitude of approximately 400 kilometres**.

➤ **Countries Involved:** The ISS is a collaborative effort involving **15 countries** and 5 space agencies: **NASA, Roscosmos, European Space Agency, JAXA**, and **Canadian Space Agency**.

➤ **Operation at ISS:** An international crew of seven astronauts and cosmonauts live and work aboard the station, travelling at a speed of 7.66 km/sec, completing an orbit around Earth every 90 minutes. The ISS orbits Earth 16 times within 24 hours.

Biomedical Waste Management in India

Why in News?

Amid concerns related to HIV, recent discussions on **biomedical waste management** (BMW) have gained attention, highlighting the need for effective **waste disposal systems** to protect public health and the environment.

What is Biomedical Waste?

➤ **Definition:** Biomedical waste refers to **human and animal anatomical waste,** along **with treatment apparatus** such as needles, syringes, and other materials used in healthcare facilities during treatment and research.

○ It is classified as **biologically and chemically hazardous waste**, containing biological and microbiological contaminants.

➤ **Treatment and Disposal Methods:** Options for managing biomedical waste include, **incineration,** Plasma pyrolysis, Deep burial, Autoclaving, and **recycling.**

➤ **Current Status of Biomedical Waste Management:**

○ As of **2020,** India generated approximately **774 tons of biomedical waste per day**.

○ India has **393,242 healthcare facilities**, with **67.8% being non-bedded** (clinics, laboratories) and **32.2% being hospitals and nursing homes**.

● Approximately **79% of these facilities utilize 218 Common Biomedical Waste Treatment Facilities (CBWTF)** for waste management.

● Out of operational CBWTFs, **208** have adopted the **Centralised Bar Code System for Tracking Biomedical Waste (CBST-BMW)** to enhance monitoring.

➤ **Strategies for Enhancement:**

○ **Adoption of Circular Economy Practices:** Implementing a circular economy model can promote sustainable practices in healthcare waste management.

● **IIT Researchers** advocate for a '**reduce-reuse-recycle**' approach instead of traditional '**take-make-dispose' models**.

Transition to Circular Economy in Healthcare Waste Management

Adoption of Circular Economy Practices	Implementing 'Reduce-Reuse-Recycle' Model	Strengthening Regulations	Public Awareness Campaigns	Investment in Infrastructure	Sustainable Healthcare System
Initiating sustainable waste management	Minimizing waste generation	Enforcing stricter compliance	Educating stakeholders	Enhancing waste management facilities	Achieving environmental sustainability

What are the Provisions for Biomedical Waste Management?

➤ **Biomedical Waste Management Rules, 2016**
  ○ The ambit of the rules has been expanded to include vaccination camps, blood donation camps, surgical camps or any other healthcare activity.
  ○ **Chlorinated plastic bags**, gloves and blood bags has been **phased out within two years starting from March 2016.**
  ○ **Pre-treatment of the laboratory waste**, microbiological waste, blood samples and blood bags through disinfection or sterilisation on-site in the manner prescribed by the **World Health Organization (WHO)** or by the **National AIDS Control Organisation (NACO)**.
  ○ Bio-medical waste has been classified into **4 categories** to improve the segregation of waste at source.

➤ **Hazardous and other wastes (Management and Transboundary Movement) Rules, 2016.**

➤ **Basel Convention:** The Basel Convention, adopted in 1989, and effective from 1992, is an **international treaty** aiming to **reduce trans-boundary movements of hazardous wastes**.
  ○ India is a **member of the Basel Convention** but has not ratified the **Basel ban amendment**.

What is the Influence of HIV/AIDS on Policies?

➤ The **late 1980s** saw a global crisis with the **"Syringe Tide"** in the **US**, leading to stricter regulations like the **Medical Waste Tracking Act of 1988**.

➤ In India, significant steps began with the introduction of the **Biomedical Waste (Management and Handling) Rules in 1998**, recognizing **hospital waste as hazardous**.

➤ The **Supreme Court's** ruling in *Dr. B.L. Wadehra vs. Union of India (1996)* highlighted pollution concerns, influencing regulatory frameworks.
  ○ SC said that owners and occupiers of premises in Delhi without a latrine or urinal connected to a municipal drain must collect and remove filth to designated depots, following prescribed guidelines.

Biomedical Waste Management

Blue Waste
Consists of broken or discarded glass, excluding cytotoxic waste.

Yellow Waste
This category includes human and animal anatomical waste, soiled waste, discarded medicines, chemical waste, and contaminated linen.

White Waste
Encompasses waste sharps and metals, including needles and scalpels.

Red Waste
Comprises disposable items like syringes, tubes, and gloves that are not sharps.

Global Cooperation in Space Debris Management

Why in News?

Recently, the issue of increasing **satellites and space debris** in **Low Earth Orbit (LEO)** has gained international attention, with experts warning that without global cooperation, this vital region of space may become unusable.

➤ In October 2024, a **United Nations panel on space traffic coordination** called for urgent measures to address this challenge.

high Earth & geosynchronous orbit (≥35,780 km)
mid Earth orbit (2,000–35,780 km)
low Earth orbit (180–2,000 km)
Earth
lunar orbit (384,000 km)

Note:

What is Lower Earth Orbit (LEO)?

➢ **About:**

  ○ **Low Earth Orbit (LEO)** refers to an orbit around Earth at altitudes typically ranging from **180 km to 2,000 km**.

  ○ This region is closest to the Earth's surface and is the most frequently utilized orbital region for satellites, including the **International Space Station (ISS).**

➢ **Orbital Mechanics of LEO:**

  ○ For a satellite to remain in LEO, it must travel at a speed of approximately **7.8 kilometers per second**.

    ● At this speed, the **centrifugal force** generated by the satellite's motion balances the **gravitational pull** of the Earth, enabling the satellite to maintain its orbit.

    ● As a result, satellites in LEO take around **90 minutes** to complete one full orbit around Earth.

  ○ Unlike **suborbital objects,** which return to Earth, or objects exceeding escape velocity (25,000 mph), **LEO objects remain in orbit indefinitely** unless influenced by external forces like **atmospheric drag** or **orbital decay.**

➢ **Importance of LEO:**

  ○ **Satellite Applications:** LEO is preferred for **Earth observation satellites**, as they provide **high-resolution images and data** due to their **proximity** to the Earth's surface.

    ● Many communication satellites and scientific missions also utilise LEO for better transmission speeds and reduced latency.

    ● LEO satellites are also crucial for **Global Positioning Systems (GPS).**

  ○ **International Space Station (ISS):** The **ISS** orbits in LEO, making it accessible for human space exploration and scientific research.

    ● Its location allows for **regular resupply missions** and **ease of crew transport.**

  ○ **Cost-Effectiveness and Accessibility:** Satellites in LEO are **easier and cheaper to launch** compared to those in higher orbits, such as **Geostationary Orbit (GEO)**.

    ● The lower altitudes mean **reduced energy requirements** for reaching orbit.

What are the Challenges Associated with LEO?

➢ **LEO Congestion & Space Debris:** The increasing number of satellites in LEO has led to concerns about space debris.

  ○ **Decommissioned satellites, broken parts, and spent rocket stages** accumulate in this orbit, posing collision risks to active satellites and spacecraft.

  ○ Over **14,000 satellites**, including **3,500 inactive** ones, are in LEO, alongside roughly **120 million debris fragments**.

  ○ Recent incidents, like the **explosion of a Chinese rocket** and a **defunct Russian satellite**, have increased **space debris**, threatening satellites and astronauts aboard the **ISS**.
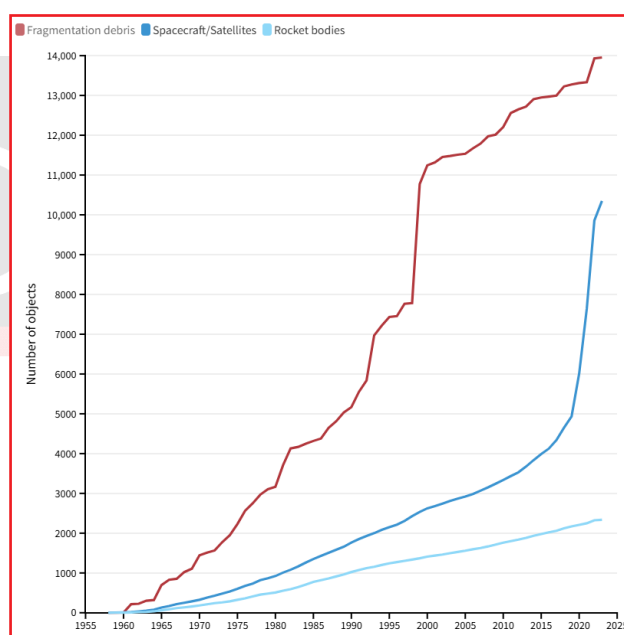
➢ **Collision Risk:**

  ○ Increased congestion in LEO poses risks of **USD 556 million** in damages in between 2024-29, with a **3.13% collision probability**.

    ● There has also been a **17% increase in close encounters** per satellite in the past year.

➢ **Orbital Saturation:**

  ○ The rapid growth in satellite constellations, driven by companies like **SpaceX's Starlink (6,764 satellites)** has intensified competition for orbital space, making effective regulation and international collaboration crucial.

Note:

- ➢ **Management Challenges:**
  - ❍ **Commercial Interests:** Private companies, like **SpaceX's Starlink**, often guard proprietary satellite data, hindering transparency and data sharing. This limits the ability to track satellites and space debris effectively.
  - ❍ **Lack of Standardization:** Current collision avoidance methods are informal, relying on inconsistent data formats and protocols.
    - ● This fragmented approach results in **accountability issues** and **complicates the development of universal standards** for satellite operations.
- ➢ **Strategic Concerns:**
  - ❍ **Geopolitical Tensions:** Countries are often reluctant to share satellite data due to national security concerns, especially regarding dual-use satellites with both civilian and military functions.
    - ● This reluctance complicates international cooperation and the creation of a centralized space traffic management system.
  - ❍ **Weaponisation of LEO:** Anti-satellite (ASAT) missile tests by nations like China, USA, India (2019, **Mission Shakti**), and Russia (2021, **destruction of Cosmos 1408)** have significantly **increased space debris**, posing long-term risks to LEO operations.
    - ● China's SC-19 test generated over 3,000 trackable fragments.

> **Space Debris:** Space debris refers to **fragmented natural objects in Earth's orbit** that no longer serve any functional purpose.
> ➢ This includes **defunct satellites, spent rocket stages, and fragments** resulting from collisions or other incidents.

What are the Threats Posed by Space Debris?

- ➢ **Hazard to Operational Satellites:** Space debris is a significant risk for operational satellites, as **collisions can render them nonfunctional**, disrupting vital services.
- ➢ **Reduction of Orbital Slots:** The accumulation of debris in specific orbital regions **limits the availability of prime orbital slots for future space missions.**
- ➢ **Challenges in Space Situational Awareness:** The rising volume of space debris **complicates efforts to track and predict the movements of objects in**

space, making it harder for satellite operators and space agencies to maintain situational awareness.

- ➢ **Kessler Syndrome:** The growing number of objects and debris in space can lead to the Kessler Syndrome, a scenario where the **density of debris in orbit increases, leading to a higher likelihood of collisions** and **further debris** generation.
  - ❍ For example, in 2009, a defunct Russian satellite collided with an American weather satellite, producing thousands of debris fragments.
  - ❍ **Kessler Syndrome** counters the **Big Sky Theory (1978)** proposed by **NASA** which suggested that **space debris would not pose a long-term issue** due to **space's vastness.**

What are the Initiatives to Address Space Debris Challenges?

- ➢ **India's Initiatives:**
  - ❍ **ISRO's** System for Safe and Sustainable Operations Management (IS 4 OM): It was established in 2022 to continuously monitor objects that pose collision risks.
    - ● It predicts space debris evolution, and develops strategies to mitigate associated threats.
  - ❍ **Collision Avoidance Maneuvers:** In 2022, ISRO successfully carried out 21 collision avoidance maneuvers to prevent potential impacts between Indian operational space assets and other space objects.
  - ❍ **Centre for Space Debris Research: It was established by** ISRO as a **dedicated center to monitor and develop mitigation strategies** for space debris.
  - ❍ **Project NETRA**: Project NETRA is an early-warning system to detect space debris and other hazards. It aims to protect Indian satellites from collisions.
- ➢ **Global Initiatives:**
  - ❍ **Inter-Agency Space Debris Coordination Committee (IADC):** Inter-Agency Space Debris Coordination Committee (IADC) was established in 1993 as an international forum that **coordinates efforts among spacefaring nations** to address the growing issue of **space debris.**

Note:

❍ **United Nations Committee on the Peaceful Uses of Outer Space (COPUOS):** <u>COPUOS</u> develops guidelines for the **long-term sustainability of outer space activities,** including measures for space debris mitigation.

❍ **European Space Agency's Clean Space Initiative:** The <u>Clean Space initiative</u> by ESA aims to **reduce space debris and promote sustainable space activities** by encouraging the development of technologies to avoid generating debris and by removing existing debris.

UN's Five Treaties on Space Activities
➢ <u>**Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space**</u> **(1967)**
➢ <u>**Agreement on the Rescue of Astronauts, the Return of Astronauts, and the Return of Objects Launched into Outer Space**</u> **(1968))**
➢ <u>**Convention on Liability for Damage Caused by Space Objects**</u> **(1972)**
➢ <u>**Convention on Registration of Objects Launched into Outer Space**</u> **(1976)**
➢ <u>**Agreement Governing the Activities of States on the Moon and Other Celestial Bodies**</u> **(1979)**
❍ **India has signed all five treaties** but has **not ratified the Moon Agreement.**

■■■

Note:

Environment and Ecology

Highlights

- Ground Level Ozone Pollution
- Ratapani Tiger Reserve
- Global Plastic Treaty

Ground Level Ozone Pollution

Why in News?

Recently, the Ministry of Environment, Forest and Climate Change (MoEF&CC) highlighted the **steps being taken to control Ground Level Ozone Pollution(GLOP) in India.**

Ozone (O₃)

Skin Cancer Cataract   Depletion by Ozone-Depleting Substances (ODS) — CFCs, HCFCs, Halons, etc.

UPPER ATMOSPHERE
Protective ozone layer in the **STRATOSPHERE**

GOOD

Ozone (O₃)

Montreal Protocol (to Vienna Convention, 1985)
❍ Stop production of ODS
❍ India is a signatory
❍ Kigali Amendment, 2019 (to Montreal Protocol)

LOWER ATMOSPHERE
Harmful air pollutant in the **TROPOSPHERE**

BAD

Gothenburg Protocol, 1999
❍ Reduce acidification, eutrophication and ground-level ozone.
❍ India is not a signatory

VOCs

NOx

NOx

World Ozone Day 16ᵗʰ September

Sunlight + NOx + VOCs = Ground-level ozone

What is Ground Level Ozone Pollution?

➢ **Ground Level Ozone Pollution:** Ground-level **ozone (O_3)** pollution refers to the excess presence of **ozone at the Earth's surface,** which is formed through chemical reactions in the atmosphere.
  - ❍ Unlike the ozone layer in the stratosphere, which protects life from harmful ultraviolet radiation, ground-level ozone is a harmful pollutant that poses significant health risks and environmental damage.
➢ **Formation of Ground Level Ozone:** Ground-level ozone is a **secondary pollutant,** meaning it is not directly emitted but **formed through chemical reactions between nitrogen oxides (NOx) and volatile organic compounds (VOCs).**
  - ❍ NOx (emitted by vehicles, power plants, and industrial processes) and VOCs (emitted from vehicles, petrol pumps, solvents, and waste burning).

Note:

○ These reactions occur in the **presence of sunlight,** making ozone formation more significant during sunny days and warmer seasons.

➢ **Regulation:** The **Central Pollution Control Board (CPCB)** in India has set **National Ambient Air Quality Standards (NAAQS) for ozone,** including an **8-hour average limit of 100 µg/m³ and a 1-hour limit of 180 µg/m³.**

○ Ground-level ozone is monitored under the **National Air Quality Monitoring Programme (NAMP),** managed by CPCB in collaboration with **State Pollution Control Boards (SPCBs)** and the **National Environmental Engineering Research Institute (NEERI).**

➢ **Impact:**

○ **Health Effects:** Ground-level ozone causes **respiratory issues** and worsen conditions like **asthma and heart disease.** Chronic exposure may reduce lung capacity, cause permanent damage.

● By 2050, ozone exposure could lead to over a million deaths in India if emissions are not controlled.

○ **Environmental Impact:** Ozone damages crops, reducing agricultural productivity, and harms forests by inhibiting growth and photosynthesis.

➢ **Measures to Control GLOP:**

○ **Ozone Depleting Substances (ODS):** MoEF&CC has notified the **Ozone Depleting Substances (Regulation and Control) Rules, 2000,** to regulate the use, import, and export of ODSs in India.

● ODS, like **Chlorofluorocarbons (CFCs),** harm the ozone layer. They are **stable in the troposphere** but break down under UV light in the **stratosphere,** leading to ozone depletion.

○ **Cleaner Fuels**: The government has encouraged the use of **Compressed Natural Gas, Liquefied Petroleum Gas,** and **ethanol-blended fuels** to reduce vehicular and industrial emissions.

○ **Vapour Recovery Systems (VRS)**: Installation of VRS at petrol pumps, particularly in Delhi-NCR, to minimize VOC emissions during refueling operations.

○ **PM Electric Drive Revolution in Innovative Vehicle Enhancement (PM-E Drive)**

○ **Electric vehicles (EVs)**

○ **National Clean Air Programme (NCAP**

○ **Bharat Stage - VI(BS-VI) compliant vehicles**

Air Pollutants

Sulphur Dioxide (SO₂)

It comes from the consumption of fossil fuels (oil, coal and natural gas). Reacts with water to form acid rain.

Impact: Causes respiratory problems.

Ozone (O₃)

Secondary pollutant formed from other pollutants (NOx and VOC) under the action of the sun.

Impact: Irritation of the eye and respiratory mucous membranes, asthma attacks.

Nitrogen Dioxide (NO₂)

Emissions from road transport, industry and energy production sectors. Contributes to Ozone and PM formation.

Impact: Chronic lung disease.

Carbon Monoxide (CO)

It is a product of the incomplete combustion of carbon-containing compounds.

Impact: Fatigue, confusion, and dizziness due to inadequate oxygen delivery to the brain.

Ammonia (NH₃)

Produced by the metabolism of amino acids and other compounds which contain nitrogen.

Impact: Immediate burning of the eyes, nose, throat and respiratory tract and can result in blindness, lung damage.

Lead (Pb)

Released as a waste product from extraction of metals such as silver, platinum, and iron from their respective ores.

Impact: Anemia, weakness, and kidney and brain damage.

Particulate Matter (PM)

PM10: Inhalable particles, with diameters that are generally 10 micrometers and smaller.
PM2.5: Fine inhalable particles, with diameters that are generally 2.5 micrometers and smaller.
Source: Emitted from construction sites, unpaved roads, fields, fires.
Impact: Irregular heartbeat, aggravated asthma, decreased lung function.

Note: These major air pollutants are included in the Air quality index for which short-term National Ambient Air Quality Standards are prescribed.

Drishti IAS

Note:

Ratapani Tiger Reserve

Why in News?

Recently, the **Ratapani Wildlife Sanctuary** has been officially declared a **tiger reserve**, becoming the **8th such reserve in Madhya Pradesh** and **57th tiger reserve in India.**

➢ It was approved by the **Ministry of Environment, Forest, and Climate Change** (MoEF&CC) through the **National Tiger Conservation Authority (NTCA).**

TIGER

Royal Bengal Tiger (Panthera Tigris) is the National animal of India.

Subspecies of Tiger

✷ **The continental** *(Panthera tigris tigris)*

✷ **The Sunda** *(Panthera tigris sondaica)*

Habitat

Tropical rainforests, evergreen forests, temperate forests, mangrove swamps, grasslands, and savannas

Countries Where Tiger Population Is Found

▣ Found only in **13 Tiger Range countries-** India, Nepal, Bhutan, Bangladesh, Myanmar, Russia, China, Thailand, Malaysia, Indonesia, Cambodia, Laos, and Vietnam

◆ As per the latest report by IUCN, tiger has gone extinct in Cambodia, Laos, and Vietnam

Protection Status

▣ **IUCN Red List:** Endangered
▣ **CITES:** Appendix I
▣ **WPA 1972:** Schedule I

Threats

▣ Habitat loss
▣ Poaching and illegal trade
▣ Human-Wildlife conflict

Conservation Efforts

▣ **International Big Cats Alliance (IBCA):** For conservation of seven big cats namely Tiger, Lion, Leopard, Snow Leopard, Cheetah, Jaguar and Puma (launched by India)
▣ **Tx2 campaign:** Launched by WWF; stands for 'Tiger times 2' signaling the goal to double the tiger population by 2022
▣ **National Tiger Conservation authority (NTCA):** Constituted under the WPA, 1972
▣ **Project Tiger:** Launched in 1973
▣ **Tiger Census:** Every 4 years

Tigers In India

▣ India has the **largest** population
◆ As of 2022, India has 3167 tigers
◆ Largest population has been found in Central Indian Highlands & Eastern Ghats Landscape
▣ **Tiger Reserves:** India now has 53 tiger reserves
◆ **Ranipur in UP** is the latest
◆ **Nagarjun Sagar** (Andhra Pradesh) **is the largest** while Orang (Assam) **is the smallest** (Core area)

Drishti IAS

Note:

What are Some Key Facts About Ratapani Tiger Reserve?

➢ It is situated near the **Vindhya hills**, the sanctuary encompasses the **Bhimbetka Rock Shelters**, a **UNESCO World Heritage Site.**

➢ The **Ratapani Tiger Reserve** encompasses a total area of 1,271.4 square kilometers, with a core area of 763.8 square kilometers and a buffer area of 507.6 square kilometers.

➢ **Flora and Fauna:**

❍ **Dry and moist deciduous**, with **teak (Tectona grandis) covering 55%** of the area.

❍ **Bamboo** and **evergreen Saja forests**, enhancing tourist appeal.

❍ The sanctuary is home to more than **35 species of mammals**, **33 species of reptiles, 14 species of fishes and 10 species of amphibians** and **over 40 Tigers**.

What is the Procedure to Designate Tiger Reserve in India?

➢ **Initial Proposal:** The **state government proposes a wildlife sanctuary or national park** for designation as a tiger reserve, assessing ecological significance and tiger presence.

❍ A **comprehensive plan is prepared**, outlining management strategies and habitat requirements to support a viable tiger population.

➢ **Approval from NTCA:** The proposal and conservation plan are submitted to the **National Tiger Conservation Authority (NTCA)** for review and evaluation.

➢ **In-Principle Approval:** The **NTCA grants in-principle approval**, recognizing the area as critical for tiger conservation and eligible for funding.

➢ **Official Notification:** The **state government issues an official notification** declaring the area as a tiger reserve under **Section 38V the Wildlife (Protection) Act, 1972**, delineating core and buffer zones.

❍ **Initiatives are launched to benefit local communities** and promote sustainable livelihoods while managing the tiger reserve effectively.

➢ **Monitoring and Evaluation:** Continuous **monitoring by NTCA** and state authorities assesses conservation effectiveness and adapts management strategies as needed.

Different Types of Conservation Methods
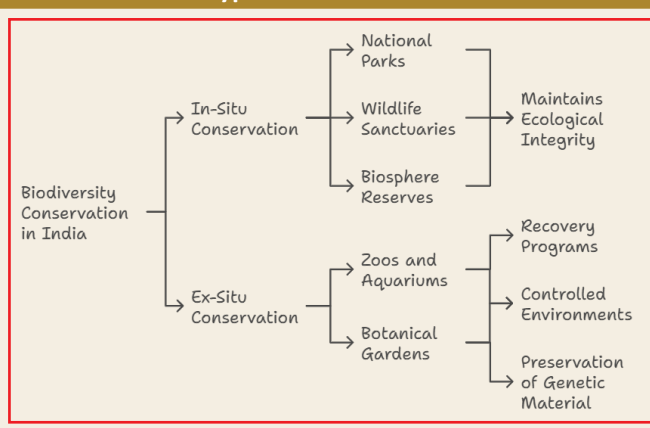
Note:

Difference Between Wildlife Sanctuary, Tiger Reserve and Biosphere Reserve

Feature	Wildlife Sanctuary	Tiger Reserve	Biosphere Reserve
Definition	An area dedicated to the **protection of specific species of flora and fauna,** and their habitats owned by the government or private entities.	A protected area specifically designated for the **conservation of tigers and their habitats**.	A designated area for the **conservation of biodiversity**, and sustainable development, including flora, fauna, and cultural heritage.
Management Authority	Managed by state governments or private organizations.	Managed by the **National Tiger Conservation Authority (NTCA)** under MoEF&CC.	Managed by the **MoEF&CC** in collaboration with local communities.
Public Access	Generally open to visitors with some restrictions on activities.	Access is regulated to minimize human disturbance; t**ourism is allowed** in designated areas.	Limited public access; primarily for research and education purposes.
Legal Framework	Governed by the **Wildlife Protection Act, 1972.**	Established under the Wildlife Protection Act, 1972 with specific provisions for tiger conservation.	Recognized under **UNESCO's Man and Biosphere Programme**; governed by national laws for conservation.

Global Plastic Treaty

Why in News?

Global plastic treaty talks failed to reach a consensus at the **5ᵗʰ meeting of the United Nations(UN) Intergovernmental Negotiating Committee (INC-5)** in Busan, South Korea.

➢ A resolution adopted in **2022 at the UN Environment Assembly in Nairobi** aimed to establish **global rules to curb plastic pollution by the end of 2024,** but nations were unable to reach an agreement.

➢ The delegations agreed that another session would be scheduled in 2025, tentatively being calling **"INC-5.2," to finalize the treaty.**

Why did the Global Plastic Treaty Talks Failed to Reach a Consensus?

➢ **Limits on Plastic Production:** A central issue of contention was whether countries should agree to targets for reducing the **production of virgin plastic polymers (**made from raw materials derived from petroleum**).**

  ○ A group of 66 countries, led by **Norway and Rwanda,** along with the **European Union,** argue for capping plastic production to control the environmental impact of plastics.

  ○ Nations like **Saudi Arabia and India,** which rely heavily on **petrochemicals** and **plastic production**

for their economies, opposed any measures that would limit production.

➢ **Development Concerns:** India argued that regulating plastic production would infringe upon its **right to development,** especially given the country's role in the global plastic polymer market.

  ○ India's position was that **any treaty should not undermine national growth aspirations.**

➢ **Unacceptable Targets:** The **draft treaty proposed** year-wise targets to phase out **single-use plastics** and restrict hazardous chemicals like **Di(2-ethylhexyl) phthalate (DEHP), Dibutyl phthalate (DBP), Benzyl butyl phthalate (BBP) , and Di-isobutyl phthalate (DIBP) by 2040.**

  ○ These measures, while aimed at reducing plastic pollution, were rejected by some countries due to their perceived negative economic impacts.

  ○ While India has taken steps to curb plastic waste, including **banning short-lived plastics** and implementing an **Extended Producer Responsibility (EPR)** regime, it opposed the proposed targets, asserting that such regulations could harm the country's development.

➢ **Disagreements on Treaty's Scope:** While many nations wanted the treaty to address the **full lifecycle of plastics** (including production, consumption, waste management, and its impact), some delegations **felt the focus should be on plastic waste alone.**

Note:

○ This created tension between those seeking comprehensive solutions and those prioritizing immediate waste management.

○ Kuwait criticized expanding the **mandate beyond plastic pollution,** claiming it was a pretext for **trade restrictions and economic agendas.**

➤ **UN Environment Programme:** Highlighted the urgency of action, warning against prolonged negotiations as **oceans and ecosystems suffer from plastic waste accumulation.**

UN Intergovernmental Negotiating Committee
➤ **About:** The **UN INC** is a key body established by the **UN Environment Assembly (UNEA)** to develop a legally binding international instrument to address plastic pollution, including its impact on marine environments.   ○ UN Member States adopt Resolution 5/14 in 2022 to work toward a legally binding global plastics treaty.   ➤ **INC Sessions:** The process of negotiation, aimed at finalizing the global plastics treaty by the end of 2024, involves a series of sessions held globally, starting from **INC-1** in **Uruguay** (November 2022), continuing through **INC-2 in France (June 2023),** and **INC-3** in **Kenya** (November 2023), **INC-4 in Canada (April 2024)**, and INC-5 in **South Korea** (December 2024).

Why Does the World Need a Global Plastic Treaty?

➤ **Explosive Growth**: The global production of plastic has **doubled from 234 million tonnes (mt) in 2000 to 460 mt in 2019**.

○ Projections suggest that **plastic production will reach 700 mt by 2040,** according to the **Organisation for Economic Co-operation and Development (OECD).**

○ **Asia is the largest producer of plastic,** accounting for nearly half of global production. North America and Europe follow, with 19% and 15%, respectively.

Top 10 plastic polluters ranked
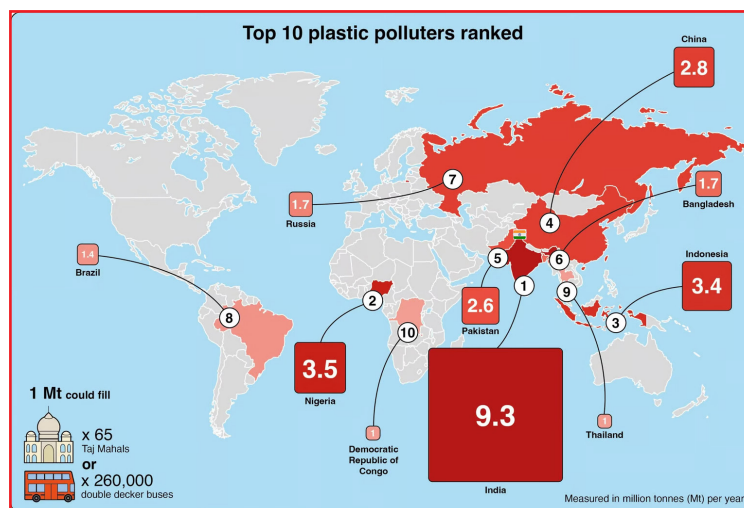
➤ **Impact of Plastic:**

○ **Environment:** Plastic can take anywhere from 20 to 500 years to decompose, leading to a massive accumulation of plastic waste in landfills and natural habitats.

● Despite the growing volume of plastic waste, **only about 9% of plastic waste is recycled,** as per a *2023 study by The Lancet.* This inefficiency exacerbates the pollution crisis.

● Around **8 million tonnes of plastic end up in the oceans annually,** harming marine life and ecosystems. By **2050, plastic could outweigh fish in the oceans if current trends continue.**

○ **Human Health:** Chemicals in plastics, such as **bisphenol A (BPA),** can disrupt the **endocrine system**, which regulates hormones in the body.

● These chemicals remain in the final product and can leach out, contributing to various health issues, including **cancer, diabetes,** reproductive issues, and **neurodevelopmental impairments.**

○ **Wildlife:** Plastic pollution has devastating effects on **marine and terrestrial species,** with animals ingesting or becoming entangled in plastic waste.

○ **Climate Change:** Plastic production contributes **3.6% of global greenhouse gas emissions,** with 90% of those emissions coming from **fossil fuels** used to create plastic.

● If current trends continue, greenhouse gas emissions from plastics could rise by 37% from 2020 levels to 3.35 gigatonnes of **Carbon dioxide equivalent (CO_2e)** by 2050.

➤ **Importance of Global Plastic Treaty:** A global treaty is needed to regulate plastic throughout its lifecycle, from production to disposal.

Note:

❍ To tackle the plastic pollution crisis, nations must commit to legally binding agreements that **curb production, improve recycling, and prevent plastic waste** from entering ecosystems.

What Challenges Hinder a Global Treaty on Plastic Pollution?

➢ **Divergent National Interests:** Developed nations push for lifecycle approaches to manage plastic production and consumption.

❍ Developing and **petrochemical-centric nations** view such measures as restrictive and detrimental to economic growth.

➢ **Trade Implications:** Plastic is a globally traded commodity, and any restrictions can have **significant trade implications, making consensus difficult.**

➢ **Funding and Resources:** Low- and middle-income **countries** often lack the resources to implement comprehensive plastic pollution measures, leading to disagreements over financial support and responsibility.

➢ **Political Will and Leadership:** Despite the shared understanding of the crisis, the **political will to implement transformative measures was lacking.** Balancing immediate economic interests with long-term environmental sustainability can be challenging for policymakers.

What are Plastics?

➢ **About:** Plastics are materials, either **synthetic or natural,** that can be shaped when soft and then hardened to retain their form.

❍ **Plastics are polymers** made up of repeating units called monomers. A polymer is a large molecule formed by chemically linking many smaller monomers together.

➢ **Types of Plastic:**

THE 7 TYPES OF PLASTICS
THEIR TOXICITY AND WHAT THEY ARE MOST COMMONLY USED FOR

TOXICITY CODE: ⚠ LOW   ☠ HIGH

Polymer Name	POLYETHYLENE TEREPHTHALATE	HIGH-DENSITY POLYETHYLENE	POLYVINYL CHLORIDE	LOW-DENSITY POLYETHYLENE	POLYPROPYLENE	POLYSTYRENE	All other plastics, including acrylic, fiberglass, nylon, polycarbonate, and polylactic acid (a bioplastic)
Resin Identification Code	1	2	3	4	5	6	7
Abbreviation	PET or PETE	HDPE	PVC	LDPE	PP	PS	OTHER
Recyclable?	Commonly Recycled	Commonly Recycled	Sometimes Recycled	Sometimes Recycled	Occasionally Recycled	Commonly Recycled (but difficult to do)	Difficult to Recycle
Percentage Recycled Annually	36%	30-35%	<1%	6%	3%	34%	Low
How Long to Decompose Under Perfect Conditions	5-10 Years	100 Years	Never	500-1,000 Years	20-30 Years	50 Years	Majority of these plastics: **never** Polylactic acid: **6 months**
Maximum Temperature	70°C (158°F)	120°C (248°F)	70°C (158°F)	80°C (176°F)	135°C (275°F)	90°C (194°F)	Polycarbonate: **135°C (275°F)** Polyactic acid: **150°C (302°F)**
Brittleness Temperature	-40°C (-40°F)	-100°C (-148°F)	-30°C (-22°F)	-100°C (-148 °F)	0°C (32°F)	-20°C (-4°F)	Polycarbonate: **-135°C (-211°F)** Polylactic acid: **60°C (140°F)**
Toxicity Level	☠	⚠	☠	⚠	⚠	☠	☠
Most Commonly Leached Toxin(s)	Antimony Oxide, Bromine, Diaszomethane, Lead Oxide, Nickel Ethylene Oxide, and Benzene	Chromium Oxide, Benzoyl Peroxide, Hexane, and Cyclohexane	Benzene, Carbon Tetrachloride, 1,2-Dichloroethane, Phthalates, Ethylene Oxide, Lead Chromate, Methyl Acrylate, Methanol, Phthalic Anhydride, Tetrahydrofuran, and Tribasic Lead Sulfate, Mercury, Cadmium, Bisphenol A (BPA)	Benzene, Chromium Oxide, Cumene Hydroperoxide, And Tert-butyl Hydroperoxide	Methanol, 2,6-di-tert-Butyl-4-Methyl Phenol, and Nickel Dibutyl Dithiocarbamate	Styrene, Ethylbenzene, Benzene, Ethylene, Carbon Tetrachloride, Polyvinyl Alcohol, Antimony Oxide, and Tert-butyl Hydroperoxide, Bensoquinone	BPA, BPS, as well as all other toxins mentioned

Note:

➢ **India and Plastics Problem:** India is presently the biggest contributor to plastic pollution in the world, and releases **9.3 million tonnes of plastic waste every year which is almost 20% of the global generation of plastic waste.**

○ A large portion of India's plastic waste, approximately **3.5 million tonnes, is released into the environment** due to poor waste management practices.

○ As India's urban areas expand, the **demand for plastic products,** especially packaging, rises, leading to **increased plastic waste and challenges in waste management.**

● India's infrastructure for **managing plastic waste is underdeveloped.** There are more uncontrolled dumping sites than sanitary landfills.

○ **Open burning is a common waste disposal practice in India**, leading to the release of toxic pollutants into the atmosphere. This contributes to both air **pollution and public health problems.**

○ India stands to lose an **estimated USD 133 billion in material value from plastic packaging waste by 2030,** with a significant portion of that loss attributed to uncollected plastic waste.

○ The EPR system in India faces implementation challenges, with inconsistent enforcement of plastic waste management laws.

○ The growth of **e-commerce has increased plastic packaging waste**, much of which is non-recyclable and contributes to environmental pollution.

India's Initiatives to Curb Plastics:
➢ **Plastic Waste Management (Amendment) Rules, 2022**
➢ **Plastic Waste Management (Amendment) Rules, 2024**
➢ **India Plastics Pact**
➢ **Project REPLAN**
➢ **Un-Plastic Collective**
➢ **GoLitter Partnerships Project**

Note:

History

Highlights

- *Akal Takht*
- *80-Pillar Assembly Hall of Kumhrar and Mauryan Architecture*
- *Birth Anniversary of C. Rajagopalachari*

Akal Takht

Why in News?

The **Akal Takht,** the supreme temporal and spiritual authority of the Sikh community, governed by the **Shiromani Gurdwara Parbandhak Committee (SGPC),** has imposed religious punishment *(Tankha)* on Sukhbir Singh Badal, **President of the Shiromani Akali Dal (SAD).**

➢ This action comes as punishment for the alleged misgovernance during the SAD's tenure in Punjab (2007–2017).

➢ This has sparked discussions about the **Akal Takht's authority and its relationship with the SAD and the SGPC.**

What is the Akal Takht?

➢ **Historical Significance**: Akal Takht was established in 1606 by **Guru Hargobind**, the **6th Sikh Guru,** in response to the execution of his father, **Guru Arjan Dev (5th Guru of the Sikhs),** by the **Mughals.**

  ❍ Takht is a Persian word for **"imperial throne"**. Akal Takht is located in the **Golden Temple complex**, facing the Harmandir Sahib.

  ❍ Created as a response to Mughal oppression, the **Akal Takht became a symbol of Sikh sovereignty and resistance,** serving as a platform for governance and justice.

➢ **Symbolism:** The Guru requested two swords, symbolizing *miri* (temporal power) and *piri* (spirituality), with the miri sword shorter, signifying the primacy of spiritual authority.

  ❍ **Akal Takht features a high throne**, three times taller than the maximum height allowed by **Mughal sovereignty.**

    ● Its altitude surpasses that of the Mughal throne balcony in Delhi's Red Fort, **symbolizing defiance against Mughal rule** and asserting Sikh sovereignty.

➢ **Spiritual and Temporal Authority**: The Akal Takht is one of the **five Takhts** (seats of power) in Sikhism but holds the highest position due to its dual authority(spiritual guidance with temporal governance).

  ❍ The tradition of issuing *Hukamnamas* **(edicts) began here,** symbolizing its supreme role in guiding the Sikh community.

➢ **Role After the 10th Guru:** The Akal Takht became a crucial center for Sikhs after the passing of **Guru Gobind Singh(10th and last Guru).**

  ❍ During turbulent times, such as the persecution of **Sikhs in the 18th century**, the Akal Takht became a rallying point for **Sarbat Khalsa** (general assembly of Sikhs) **to deliberate on critical issues.**

    ● **Maharaja Ranjit Singh,** who ruled Punjab for almost four decades (1801-39), convened one of the **last Sarbat Khalsas in 1805.**

➢ **Role of the Akal Takht Jathedar**: The **Jathedar (head) of the Akal Takht** is empowered to summon Sikhs for moral and spiritual accountability and prescribe **punishment(***Tankha)* to instill humility and discipline, this authority only applies to those who identify as a Sikh.

  ❍ A Jathedar must be baptized, knowledgeable in Sikh scriptures, and maintain moral integrity. Initially appointed by **Sarbat Khalsa,** the Jathedar's appointment shifted to the **Darbar Sahib committee** under British influence. **Post-1925, the SGPC began appointing the Jathedar.**

Other 4 Sikh Takhts

➢ **Takht Sri Keshgarh Sahib:** Located in the Siwalik foothills, Himachal Pradesh, it is a historical site linked to Guru Gobind Singh and the foundation of the **Khalsa.**

drishti

➢ **Takhat Sri Harimandir Ji Patna Sahib:** Located in Patna, Bihar, it is the birthplace of Guru Gobind Singh.

➢ **Takhat Sachkhand Shri Hazur Abchalnagar Sahib:** Located in Nanded, Maharashtra, it is the site of Guru Gobind Singh's cremation in 1708.

➢ **Takhat Sri Damdama Sahib:** Located in Talwandi Sabo, Punjab, it was recognized as the place where Guru Gobind Singh finalized the **Sikh scriptures(Guru Granth Sahib).**

TEN GURUS OF SIKH RELIGION	
Guru Nanak Dev (1469-1539	➢ He was the first guru of Sikh and the founder of Sikh religion. ➢ He started the GURU KA LANGAR. ➢ He was the contemporary of Babur. ➢ Kartarpur corridor was commemorated on the 550th birth anniversary of Guru Nanak Dev.
Guru Angad (1504-1552)	➢ He invented the new script called Guru-Mukhi and popularized and expanded the system of Guru ka Langar.
Guru Amar Das (1479-1574)	➢ He introduced the ceremony of the Anand Karaj Marriage. ➢ He abolished the custom of Sati and Purdah system among the Sikhs. ➢ He was a contemporary of Akbar.
Guru Ram Das (1534-1581)	➢ He founded Amritsar in 1577 on the land granted by Akbar. ➢ He started the construction of Golden Temple/Swarna mandir at Amritsar.
Guru Arjun Dev (1563-1606)	➢ He composed the Adi Granth in 1604. ➢ He led to the completion of construction of Golden temple. ➢ He was acclaimed as Shaheeden-de-Sartaj. ➢ He was executed by Jahangir on charges of helping prince Khusrau.
Guru Hargobind (1594-1644)	➢ He led to the transformation of the Sikh Community into a Military community. He is known as "Soldier Saint". ➢ He led to the establishment of Akal Takht and fortified the Amritsar City. ➢ He waged wars against Jahangir and Shah Jahan.
Guru HarRal (1630-1661)	➢ He was a man of peace thus devoted most of his life in maintaining peace with Aurangzeb and doing missionary work.
Guru Har Krishan (1656-1664)	➢ He was the youngest guru of all and was given the title of Guru at a very early age of 5, ➢ He was summoned by Aurangzeb against anti-islamic blasphemy.
Guru Teq Bahadur (1621-1675)	➢ He founded Anandpur Sahib.
Guru Gobind Singh (1666-1708)	➢ He founded a warrior community known as Khalsa in 1699. ➢ He introduced a new rite "Pahul" ➢ He joined Bahadur Shah's as a noble. ➢ He was the last Sikh Guru in human form and he passed the Guruship of Sikhs to the Guru Granth Sahib.

What is the Relationship Between the Akal Takht, SGPC, and SAD?

➢ **SGPC's Role in Sikh Governance**: Formed in **1920**, the SGPC was tasked with managing Sikh gurdwaras and upholding religious principles. Under the **Sikh Gurdwaras Act of 1925**, it gained **legal authority to appoint the Jathedar of the Akal Takht.**

○ The SGPC controls the finances and administration of major Sikh shrines in Punjab, Himachal Pradesh, and Chandigarh.

➢ **SAD**: The SAD, established alongside the SGPC, initially functioned as its **political wing to mobilize Sikhs during the Gurdwara Reform Movement.**

Note:

➢ **Intertwined Relationship**: Control over the SGPC allows the SAD to influence appointments and decisions at the Akal Takht.

 ❍ Critics argue that this relationship undermines the **independence of the Akal Takht's moral authority,** making it susceptible to political interference.

Gurudwara Reform Movement

➢ The Gurudwara Reform Movement, or Akali Movement, began in **1920 in Amritsar, Punjab,** led by Sikhs protesting against British control and corrupt mahants (priests) running Gurudwaras.

 ❍ The movement sought to **reclaim Gurudwaras from British-backed mahants,** leading to the formation of the SGPC in November 1920.

➢ The Akali Movement was part of a larger wave of **religious reforms in colonial India.**

➢ It led to the **Sikh Gurudwara Act of 1925, which granted the Sikh community legal control over their Gurdwaras,** ending the hereditary control by mahants.

What Challenges Facing the Akal Takht and the SGPC?

➢ **Erosion of Autonomy**: Allegations of political interference in the Akal Takht's decisions have weakened its **moral standing within the Sikh community.**

 ❍ The delayed SGPC elections have fostered perceptions of **nepotism** and **lack of transparency.**

➢ **Fragmentation of Sikh Leadership**: Disputes within the SGPC and between different factions of the Sikh community undermine the effectiveness and unity of these institutions.

 ❍ Calls for reform and democratization within the SGPC and the Akal Takht are gaining momentum, particularly from the Sikh diaspora.

➢ **Relevance in a Changing World**: The Akal Takht faces the **challenge of asserting its authority within a globalized Sikh community.** This includes addressing social issues such as increasing drug addiction, and rising economic disparities, while upholding its core principles of justice, humility, and unity.

80-Pillar Assembly Hall of Kumhrar and Mauryan Architecture

Why in News?

The **Archaeological Survey of India (ASI)** has initiated efforts to uncover the remnants of an **80-pillar assembly hall at the Mauryan archaeological site of Kumhrar, Patna**.

➢ The initiative promises to rekindle global interest in the **Mauryan empire and its contributions to art and architecture.**

### What are the Key Facts About the 80-Pillar Assembly Hall of Kumhrar?

➢ **Historical Importance**: 80-Pillar Assembly Hall of Kumhrar, is linked to the **Mauryan empire (321–185 BCE),** one of ancient India's greatest dynasties.

 ❍ **Emperor Ashoka (268–232 BCE)** is believed to have convened the **3rd Buddhist Council** in this hall, aiming to unify the fragmented **Buddhist sangha and propagate Dhamma (Buddhist teachings).**

  ● This event was pivotal in shaping **Buddhism** as a global religion.

 ❍ The site reaffirms **Pataliputra(Mauryan capital)** role as a **political and cultural hub of the Mauryan empire.**

➢ **Architectural Significance:** The hall featured 80 sandstone pillars supporting a wooden roof and floor.

 ❍ Materials like sandstone and wood were transported via the **Sone**-**Ganga river route,** showcasing advanced planning and resource management during the Mauryan period.

➢ **Archaeological Discoveries:**

 ❍ **First Excavation (1912–1915):** Discovered one intact pillar, 80 pits marking the placement of other pillars, and stone fragments.

  ● Evidence of thick ash layers suggested destruction by fire, potentially during the **Indo-Greek invasion or later Huna invasions**

 ❍ **Second Excavation (1961–1965):** unearthed four additional pillars.

Note:

➤ **Preservation Challenges:** Rising water levels led to partial submergence of the site, prompting the **ASI to cover it with soil in 2004-2005 as a conservation measure.**

➤ **Reopening of the Assembly Hall:** The ASI is uncovering the site due to a receded water table in Patna and rising interest in Mauryan heritage.
   ○ Initially, 6–7 pillars will be exposed to study humidity and groundwater impacts, with support from the **Central Ground Water Board.**
   ○ An expert committee will later decide on fully reopening the 80 pillars, balancing preservation with public access.

What are the Key Highlights of the Mauryan Art and Architecture?

➤ **Architectural Types:** Mauryan architecture is categorized into **Court Art** (designed for political and religious purposes) and **Popular Art** (widely accessible and influenced by local traditions).
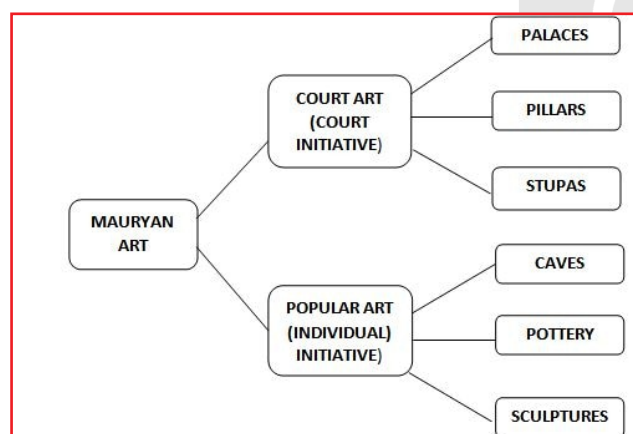
➤ **Mauryan Court Art:**
   ○ **Palace:** Greek historian **Megasthenes** praised the palaces of the Mauryan Empire as remarkable creations, with **Chinese traveler Fa Hien** calling them god-gifted monuments.
      ● The palace of Chandragupta Maurya was influenced by **Achaemenid palaces at Persepolis (capital of the Achaemenid Empire).**
      ● Wood was the primary material used in construction.
   ● **Examples:** Ashoka's palace at Kumrahar, and Chandragupta's palace.

   ○ **Pillars:** Mauryan pillars are tall, free-standing, monolithic, and made of sandstone quarried at Chunar.
      ● They feature a lustrous polish and were influenced by **Achaemenian pillars.**

➤ While Mauryan pillars are rock-cut, showcasing the carver's skills, **Achaemenian pillars were constructed in pieces.**
      ● Ashoka's pillars, found across north India, often feature capitals with animal figures like lions and bulls, symbolizing the state.

➤ They were erected to disseminate Buddhist teachings and court orders, with inscriptions in **Pali, Prakrit, Greek, and Aramaic.**
      ● The structure of Mauryan pillars consists of four parts: a **monolithic shaft, a lotus- or bell-shaped capital, an abacus, and a capital figure.**

➤ Similarities with Achaemenian pillars include **polished stones and motifs like the lotus,** as well as the practice of inscribing proclamations.
   ○ **Stupa:** Typically, stupas feature a **cylindrical drum, a hemispherical mound** (anda), a **harmika** (square railing), and a **chhatra** (Central pillar supporting a triple umbrella form) representing Buddhist principles.
      ● The stupa's core was unburnt brick, while the outer surface used burnt bricks, covered with plaster, and decorated with wooden sculptures.
      ● **Sanchi Stupa (Madhya Pradesh),** most famous Ashokan stupa. **Piprahwa Stupa (Uttar Pradesh) oldest.**

➤ **Other stupas post-Buddha's death:** Rajagriha, Vaishali, Kapilavastu, Allakappa, Ramagrama, Vethapida, Pava, Kushinagar, Pippalivana.

➤ **Mauryan Popular Art:**
   ○ **Cave Architecture**: During the Mauryan period, caves were used as **viharas by Jain and Buddhist monks.** They were characterized by highly polished interiors and decorative gateways.
      ● **Example**: **Barabar Caves** (4 caves) in Bihar, created by Ashoka for the **Ajivika Sect**(founded by Goshala Maskariputra, emphasized that the universe was governed by *niyati (destiny)*).
   ○ **Sculptures**: Yaksha and Yakshi sculptures were worshipped across Jainism, Hinduism, and Buddhism.

Note:

- **Examples**: **Lohanipur Yaksha(** torso of the nude male figure**),** and **Didargunj Yakshi,** Patna
  - **Pottery**: Known as **Northern Black Polished Ware (NBPW),** Mauryan pottery had black paint and a lustrous finish, often used for luxury items.

Mauryan Dynasty

➤ **Chandragupta Maurya (321–297 BCE)**: The **founder of the Mauryan Empire,** overthrew the **Nanda dynasty** and expanded the empire by annexing regions such as the **Hindu Kush**.
  - In 305–303 BCE, he formed a treaty with **Seleucus Nicator,** gaining additional territories. Later in life, **Chandragupta became a disciple of Jainism.**
  - **Chanakya**, the prime minister under the reign of Chandragupta Maurya (322 BCE - 297 BCE) and his successor Bindusar. Chanakya played a significant role in the empire's success.

➤ **Bindusara (298-272 BCE)**: Expanded the empire to the Deccan, known as **"Amitraghata" (slayer of enemies).** Adopted the **Ajivika sect**. **Deimachus** was a Greek ambassador at his court.

➤ **Ashoka (272-232 BCE)**: After the **Kalinga War**, which led to massive casualties, he embraced **Buddhism** and promoted peace through his **Dhamma (moral laws).** Organized the 3rd Buddhist Council and spread Buddhism globally.

➤ **Dasharatha (232–224 BCE)**: Last Mauryan ruler to issue imperial inscriptions. Faced territorial losses.

➤ **Samprati (224–215 BCE)**: Re-established Mauryan control over disintegrated territories and promoted Jainism.

➤ **Shalishuka (215–202 BCE)**: Known as a quarrelsome ruler with a negative reputation.

➤ **Devavarman (202–195 BCE)**: Brief reign, mentioned in the Puranas.

➤ **Shatadhanvan (195–187 BCE)**: Lost territories due to external invasions.

➤ **Brihadratha (187–185 BCE)**: The last Mauryan emperor, assassinated by **Pushyamitra Shunga**, marking the end of the Mauryan dynasty.
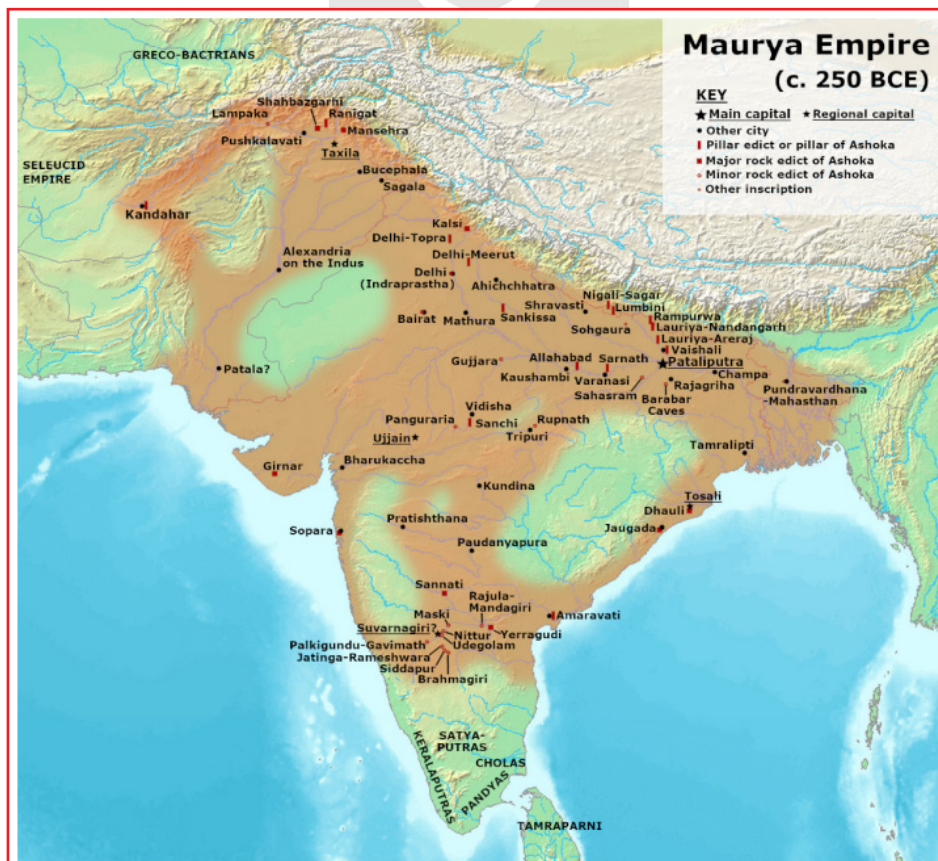

Note:

Archaeological Survey of India (ASI)

➤ The ASI, under the Union Ministry of Culture, **protects and maintains** monuments and archaeological sites of national importance under the relevant provisions of the **Ancient Monuments Preservation Act, 1904 and The Ancient Monuments and Archaeological Sites and Remains Act, 1958 (AMASR Act).**

  ○ ASI conducts surveys, excavations, and conservation of archaeological sites and protected monuments.

  ○ ASI was founded in 1861 by **Alexander Cunningham- the first Director-General of ASI.** He is considered as the **"Father of Indian Archaeology".**

Birth Anniversary of C. Rajagopalachari

Why in News?

The Prime Minister of India, paid tribute to **Shri Chakravarti Rajagopalachari** (popularly known as **Rajji**) on his birth anniversary (10th December), remembering his invaluable contributions to India's freedom struggle, governance, and social empowerment.

Remembering Bharat Ratna Shri C Rajagopalachari
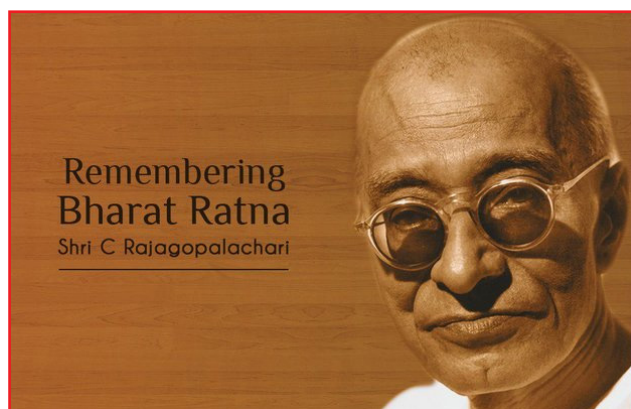
Who was C. Rajagopalachari?

➤ **Early Life and Education:** C. Rajagopalachari was born on 10th December 1878 in Salem, Madras Province (now Tamil Nadu). Became a Bachelor of Law in 1899 and began his legal practice in Salem.

➤ **Politics and Social Reforms:** Rajagopalachari was deeply affected by **Lord Curzon's** decision to **partition Bengal on communal lines** and was inspired by **Lokmanya Bal Gangadhar Tilak's** call for complete independence.

  ○ Joined the **Indian National Congress (INC)** and actively participated in India's freedom struggle.

  ○ In 1917, Rajagopalachari became Chairman of Salem Municipality, focused on social welfare of **backward classes**, and in 1925, he established an Ashram in Madras Province for social upliftment.

    ● The Ashram published two magazines, *Vimochanam (Tamil) and Prohibition (English).*

➤ **Freedom Struggle:** During the **anti-Rowlatt agitation**, Rajji hosted **Mahatma Gandhi** in Chennai, Tamil Nadu.

  ○ In 1930, during the **Dandi March,** Rajagopalachari led the Salt March in Madras Province from Tiruchi to Vedaranyam (also known as **Vedaranyam Satyagraha**).

    ● His arrest during Vedaranyam Satyagraha gained him national recognition as a leader in the **independence movement**.

  ○ After the **Quit India movement**, Rajagopalachari's pamphlet *"The Way Out"* outlined the **C. R. Formula** to resolve the constitutional deadlock between the **Muslim League** and the INC regarding a separate Muslim state.

➤ **Prime Minister of Madras Province:** In 1937, Rajagopalachari became the **Prime Minister of Madras Province.**

  ○ Implemented social and economic reforms, including the **promotion of Khadi,** the **abolition of Zamindari,** and the **introduction of Hindi in schools.**

  ○ Focused on raising the **standard of living for Dalits** and promoting **social equity.**

Note:

- ➢ **Post-Independence Contributions:** Rajagopalachari was appointed the **Governor of West Bengal** and later the **first Indian Governor-General of Independent India in 1947** (the office was permanently abolished in 1950).
  - ○ Worked to integrate **Muslims into the national mainstream** and maintain India's secular fabric.
  - ○ Served as Union Home Minister after **Sardar Patel's** death and played a significant role in key national issues, including the **preparation of the First Five-Year Plan.**
  - ○ In 1959, Rajagopalachari founded the **Swatantra Party,** advocating for a market economy and less government control.
  - ○ In 1962, Rajaji led a **Gandhi Peace Foundation** delegation to the US, urging a **ban on nuclear tests.**
  - ○ Rajagopalachari wrote a Tamil translation of the Ramayana, titled *Chakravarthi Thirumagan,* which won the **Sahitya Akademi Award in 1958.**
- ➢ **Legacy:** Shri C. Rajagopalachari was awarded **'Bharat Ratna'** in 1954. He was the **first to receive the highest civilian award.**
  - ○ Rajagopalachari passed away on 25th December 1972.

■■■

Note:

Art and Culture

Highlights

- Hornbill Festival
- Cultural Exchange and Growth of Kashmir's Craft Industry

Hornbill Festival

Why in News?

The Prime Minister of India has congratulated the people of Nagaland on the completion of 25 years of the Hornbill Festival.

➢ **Nagaland is known as the land of festivals**, and the **Hornbill festival is referred to as the festival of festivals.**
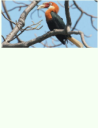
What is the Hornbill Festival?

➢ **About:** The Hornbill Festival, initiated in 2000, is Nagaland's premier cultural event, showcasing the heritage of its **17 Naga tribes.** Held from **1st December to 10th December,** it coincides with Nagaland Statehood Day(1st December).

  ○ Hornbill Festival is named after the hornbill bird, a symbol of fidelity, beauty, and grace in Naga folklore.

➢ **Cultural Celebration:** Hornbill Festival serves as a platform for the Naga tribes to display their rich traditions through performances, dances, and exhibitions.

○ Warriors, dressed in full ceremonial attire, perform traditional dances and war cries that narrate stories of **victories, harvests, love, and tribal legends.**

- Their distinctive attire features **hornbill feathers, boar tusks, and colorful woven sashes,** creating a striking display of Naga heritage and pride.

○ It serves as the state's largest tourist event, attracting over 1.5 lakh visitors in 2023, including international tourists.

Hornbill
➢ The **Great Indian Hornbill (*Buceros bicornis*),** also known as the **Concave-Casqued Hornbill,** is a large bird found in the **Indian subcontinent** and Southeast Asia.
○ It primarily inhabits evergreen and moist deciduous forests.
○ It thrives in the **canopy of tall trees** in the **Western Ghats**, northeastern states, and the Himalayas.
○ It is the **state bird of Arunachal Pradesh a**. **India hosts nine hornbill species**, with the northeast having the highest diversity.

India's 9 Hornbill Species

The Great Hornbill	Rufous-necked Hornbill	Wreathed Hornbill
■ **Habitat:** Western Ghats and Himalayas. **Largest of all hornbills in India, state bird of Arunachal Pradesh and Kerala.** ■ **IUCN Red List:** Vulnerable ■ **CITES:** Appendix I ■ **Wildlife Protection Act (WPA), 1972:** Schedule I	■ **Habitat:** It has the Northernmost extent. Whole of North-East India to Mahananda Wildlife Sanctuary in West Bengal. ■ **IUCN Red List:** Vulnerable ■ **CITES:** Appendix I	■ **Habitat:** North-East India. ■ **IUCN Red List:** Vulnerable ■ **CITES:** Appendix II
Narcondam Hornbill	**Malabar Pied Hornbill**	**Oriental Pied Hornbill**
■ **Habitat:** Endemic to the Indian island of Narcondam in Andamans. ■ **IUCN Red List:** Vulnerable ■ **CITES:** Appendix II ■ **WPA, 1972:** Schedule I	■ **Habitat:** Evergreen and moist deciduous forests in India and Sri Lanka. ■ **IUCN Red List:** Near Threatened ■ **CITES:** Appendix II.	■ **Habitat:** Subtropical or tropical moist lowland forests. ■ **IUCN Red List:** Least Concern ■ **CITES:** Appendix II
Austen's Brown Hornbill	**Malabar Grey Hornbill**	**Indian Grey Hornbill**
■ **Habitat:** Forests of North East India, majorly in Namdapha National Park, Arunachal Pradesh. ■ **IUCN Red List:** Near Threatened ■ **CITES:** N/A	■ **Habitat:** Western Ghats. ■ **IUCN Red List:** Least Concern ■ **CITES:** N/A	■ **Habitat:** Foothills of Southern Himalayas. ■ **IUCN Red List:** Least Concern ■ **CITES:** N/A

Note:

What are the Key Facts About Nagaland?

➢ **Statehood**: Nagaland became the **16th state** of India on **1st December 1963**.

   ○ **Borders: Assam** (west and northwest), **Myanmar** (east), **Arunachal Pradesh** and **Manipur** (south).

➢ **State Symbols**: **Blyth's tragopan** (State Bird) and **Mithun** (State Animal of Nagaland and Arunachal Pradesh).

   ○ The **mithun (***Bos frontalis***) a bovine species,** native to Northeast India, is now recognized by **Food Safety and Standards Authority of India (FSSAI)** as a 'food animal', enabling its commercial farming and meat processing.

➢ **GI Products**: **Naga tree tomato**, **Naga cucumber**, and **Naga Mircha** (chili).

➢ **Protected Areas**: Intanki National Park, Fakim Wildlife Sanctuary, Singphan Wildlife Sanctuary, and Pulie Badze Wildlife Sanctuary.

➢ **Tribes and Culture**: Home to **17 major tribes** and numerous sub-tribes, each with distinct customs, languages, and attire.

Tribes of Nagaland			
1. Angami	2. Ao	3. Chakhesang	4. Chang
5. Khiamniungan	6. Kuki	7. Konyak	8. Kachari
9. Lotha	10. Phom	11. Pochury	12. Rengma
13. Sumi	14. Sangtam	15. Tikhir	16. Yimkhiung
17. Zeliang			

Cultural Exchange and Growth of Kashmir's Craft Industry

Why in News?

Recently, Artisans from Kashmir and Central Asia reunited after nearly **500 years in Srinagar** for a **three-day craft exchange initiative,** celebrating shared heritage and reviving cultural connections.

➢ The event celebrated **Srinagar's recognition as a "World Craft City" by the World Crafts Council (WCC).**

How did Central Asia Influence the Development of Crafts in Srinagar?

➢ **Historical Craft Connections: Zain-ul-Abidin, the 9th Sultan of Kashmir (15th century)**, introduced Central Asian craft techniques to Kashmir with the help of artisans from **Samarkand, Bukhara, and Persia.** Post his reign, these connections weakened and **came to an end by 1947.**

   ○ Located on the historic **Silk Route,** Srinagar became a **melting pot of cultural, economic, and artistic exchanges.** This cross-cultural interaction played a vital role in the development of Kashmir's distinctive crafts.

➢ **Craftsmanship Techniques:**

   ○ **Wood Carving:** Kashmiri artisans, known for their intricate woodwork, adopted techniques from Central Asia.

      ● While **Kashmiri woodcarvers used chisels and hammers** for detailed designs, **Iranian woodcarvers typically employed a single chisel** for floral motifs.

   ○ **Carpet Weaving:** Kashmir's carpet weaving was profoundly shaped by **Persian techniques.**

      ● The Persian knotting methods, including the *Farsi baff and Sehna knots,* were incorporated into Kashmiri carpets.

      ● Additionally, Kashmir's carpet patterns named after Iranian cities like Kashan and Tabriz highlight the cultural ties, with artisan exchanges further enhancing skills and inspiring craftsmanship.

   ○ **Embroidery:** Uzbekistan's suzani embroidery was recognized as a precursor to **Kashmir's sozini work.** Similarities were observed in techniques, color palettes, and floral motifs.

What is the World Craft City?

➢ **About:** The **"World Craft City" initiative,** launched in 2014 by the **World Crafts Council AISBL (WCC-International)** under the **WCC-World Craft City Programme,** recognizes cities for their contributions to cultural, economic, and social development through crafts.

   ○ The WCC AISBL, established in 1964 as a **non-profit organization**, aims to enhance the status of crafts in cultural and economic life and promote fellowship among crafts persons through support and guidance.

➢ **Indian Cities:** Srinagar (Jammu and Kashmir), Jaipur (Rajasthan), Mamallapuram (Tamil Nadu) and Mysore

(Karnataka) have been recognized as World Craft Cities by WCC.

○ The WCC announced the **'Seal of Authenticity of the Craft'** for Kashmir's handicrafts, certifying **handmade products from J&K.** This initiative aims to provide global recognition and enhance quality in the textile industry.

➢ **Key Crafts of Srinagar:**

○ **Pashmina Shawls:** Known for their fine quality and intricate handwoven patterns. **Pashmina shawls** originate from Kashmir, where the **Pashmina fabric is hand-spun and hand-woven.**

● **Mughal Emperor Akbar** promoted the craft by commissioning shawls for the royal family.

○ **Kashmiri Carpets:** Renowned for their rich designs, particularly the traditional Persian-style carpets**.**

● The unique **hand-knotted kashmir carpets use a coded script called Taleem** for design instructions. These carpets feature traditional oriental and floral motifs and are made from various materials like silk and wool.

○ **Paper Mâché:** It is the art of creating objects from **molded paper pulp,** traditionally painted and lacquered.

● In Kashmir, it began with pen cases and evolved into a distinct art of surface decoration *(naqashi).*

○ **Embroidered Textiles:** Fine embroidery techniques like Sozni and Aari work, used in garments and accessories.

● Sozni shawls originate from Kashmir, with **"Sozni" meaning needle in Persian.**

○ **Wood Carving:** Intricate designs carved into **walnut wood,** creating beautiful furniture and home décor.

○ **Copperware:** Traditional Kashmiri metal crafts, especially the copper samovars and tea sets. Part of the ancient heritage of Kashmir, with artisans skilled in **metallurgy.**

○ **Khatamband:** It is a handcrafted art of making ceilings by fitting small pieces of walnut or deodar wood into geometric patterns without using nails.

Note: In 2021, Srinagar city was designated a creative city as part of the **UNESCO (United Nations Educational, Scientific and Cultural Organization) Creative City Network (UCCN)** for crafts and folk arts.

➢ Other Indian cities in the UCCN include **Jaipur** as the 'City of Crafts and Folk Arts' (2015), **Varanasi** as the 'Creative City of Music' (2015), **Chennai** as the 'Creative City of Music' (2017), **Mumbai** as the 'City of Film' (2019), **Hyderabad** as the 'City of Gastronomy' (2019), **Kozhikode** as the 'City of Literature' (2023), and **Gwalior** as the 'City of Music' (2023).

Geographical Indication Tag for Kashmir Crafts

➢ Kashmir's seven crafts including the **Kashmiri Carpets, pashmina, sozni, kani shawl, walnut wood carving, khatamband, and papier mache**, have earned **Geographical Indication (GI) tags** under the **Geographical Indications of Goods (Registration and Protection) Act, 1999.**

○ A GI tag ensures that only authorized users or those residing in the specific geographical area can use the product name, protecting the authenticity and heritage of the craft.

How Can Artisans Benefit from Cross-Border Cultural Exchanges?

➢ **Skill Enhancement:** Exposure to different techniques and styles can help artisans refine their **skills and innovate within their craft**, leading to unique and innovative products that stand out in the market.

➢ **Market Expansion:** Cultural exchanges open up new markets, allowing artisans to showcase their work to a global audience and **increase their customer base.**

○ By participating in international events, artisans can gain insights into global **market trends and adapt their products to meet international demand.** Exposure to international buyers can help them achieve financial sustainability, ensuring the preservation of their craft for future generations.

➢ **Artisans as Cultural Ambassadors:** Artisans acting as cultural ambassadors. Showcase their crafts internationally fosters global respect and understanding, while promoting mutual appreciation of diverse traditions.

Note:

❍ These interactions help preserve their crafts and **contribute to global cultural dialogue,** enriching both their artistic practice and economic opportunities.

What are the Challenges Faced by Kashmiri Artisans?

➢ **Workforce Participation**: Approximately **92% of artisans rely on crafts as their primary source of income,** but the income generated is often insufficient, forcing many to take up secondary livelihood options such as agriculture or daily labor.

➢ **Gender and Wage Disparities**: While a significant number of female artisans (63%) are engaged in crafts like Sozni, wage disparities between men and women persist.

   ❍ Some crafts, such as Khatamband and wood carving, remain male-dominated.

➢ **Declining Interest in Craft**: Many artisans are abandoning traditional crafts in favor of more stable employment opportunities.

   ❍ A notable percentage (4%) of artisans have already **shifted to other forms of livelihood,** especially in regions like Dal, where agriculture serves as a secondary income.

   ❍ The **drop in international demand,** coupled with competition from **cheaper alternative**s and **machine-made products**, has placed additional pressure on the sector.

   ❍ Younger generations are often reluctant to continue practicing traditional crafts due to the lack of financial stability, many prefer to pursue careers that offer more economic security and social recognition.

➢ **Lack of Innovation:** There is a lack for innovation and modernization in the craft sector to keep up with changing market demands.

India's Initiatives to Promote Handicrafts
➢ **National Handicraft Development Programme**
➢ **Comprehensive Handicrafts Cluster Development Scheme**
➢ **Shilp Didi Mahotsav**
➢ **PM Vishwakarma Scheme**
➢ **Ambedkar Hastshilp Vikas Yojana**
➢ **One District One Product**

■■■

Note:

Geography

Highlights

- *International Mountain Day 2024*
- *Rapid Expansion of Himalayan Glacial Lakes*
- *UNCCD's Drought Atlas*
- *Ninetyeast Ridge*
- *Challenging Big Bang Theory*
- *India's Ancient Water Harvesting System*
- *Including Non-Mineralised Areas in Mining Leases*
- *Lake-Effect Snow*

International Mountain Day 2024

Why in News?

Recently, the Ministry of Environment, Forest and Climate Change observed **International Mountain Day 2024** (11th December) to highlight the need to protect the **Indian Himalayan Region (IHR).**

What is International Mountain Day?

➤ **History**: International Mountain Day, observed on 11th **December**, was established by the **United Nations** in **2003** to raise awareness about sustainable development in mountains and their vital importance to life.

○ The **Food and Agriculture Organization (FAO)** plays a key role in coordinating this observance.

➤ **Theme 2024**: *Mountain solutions for a sustainable future – innovation, adaptation and youth.*

➤ **Importance of Mountains:** Mountains cover about **one-fifth of the Earth's surface** and are home to **15% of the world's population** and host half of the world's biodiversity hotspots.

○ They provide essential freshwater for half of humanity acting as **"water towers",** supporting agriculture, **clean energy,** and health sectors.

○ Mountains are ecological treasures that need protection. Without them, many countries would face dry, barren land. Their preservation is key to sustainable development.

What are the Key Facts About Indian Himalayan Region (IHR)?

➤ **Geographical Extent**: The IHR stretches across **13 Indian states/Union Territories**, including Jammu & Kashmir, Himachal Pradesh, Uttarakhand, Sikkim, Arunachal Pradesh, and parts of West Bengal, Assam, Nagaland, Manipur, Mizoram, Tripura and Meghalaya.

○ It spans a distance of approximately **2,500 km** from west to east.

➤ **Tectonic Activity**: The IHR is tectonically active due to the ongoing collision between the **Indian Plate and the Eurasian Plate**.

○ This has led to the formation of the **Himalayan mountains** and continues to shape the region's geological features.

➤ **Geological Diversity:** The region is rich in geological features, with varying rock formations, fault lines, and plateaus. There are **igneous, sedimentary, and metamorphic rocks** found in different sections of the Himalayas.

➤ **Significance**: The IHR covers about **16.2% of the country's total geographical area.**

○ The region is a **biodiversity hotspot**, home to numerous plant and animal species, some of which are endemic or endangered.

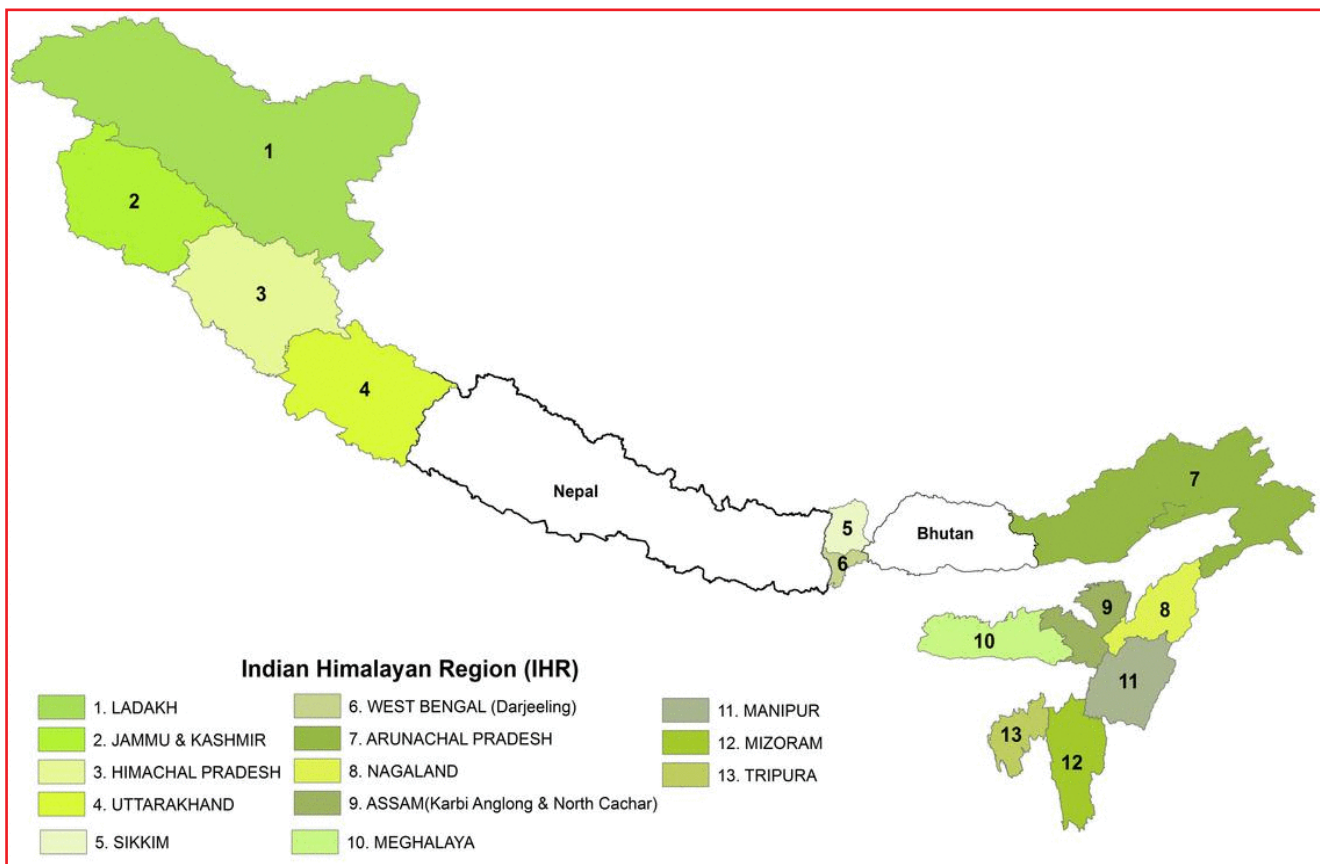○ The region is the source of major river systems, including the **Ganga, Yamuna, Indus,** and **Brahmaputra.**

○ The region features various ecosystems, including **temperate forests, alpine meadows, glaciers, and snow-capped peaks**.

- It is home to iconic wildlife such as the **snow leopard, Himalayan tahr**, **red panda,** and the **one-horned rhinoceros.**

○ The IHR plays a critical role in **regulating the climate** of the Indian subcontinent by acting as a barrier to **cold, dry Arctic winds** and influencing the **monsoon patterns**.

Note:

- The region also helps in **carbon sequestration** through its forests, contributing to the global fight against climate change.

  ○ The IHR acts as a natural **border** between India and several neighboring countries like **China**, **Nepal**, **Bhutan**, and **Pakistan**.

➢ **Concerns:**

  ○ **Unsustainable Development:** Activities like **deforestation**, **Hydropower Projects in Himalayas**, and infrastructure projects like **Char Dham Project** disrupt ecosystems and contribute to **disasters.**

  ○ **Climate Change Impact:** Glacial melting and expanding lakes increase **flood risks,** while temperature rise affects water resources.

- Events like floods in Himachal Pradesh, and **glacial lake outbursts** in Sikkim highlight the consequences.

  ○ **Cultural Erosion:** The IHR is **home to indigenous communities** with valuable traditional knowledge for sustainable resource management, but modernisation threatens to **erode these cultural practices.**

  ○ **Rising Tourism:** Tourism generates **8 million tonnes of waste annually,** with **projections indicating 240 million tourists by 2025.**

- The region's fragile ecology is under threat, as waste often ends up polluting land, water, and air due to the **lack of space for disposal in mountain towns.**

Indian Himalayan Region (IHR)

1. LADAKH	6. WEST BENGAL (Darjeeling)	11. MANIPUR
2. JAMMU & KASHMIR	7. ARUNACHAL PRADESH	12. MIZORAM
3. HIMACHAL PRADESH	8. NAGALAND	13. TRIPURA
4. UTTARAKHAND	9. ASSAM(Karbi Anglong & North Cachar)	
5. SIKKIM	10. MEGHALAYA	

What Can be Done to Protect Indian Himalayan Region?

➢ **Sustainable Tourism**: Promote **eco-tourism,** enforce carrying capacity limits, and raise awareness to generate income for locals while minimizing environmental impact.

➢ **Glacial Water Capture**: Implement methods to capture and **store glacial meltwater** for use during dry periods to support agriculture and ecosystems.

Note:

➢ **Disaster Preparedness**: Develop **disaster management plans** for the region, focusing on **landslides, avalanches, and glacial lake outburst floods**, with early warning systems and community training.

➢ **Greywater Recycling**: Set up systems to recycle household greywater for agricultural use, enhancing water security and crop growth.

➢ **Bio-Cultural Conservation Zones**: Designate areas to preserve both natural biodiversity and indigenous cultural practices.

➢ **Integrated Development**: Establish a "Himalayan Authority" for coordinated development and monitoring of Sustainable Development Goals across the region.

How are Mountains Formed?

➢ **Formation**: Mountains are formed by movement within the Earth's crust, which consists of **tectonic plates floating on molten magma.**

  ○ These plates shift and collide over time, creating pressure that causes the Earth's surface to **buckle or protrude, forming mountains.**

➢ **Key Characteristics:**

  ○ **Elevation**: Mountains are generally higher than the surrounding land, with elevation often exceeding 600 meters.

  ○ **Steep Slopes**: Mountains typically have steep slopes, though some can be more gradual.

  ○ **Summit/Peak**: The top of a mountain is called the summit, which is often the highest point.

  ○ **Mountain Range**: A series or group of mountains connected by high ground forms a mountain range.

What are the Types of Mountain?

➢ **Based on Mode of Origin:**

  ○ **Volcanic Mountains**: Formed by the eruption of magma from the Earth's crust, creating peaks like those in Hawaii and Fiji.

  ○ **Fold Mountains**: Created by the collision and folding of tectonic plates, such as the **Himalayas and the Andes.**

  ○ **Block Mountains**: Formed by faulting and the movement of **large blocks of the Earth's crust,** leading to raised or dropped sections, like the Sierra Nevada.

  ○ **Dome Mountains:** Created by magma pushing the Earth's crust upward, forming a **dome-like structure,** often exposed after erosion like Black Hills (US).

  ○ **Plateau Mountains:** These mountains resemble dome mountains but are formed by **colliding tectonic plates pushing up the land**, shaped by **weathering and erosion.**

➢ **Based on Period of Origin**:

  ○ **Precambrian Mountains**: Precambrian mountains are ancient ranges formed during the Precambrian era (4.6 billion to 541 million years ago).

    ● They have experienced extensive erosion and metamorphism over billions of years, leaving behind residual formations (e.g., **Aravallis in India).**

  ○ **Caledonian Mountains**: Formed around 430 million years ago (e.g., Appalachians).

  ○ **Hercynian Mountains:** These mountains originated from the Carboniferous to Permian Period (approximately 340 million years and 225 million years) (e.g., Ural Mountains).

  ○ **Alpine Mountains**: The youngest mountain systems formed during the Tertiary period(66 million years ago) (e.g., Himalayas, Alps).

What are the Key Facts About Mountain Ranges in India?

➢ **The Himalayas:** The most famous and **highest mountain range in India**, stretching over 2,900 kilometers along the border between India and Tibet.

  ○ The Himalayas are divided into three main ranges, **Himadri (Great Himalayas or Inner Himalayas), Himachal (Lesser Himalayas), Shiwaliks (Outer Himalayas).**

  ○ **Mount Everest (Sagarmatha/Chomolungma)** is the highest peak in the Himalayas and the world, standing at an elevation of 8,848.86 meters above sea level. Other notable peaks in the range include **K2, Kanchenjunga,** and **Makalu.**

➢ **Western Ghats:** The **Western Ghats** (Sahyadri Hills) runs parallel to the western coast of India and has an average elevation of about 1,200 meters.

  ○ The highest peak is **Anamudi**. The Western Ghats are known for their rich biodiversity and are a **UNESCO World Heritage Site.**

  ○ The **Western Ghats are block mountains formed** by the downwarping of land into the Arabian Sea.

➢ **Eastern Ghats**: The **Eastern Ghats** runs parallel to the eastern coast of India. The highest peak is Arma Konda at 1,680 meters.

Note:

> ➤ **Aravalli Range:** One of the oldest mountain ranges in the world, stretching for about 800 kilometers across north - western India,. The **highest peak is Guru Shikhar** at 1,722 meters

> ➤ **Vindhya Range:** The **<u>Vindhya range</u>** runs across central India and is known for its historical significance. The highest point is **Sadbhawna Shikhar** at 752 meters.
>
>   ○ The Vindhya Range is located to the south of the **Malwa Plateau** and runs in an east-west direction, parallel to the Narmada Valley.

> ➤ **Satpura Range:** Located in central India, this range has peaks like Dhupgarh, which is the highest at 1,350 meters.

MOUNTAIN RANGES IN INDIA

Note:

Rapid Expansion of Himalayan Glacial Lakes

Why in News?

The **National Green Tribunal (NGT)**, taking suo motu cognisance of a news report, has recently issued a notice to the central government regarding the alarming increase in Himalayan **glacial lakes**, which have expanded by approximately 10.81% over the past 13 years due to rising temperatures.

What are Glacial Lakes?

➢ **About:** A glacial lake is a water body formed from a glacier, usually located at its base, but it can also develop on, within, or beneath the glacier.

➢ **Formation:** Glacial lakes form when glaciers erode the land, creating depressions that fill with meltwater as the glacier retreats.

   ○ Natural dams, made of ice or moraines, can also form glacial lakes, but these dams can be unstable and prone to bursting, leading to potential flooding.

➢ **Glacial Lake Expansion:** The NGT highlighted the report's finding that the surface area of glacial lakes in India has **increased by 33.7% from 2011 to 2024**, with **67 lakes identified as high-risk for GLOFs (glacial lake outburst floods)**.

   ○ This poses a significant threat to infrastructure and human lives in regions like **Ladakh, Himachal Pradesh, Uttarakhand, Sikkim**, and **Arunachal Pradesh**.

➢ **Causes of Glacial Lake Expansion:**

   ○ **Global warming** is raising temperatures in the Himalayas, which accelerates **glacier melting.**

   ○ **Retreating glaciers** contribute water to lakes and expose new land surfaces, facilitating the formation of new glacial lakes.

   ○ Thawing **permafrost** creates water-collecting depressions, expanding glacial lakes as it loses its natural drainage barrier.

What is a GLOF?

➢ A **glacial lake outburst flood (GLOF)** occurs when a glacial lake's dam fails, releasing large volumes of water, often due to rapid glacier melting or heavy precipitation.

➢ These floods can be triggered by glacier volume changes, lake water level fluctuations, and earthquakes.

   ○ According to the **National Disaster Management Authority**, climate change-induced glacial retreat in the **Hindu Kush Himalayas** has created many new glacial lakes, leading to GLOFs.

➢ **Cases of GLOF in India**

   ○ In June 2013, Uttrakhand had received an unusual amount of rainfall leading to the melting of the Chorabari glacier and the eruption of the Mandakini river.

   ○ In August 2014, a glacial lake outburst flood hit the village of Gya in Ladakh.

   ○ In October 2023, the South Lhonak Lake, a glacial lake located at an altitude of 17,000 feet in the state's northwest, experienced a rupture as a result of continuous rainfall.

What are the Concerns of the Rapid Expansion of Glacial Lakes in the Himalayas?

➢ **Impact on Downstream Communities:** Communities downstream face **displacement, loss of life**, and **property damage**, with agriculture severely affected by floods.

   ○ Many high-risk lakes lack monitoring and early warning systems, leaving communities unprepared.

   ○ The **NGT highlighted** this issue for **67 lakes in Ladakh, Himachal Pradesh**, and **Uttarakhand**, pointing to weak enforcement of disaster preparedness laws.

➢ **Feedback Loop:** Rising global temperatures **accelerate glacial retreat**, expanding glacial lakes and increasing risks.

   ○ The **IPCC's 6th Assessment Report** highlights the unprecedented rate of Himalayan glacier retreat, worsening climate-induced hazards.

➢ **Infrastructure Vulnerability:** Critical infrastructure like **roads, bridges**, and **hydropower plants** are vulnerable to GLOF-induced floods, causing significant damage, economic losses, and delays in development.

➢ **Ecosystem and Biodiversity Disruption:** Floods from glacial lakes alter sedimentation and water flows, impacting aquatic biodiversity and disrupting habitats, as seen in the **2023 Sikkim floods** affecting downstream river ecosystems.

Note:

➢ **Triggering Secondary Disasters:** The destabilization of slopes due to melting ice and increased water pressure can trigger landslides. Apart from GLOFs and landslides, the rapid expansion of glacial lakes can also lead to:

○ **Debris Flows:** As glaciers retreat, they expose loose material that can be mobilized during heavy rainfall or seismic activity, causing debris flows that threaten settlements.

○ **Erosion:** Increased water levels in glacial lakes can accelerate bank erosion, leading to habitat destruction and loss of arable land.

➢ **Climate Change Impact:** The increase in glacial lakes is directly linked to climate change, particularly **rising temperatures** leading to accelerated glacier melting.

○ The Himalayan glaciers, crucial for rivers like the **Yangtze and Ganges**, support over a billion people, **highlighting significant environmental changes** affecting water resources and ecosystems.

What Risk Mitigation Strategies can be Adopted to Address Glacial Lake Expansion?

➢ **Enhanced Monitoring Systems:** Establishing comprehensive monitoring systems for glacial lakes is crucial. This includes **satellite surveillance** and **ground-based assessments** to track changes in lake volume and surface area, enabling timely responses to emerging threats.

○ Promoting use of **Synthetic-Aperture Radar imagery** (a form of radar that is used to create two-dimensional images) to automatically detect changes in water bodies, including new lake formations, during the monsoon months.

➢ **Early Warning Mechanisms:** Developing **early warning systems for GLOFs** can significantly reduce disaster risks. These systems should integrate **meteorological data with hydrological models** to predict potential outburst events and communicate risks effectively to local communities.

➢ **Transboundary Water Management:** Given that many Himalayan rivers cross national borders, international cooperation is essential for effective management of water resources affected by glacial changes.

○ **Collaborative frameworks** can help share data, best practices, and resources among neighboring countries.

➢ **Funding and Resource Mobilisation:** Engaging with international organizations for funding can support infrastructure development aimed at mitigating disaster risks associated with glacial lake expansion.

○ This includes investments in resilient infrastructure and sustainable practices that align with global climate goals. One such example is **Coalition for Disaster Resilient Infrastructure (CDRI)**.

➢ **Training Local Manpower:** Apart from pressing specialised forces such as **National Disaster Response Force (NDRF)**, the NDMA emphasises the need for trained local manpower.

UNCCD's Drought Atlas

Why in News?

At the **UNCCD COP16** in Riyadh, the **UN Convention to Combat Desertification (UNCCD)** and the **European Commission's Joint Research Centre** launched the **World Drought Atlas** – a comprehensive global publication on drought risks and solutions.

What is the UN Convention to Combat Desertification (UNCCD)?
➢ Established in **1994**, it is the **only legally binding international treaty** that connects environmental and developmental goals to **sustainable land management**.
➢ It focuses on **arid, semi-arid, and dry sub-humid regions**, known as drylands, which contain some of the most vulnerable ecosystems and communities.
➢ The Convention's **197 member countries** work together to improve living conditions in drylands, restore land and soil productivity, and mitigate drought impacts.
➢ The UNCCD **collaborates** with the other **two Rio Conventions** to address the interconnected issues of land, climate, and biodiversity: ○ The **Convention on Biological Diversity (CBD)**   ○ The **United Nations Framework Convention on Climate Change (UNFCCC)**

What are the Key Findings of the UNCCD's Drought Atlas?

➢ **Systemic Nature of Drought Risks:** Drought is a systemic risk affecting multiple sectors globally. It projects that

Note:

by 2050, 75% of the world's population (nearly 3 in 4 people) will be affected by drought conditions if current trends continue.

- ❍ In 2022 and 2023 alone, **1.84 billion** people **(nearly 1 in 4 globally)** were affected by drought, with about **85% in low- and middle-income countries**.

➢ **Economic Consequences:** Droughts can severely impact agriculture, energy production, and trade. UNCCD asserts that the economic costs of the damages done due to droughts is underestimated by **2.4 times** amounting to **USD 307 billion per year.**

➢ **Drought Vulnerability in India:** India is particularly vulnerable to **drought** due to its diverse climatic conditions and reliance on monsoon rains for agriculture.

- ❍ The Atlas underscores that approximately **60% of India's agricultural land is rain-fed**, making it susceptible to fluctuations in rainfall patterns.
- ❍ The **2016 drought in Southern India** was due to exceptionally **low rainfall during both summer and winter monsoons**.
- ❍ **Rapid urbanization** has caused water mismanagement in **cities like Chennai,** leading to a severe crisis despite ample rainfall.
  - The **UNCCD report blames human activities** and occasional lack of rain for drought and resource degradation.

What are Droughts?

➢ **About:**

- ❍ Droughts are extended periods of significantly reduced water availability, causing imbalances in water supply, quality, and demand. These periods can be **brief or last for years**, affecting plant growth and lowering water tables.
  - They arise from climate factors like low precipitation as well as human activities such as water extraction, usage, and land management.
- ❍ Droughts can occur naturally due to weather patterns, but **climate change is increasing their frequency and severity.**

➢ **Drought Scenario in India:**

- ❍ As per, **Drought Atlas of India (1901–2020)**, approximately **two-thirds of India is susceptible to drought**. As an agriculture-based nation with 1.4 billion people, droughts greatly impact agricultural productivity.

- Between **1901 and 2020, around 56% of India's area experienced** moderate to exceptional drought conditions, impacting **300 million people** and 150 million cattle.
- Additionally, crop damage (between 1901 and 2020) led to an estimated economic loss of about **USD 8.7 billion**, reducing the **agricultural GDP by 3.1%**.
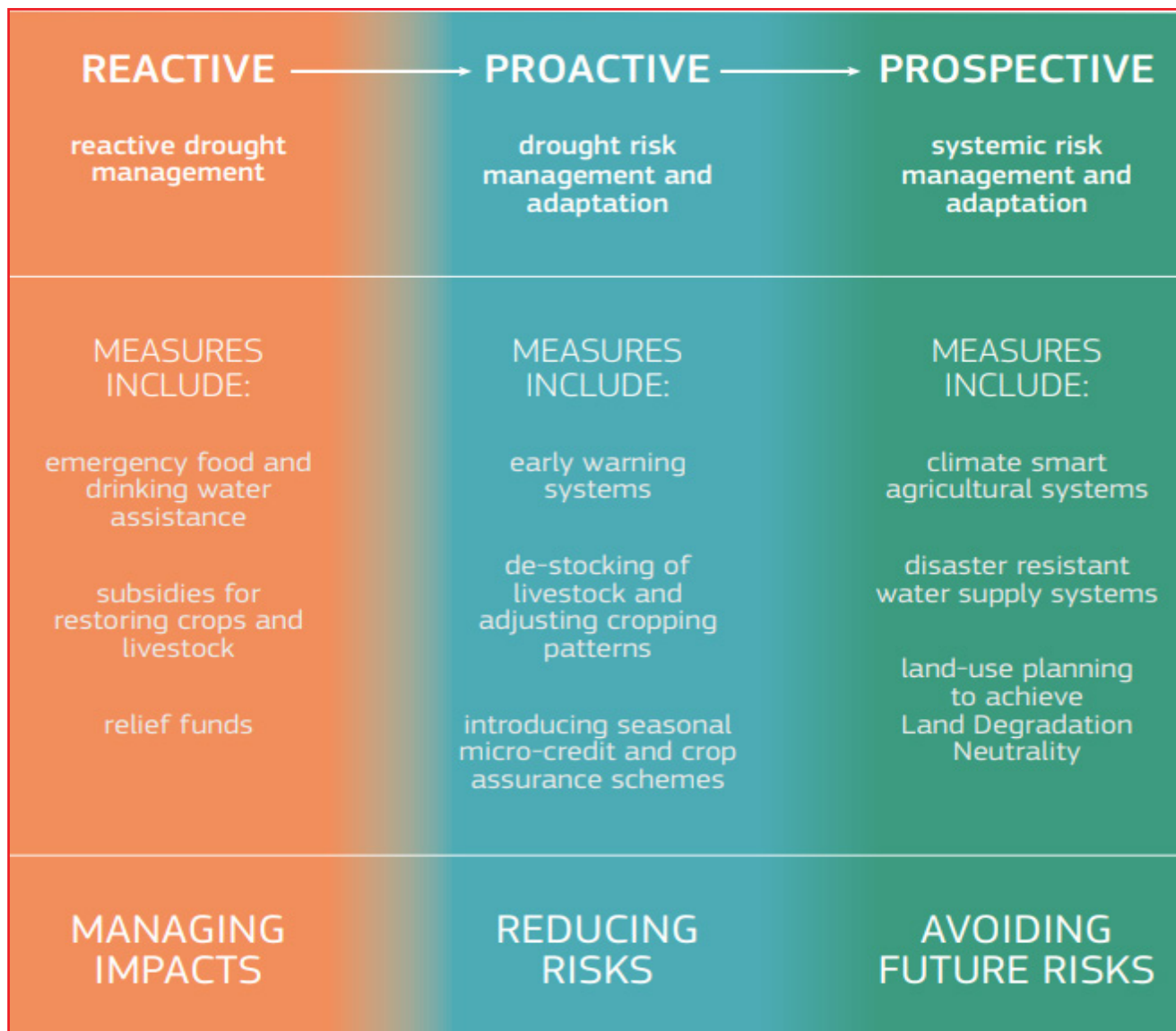
➢ **Initiatives taken to Combat Drought:**

- ❍ The **Integrated Drought Management Programme** is a joint initiative between the **Global Water Partnership (GWP)** and **WMO**.
  - The Programme aids governments and stakeholders in implementing drought management by offering policy, technical, and management guidance, and sharing scientific knowledge and best practices.
- ❍ **UNCCD's Drought Initiative** emphasizes on setting up drought preparedness systems.
- ❍ Every year, **17th June** is celebrated as the **World Day to Combat Desertification and Drought (WDCDD)**.
- ❍ **UNCCD's Drought Resilience, Adaptation and Management Policy (DRAMP) Framework,** advocates for ongoing science-policy collaboration to understand drought risks, collect data, and design equitable solutions, ensuring resilience for economies, societies, and ecosystems.

What are the Key Recommendations of the World Drought Atlas?

➢ **Governance:**

- ❍ Countries should develop and implement comprehensive national drought plans to enhance preparedness and resilience against drought events.
- ❍ Strengthening international collaboration is essential for sharing knowledge, resources, and best practices to effectively manage drought risks across borders.
- ❍ Developing financial mechanisms, such as microinsurance for smallholder farmers, can provide safety nets for vulnerable populations affected by drought.

➢ **Land Use Management:**

- ❍ Sustainable agriculture practices, such as **land restoration via reforestation, soil conservation, crop diversification and agroforestry**, are essential for building resilience against drought.

Note:

○ These measures **reduce runoff and increase stormwater retention**, **improving soil quality**, providing **shade for livestock and reducing evapotranspiration**, which strengthens vegetation's resilience to drought

➢ **Management of Water Supply and Use:**

○ **Investment in Infrastructure:** Increased investment in infrastructure for water supply and management, such as wastewater reuse and groundwater recharge systems, is necessary to enhance water security during droughts

REACTIVE →	PROACTIVE →	PROSPECTIVE
reactive drought management	drought risk management and adaptation	systemic risk management and adaptation
MEASURES INCLUDE:	MEASURES INCLUDE:	MEASURES INCLUDE:
emergency food and drinking water assistance	early warning systems	climate smart agricultural systems
subsidies for restoring crops and livestock	de-stocking of livestock and adjusting cropping patterns	disaster resistant water supply systems
relief funds	introducing seasonal micro-credit and crop assurance schemes	land-use planning to achieve Land Degradation Neutrality
MANAGING IMPACTS	REDUCING RISKS	AVOIDING FUTURE RISKS

Ninetyeast Ridge

Why in News?

A recent ***Nature Communications*** study reveals that the **Ninetyeast Ridge,** the **Earth's longest straight underwater mountain chain,** was formed by a **moving hotspot,** challenging the earlier belief that it originated from a **stationary hotspot.**

➢ This study provides new insights into **Earth's tectonic processes,** and age estimates of Ninetyeast Ridge.

Note:

What are the Key Findings of the Study?

➢ **Formation by a Moving Hotspot**: The Ninetyeast Ridge, a 5,000 km-long underwater mountain chain in the **Indian Ocean,** was formed by the **Kerguelen hotspot(volcanic hotspot located** at the **Kerguelen Plateau** in the Southern Indian Ocean**),** which moved several hundred kilometers within the **Earth's mantle,** rather than being formed by a **stationary hotspot** as previously believed.

  ○ The study is the first documented case of a **moving hotspot in the Indian Ocean,** contributing new evidence to the **theory of hotspot movement, which has been difficult to prove.**

➢ **Age Estimates**: High-precision **dating of mineral samples** from the ridge shows that the **Ninetyeast Ridge formed between 83 and 43 million years ago.**

➢ **Impact on Tectonic Models**: The study provides a more accurate reconstruction of **Earth's tectonic history** and highlights the importance of understanding mantle dynamics and hotspot movement to better predict **natural disasters.**
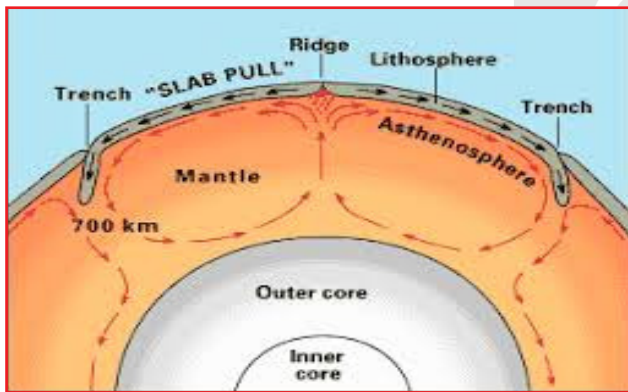
What is the Ninetyeast Ridge?

➢ **About:** The Ninetyeast Ridge is a **linear aseismic ridge**. It is named for its near-parallel alignment with the **90th meridian east.**

  ○ This underwater mountain range stretches approximately **5,000 kilometers** from the **Bay of Bengal** in the north to the **Southeast Indian Ridge (SEIR)** in the south.

  ○ The northern segment of the Ninetyeast Ridge has **massive volcanoes**, the southern part is tall and continuous, and the middle section includes **small seamounts and straight segments.**

  ○ It divides the Indian Ocean into the **West Indian Ocean and the eastern Indian Ocean.**

➢ **Formation of the Ninety East Ridge:** The most widely accepted theory is the **hotspot theory,** with some geologists attributing the **ridge's formation to the Kerguelen hotspot.**

  ○ As the **Indo-Australian plate** moved north, it passed over this hotspot, forming the ridge.

  ○ The formation process ceased due to a **reorganization in the tectonic plate** boundaries, and further research ongoing to confirm this theory.

➢ **Composition:** Primarily made of **Ocean Island Tholeiites (OIT),** a type of **sub-alkaline basalt rock.**

  ○ Rocks in the southern part of Ninetyeast Ridge are younger (43.2 million years) compared to the northern part (81.8 million years).
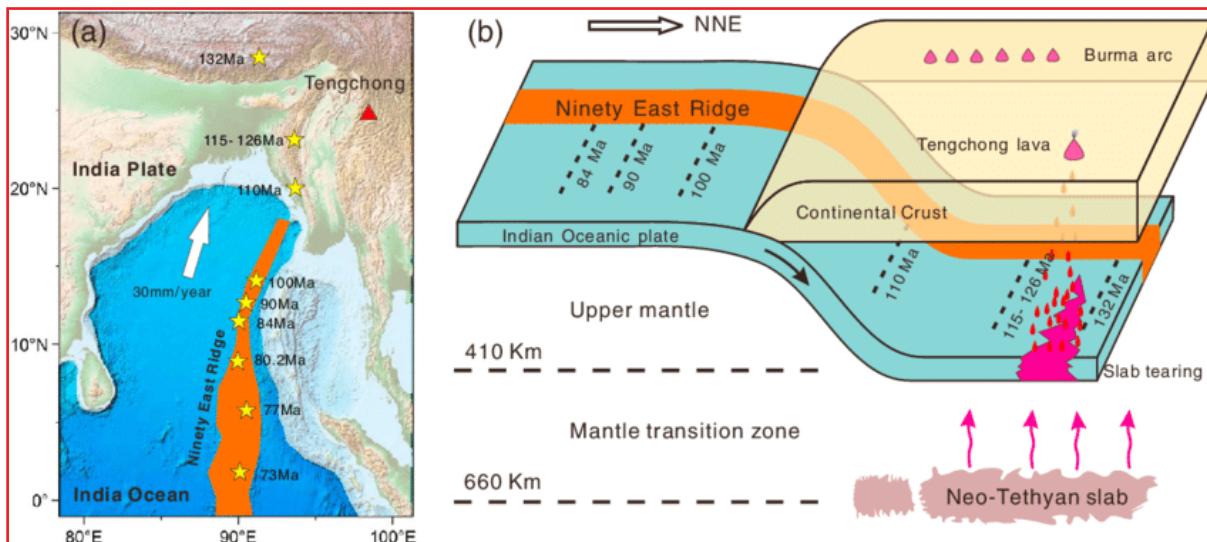
Note:

What is the Geological Significance of a Hotspot?

➤ **About:** A hotspot is an area where **hot plumes of molten rock (magma) rise** from **deep within Earth's mantle.** These plumes can form volcanoes on the **Earth's crust** as they reach the surface.

   ○ Unlike most volcanic activity, **hotspot volcanism** is not driven by **tectonic plate boundaries** but rather by **stationary plumes beneath moving plates.**

➤ **Hotspot Volcanism and Submarine Volcanism:** Hotspot volcanism is different from submarine volcanism**. Submarine volcanism** happens where tectonic plates meet and move(plate boundaries).

   ○ In contrast, Hotspot volcanism occurs within lithospheric plates, rather than at plate boundaries where convergence or divergence happens.

➤ **Hotspot Track:** As tectonic plates move over a hotspot, **active volcanoes form above the plume,** while older ones are carried away, **creating a chain of islands or seamounts.**

   ○ A hotspot track is a **linear chain of volcanoes** formed by a stationary plume beneath a moving tectonic plate. The **youngest** and most active volcano is **above the plume,** with older volcanoes further away in the direction of plate movement.

   ○ The **Hawaiian Islands and their seamount chain** are a prime example of a **hotspot track,** with the Island of Hawaii being the youngest and most active in the chain.

➤ **Dynamic Nature of Hotspots:** There is ongoing debate about the irregular volcanism patterns observed in island chains like the **Cook-Australs, Marshalls, Gilberts, and Line Islands.** Some theories suggest that **hotspots, traditionally thought to be stationary, may actually be dynamic.**

○ The debate continues as scientists gather more data to understand the complex processes driving volcanism in these regions.

How Do Hotspots Impact Tectonic Plates and Natural Disasters?

➤ Hotspot Influence on Tectonic Plates:

   ○ **Volcanic Chains and Plate Movement:** The sequence of these islands, from youngest to oldest, **provides evidence for plate motion.**

     ● The distance between these islands also allows scientists to estimate **plate speed.**

     ● Hotspots, linked to geothermal features like **geysers**, offer insights into **tectonic plate movements and interactions.**

➤ Mantle plumes drive plate tectonics by supplying heat and movement, crucial for the large-scale motion of Earth's tectonic plates.

   ○ **Rifting and Continental Breakup:** Hotspots can contribute to **continental rifting,** where plates pull apart.

     ● A mantle plume beneath a continent can weaken the lithosphere, causing it to break apart.

➤ The **East African Rift** is an example of a continent being split.

➤ **Mantle and Hotspot Influence of Natural Disasters:**

   ○ **Earthquakes:** Mantle plumes and the movement of tectonic plates can lead to earthquakes. Understanding the dynamics of these movements helps in identifying regions at risk of **seismic activity.**

     ● This knowledge is essential for designing and **implementing early warning systems.**

   ○ **Tsunamis:** Earthquakes and volcanic eruptions under the ocean can trigger **tsunamis.** By studying the patterns of mantle dynamics and hotspot activity, scientists can better predict the **likelihood of such events and issue warnings to coastal areas.**

Note:

TECTONIC PLATES
OR LITHOSPHERIC PLATES

ABOUT
- Massive, irregularly-shaped slabs of solid rock (Crust + Top Mantle)
- In 1967, McKenzie, Parker and Morgan came out with the concept of Plate Tectonics

TYPE
- Continental or Oceanic (whichever occupies the larger portion of plate)
- Pacific plate - Oceanic; Eurasian plate - Continental

MAJOR AND MINOR PLATES

North American Plate
Eurasian Plate
Eurasian Plate
Arabian Plate
Juan de Fuca Plate
Caribbean Plate
Philippine Plate
Cocos Plate
Pacific Plate
African Plate
Indo-Australian Plate
Nazca Plate
South American Plate
Antarctic Plate
Scotia Plate

▲ Major Plate
● Minor Plate

THE INDIAN PLATE
- Includes - Peninsular India and the Australian continental portions
- East Extension - Rakim Yoma Mountains (Myanmar) to Java Trench
- West - Makrana coast of Balochistan (Pakistan)
- Rate of Movement - 54 mm/year in northeast direction
- Boundary b/w India and Antarctic plate - Marked by an oceanic ridge (divergent boundary)
- Formation of Himalayas - Collision of Indian and Eurasian plates

PLATE MOVEMENT
- Plates constantly move horizontally over the Asthenosphere
- Collision/drifting away of plates result in earthquakes/volcanic eruptions

Asthenosphere – a zone of Earth's mantle lying just beneath Lithosphere; believed to be much hotter and more fluid than Lithosphere

SUBDUCTION

Occurs when tectonic plates shift and one is pushed under another

Downgoing ocean plate ›› Pushed into hotter Mantle plate ›› Heats up ›› Mixes volatile elements ›› Produces magma ›› Volcanic eruption

Subduction Zone
Oceanic Crust
Oceanic Crust
Lithosphere
Lithosphere
Mantle
Earthquakes
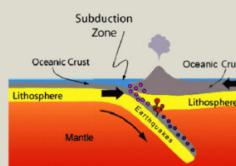
BOUNDARIES OF PLATES
- Convergent/Destructive, where plates move into one another (subduction zones)
- Divergent/Constructive, where plates move apart (rift valleys)
- Transform/Conservative, where plates move sideways in relation to each other (creates faults)

Drishti IAS

Challenging Big Bang Theory

Why in News?

Recent observations from the **James Webb Space Telescope (JWST)** have revealed the **existence of massive, fully-formed galaxies** and **black holes** as early as **400-650 million years** after the **Big Bang**.

➢ This challenges the **Big Bang Theory's** standard model, which posits that galaxies took **billions of years** to form after the universe's creation.

What are Key Highlights of the Study?

➢ **Challenge to Big Bang Theory: NASA's JWST** has discovered a surprising number of massive, fully-formed galaxies **just 400-650 million years after** the Big Bang. This challenges the Big Bang Theory, which states that the universe started as an extremely **hot and dense point (singularity) 13.8 billion years ago**, and galaxies were thought to form much later, over billions of years.

  ○ These early, mature galaxies don't fit with the current understanding of how the universe evolved.

➢ **Black Holes as Indicators: Black holes** (referred as little red dots), especially supermassive ones at the centres of galaxies, serve as **key indicators** of a galaxy's formation and evolution.

  ○ The amount of heat and light emitted by the blackhole helps in accurately **measuring the mass of stars** in galaxies.

Note:

drishti

➢ **Reason for Massive Galaxies in Early Universe:** One possible explanation for a larger number of massive galaxies in the early universe is that these galaxies **manufactured stars more efficiently** than the galaxies of today.

➢ **Role of JWST:** It has a **6.5 m** wide primary mirror and is specifically designed for **infrared observations** with a focus on studying the **early universe.**

   ❍ Observations in the **infrared spectrum** allows researchers to **detect light** from the **earliest galaxies** and see through **dust clouds** and identify **celestial objects** that are otherwise **obscured**.

Big Bang Theory

➢ **Origin of the Universe:** Proposed by **Georges Lemaître** in 1927, the **Big Bang Theory** explains how the universe began as a **single, infinitely small and hot point** that expanded and stretched to create the vast universe.

➢ **Evidence and Confirmation: Edwin Hubble** later confirmed this idea by observing galaxies **moving away from us**, indicating that the universe is still expanding.

   ❍ **Visible and ultraviolet light** from distant galaxies shift to the **infrared wavelengths** as the universe expands.

➢ **Formation of Celestial Bodies:** As the universe expanded, it **cooled**, allowing particles to form atoms, which then combined to create celestial bodies such as **planets, asteroids, comets, and black hole.**

Note:

India's Ancient Water Harvesting System

Why in News?

Recently, the **Cumbum tank** in Andhra Pradesh was in the news for its **ancient water harvesting system.**

➤ Cumbum tank is a **medium irrigation project** which is the **2nd largest** man-made reservoir in Asia and the **3rd largest** in the world.

What are the Key Points about the Cumbum Tank?

➤ **Construction:** The tank was built by Vijayanagara **Princess Varadharajamma** (also known as Ruchidevi), the wife of <u>Sri Krishna Devaraya</u> during **1522-1524 AD.**

○ It was built by damming a gorge through which the **Gundlakamma and Jampaleru rivers flow.**

➤ **Geographical Features:** The tank is fed by the **Nallamallavagu**, a stream originating from the <u>Nallamala hills</u> in the <u>Eastern Ghats</u> and is part of the **Gundlakamma river system.**

➤ **Technological and Indigenous Wisdom:** British engineer **Sir Arthur Cotton** (**pioneer of** <u>irrigation</u> works in South India) observed that **earthen bunds (embankments)** built without reinforced or compacted banks have lasted effectively over time.

○ Puddled bank is a **vertical wall of clay** between the original ground level, and any new material above.

➤ **Restoration Efforts:** The Government of Andhra Pradesh, with support from the <u>Japanese International Cooperation Agency (JICA)</u>, has modernized the tank.

What are India's Ancient Water Harvesting Systems?

Structure	TDescription	Region	Key Features
Baoli	**Stepwell structure with arches, carved motifs**, and rooms. Integral to urban water storage in low-rainfall areas.	Rajasthan, Delhi, Gujarat, Karnataka. E.g., Chandi Baori, Rajasthan, Agrasen ki Baoli, Delhi	carvings, rooms, tiered steps, seasonal water collection.
Jhalara	Rectangular stepwells with **tiered steps on three or four sides**, designed to collect water from reservoirs or lakes.	Rajasthan	Tiered steps, rectangular shape.
Talab/Bandhi	**Medium-sized reservoirs**, natural or human-made, regulating water flow and preventing flooding.	Various regions	Reservoirs, water flow regulation.
Taanka	**Cylindrical underground pit** paved to collect rainwater from rooftops or catchment areas.	Thar Desert, Rajasthan	Underground, cylindrical, paved.
Ahar Pynes	**Reservoirs with embankments,** built at the end of diversion channels for harvesting floodwater.	South Bihar	Embankments, floodwater harvesting.
Johads	Earthen storage pits made by excavating **three-sided elevated areas,** with soil used for the fourth side.	Various regions	Earthen pits, elevated area excavation.
Panam Keni	**Cylindrical wells** made with soaked **toddy palm stems**, considered sacred.	Wayanad, Kerala	Cylindrical, sacred, toddy palm stems.
Khadin (Dhora)	**Long earthen embankments** across hill slopes collecting surface runoff for agriculture.	Jaisalmer, Rajasthan	Earthen embankments, surface runoff collection.
Kund	**Saucer-shaped catchment area** with a central circular underground well, traditionally lined with lime and ash.	Various regions across India.	Catchment area, circular well, traditional lining.
Zing	**Small tanks in Ladakh** collect glacier meltwater, turning into streams by afternoon.	Ladakh	Small tanks, glacier water collection.

Note:

Kuhls	**Surface water channel**s in Himachal Pradesh carrying glacial waters to fields.	Himachal Pradesh	Surface channels, glacial water.
Zabo	System in Nagaland combining **water conservation with forestry, agriculture, and animal care.**	Nagaland	Rainwater collection, pond-like structures, terraced hillsides.
Jackwells	Pits surrounded by bunds made of hardwood logs, practiced by the Shompen tribe.	Great Nicobar Islands	Pits, hardwood bunds.
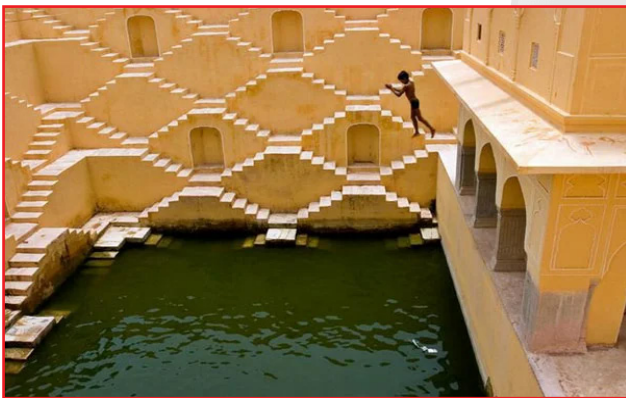
Water Management in Indian History

➤ **Indus Valley Civilization:** <u>Dholavira</u> had reservoirs to collect rainwater, while <u>Lothal</u> and Inamgaon had small bunds built to store water for irrigation and drinking.

➤ **Mauryan Empire:** The *Arthashastra* of Kautilya records extensive **irrigation systems,** including dams and bunds, managed under strict regulations.
  ○ **Taxes** were imposed based on the **source and method of water extraction**.

➤ **Early Medieval India:** The <u>Satavahanas</u> introduced **brick and ring wells.**
  ○ The <u>Chola period</u> saw advanced systems like **chain tanks** (interconnected tanks) for efficient water distribution.

  ○ The **Rajputs** built large reservoirs, such as the **Bhopal Lake under King Bhoja,** while the **Pal and Sen dynasties** constructed numerous tanks and lakes in eastern India.

➤ **Medieval Period:** <u>Feroze Shah Tughlaq</u> built the **Western Yamuna Canal,** while **Emperor Shahjahan** developed the **Bari Doab or Hasli Canal.**
  ○ The <u>Vijayanagar Kingdom</u> constructed tanks like the **Anantraj Sagar and Korangal Dam.**
  ○ **Sultan Zain Uddin** established an extensive canal network in **Kashmir.**

What is a Water Harvesting System?

➤ **About:** A water harvesting system refers to a **technique or structure designed to capture, store, and use rainwater, surface runoff,** or other sources of water for various purposes, such as agriculture, domestic use, and groundwater recharge.
  ○ It is a sustainable water management practice aimed at conserving water and addressing water scarcity.

➤ **Types:**
  ○ **Rainwater Harvesting (RWH)**: Collecting and storing **rainwater** through methods like **rooftop collection and underground storage** to conserve water.
  ○ **Groundwater Recharge Systems**: Techniques such as **recharge wells** that allow rainwater to **seep into the ground** to maintain and improve groundwater levels.
  ○ **Surface Water Harvesting**: Collecting rainwater from **land or open fields** using ponds and reservoirs for irrigation and other uses.
  ○ **Urban Water Harvesting**: Capturing rainwater in cities from **rooftops and surfaces** to reduce pressure on **municipal water systems** and manage stormwater.

➤ **Significance:**
  ○ **Reliable Water Source**: Ensures a dependable water supply with **minimal evaporation or pollution,**

Note:

suitable for daily use. Enhances **groundwater quality** and combats seawater intrusion in coastal areas.

○ **Flood Prevention**: Reduces **flood risk and water logging,** protecting property and infrastructure. Protects the environment and property by minimizing erosion and flooding.

○ **Groundwater Recharge**: **Replenishes groundwater**, enhancing availability during dry periods. Minimizes **surface runoff, preserving soil** and preventing sedimentation in water bodies.

○ **Sustainability**: Supports water conservation and combats **groundwater depletion** amidst urbanization.

| **What are India's Initiatives Related to Water Conservation?** |
|---|
| ➢ **National Water Policy, 2012** |
| ➢ **National Aquifer Mapping and Management Program (NAQUIM)** |
| ➢ **Mission Amrit Sarovar** |
| ➢ **Jal Jeevan Mission (JJM)** |
| ➢ **Jal Shakti Abhiyan (JSA)** |
| ➢ **Atal Bhujal Yojana (ABY)** |

Including Non-Mineralised Areas in Mining Leases

Why in News?

Recently, the Centre has allowed state governments to include **non-mineralised areas** within existing **mining leases** for dumping mine waste and overburden, streamlining operations and addressing industry challenges.

➢ The **Ministry of Mines** clarified that under the **Mines and Minerals (Development and Regulation) Act, 1957**, non-mineralized areas for ancillary activities like waste disposal can be included within a mining lease.

➢ This interpretation is supported by the **Mines Act, 1952**, and Rule 57 of the **Mineral Concession Rules, 2016**, which allow ancillary zones to be included in the lease area.
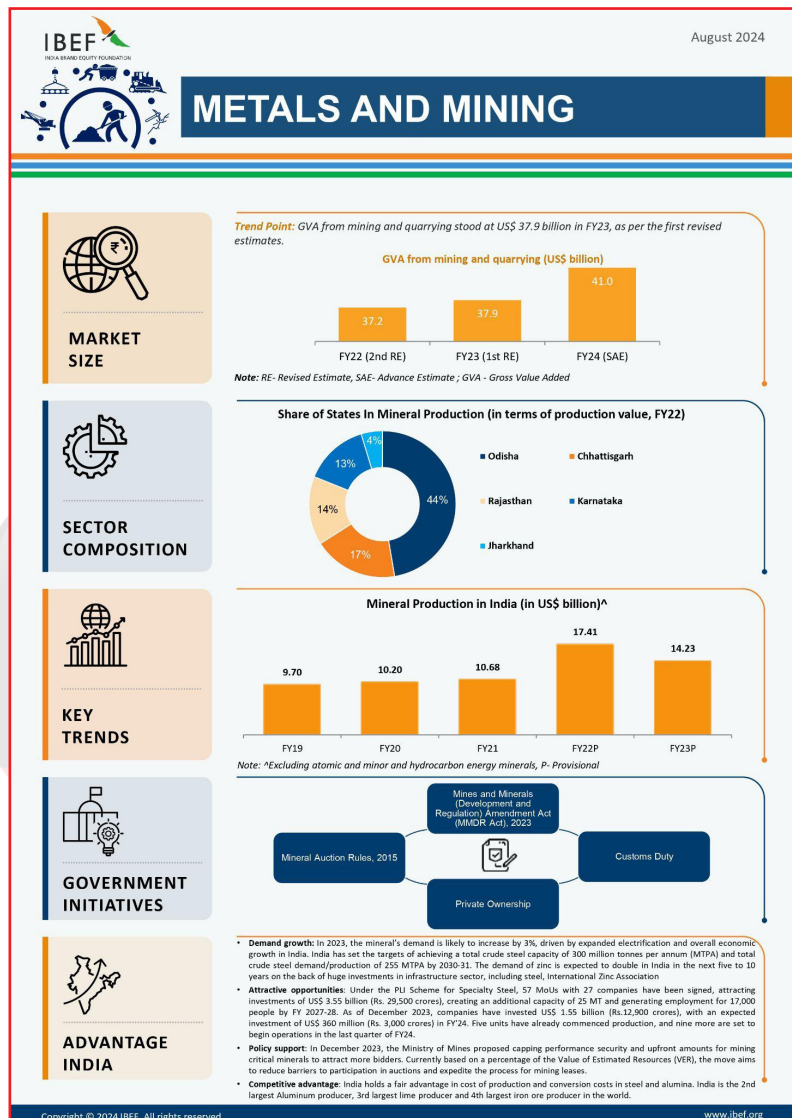
What are the Supreme Court Rulings for Regulating Mining and Minerals?

➢ **Centre's Primary Authority**: In 1989, **a seven-judge Bench** in *India Cement Ltd. v. the state of Tamil Nadu case* ruled that mining regulation falls primarily under the Centre's authority via the **Mines and Minerals (Development and Regulation) Act, 1957**, and **Entry 54** of the **Union List**.

➢ **State Authority on Taxes**: In *State of Orissa v. M.A. Tulloch & Co. Case*, it was held that states could only collect royalties, not impose additional taxes, as royalties were classified as taxes.

Note:

○ A 2004 judgment in *State of West Bengal v. Kesoram Industries Ltd. Case* questioned this classification, leading to a nine-judge review.

➢ **Overturning 1989 Verdict**: In July 2024, the Court ruled in favor of states **(overturned 1989 judgement)**, asserting their **power to tax mineral rights under Entry 50** of <u>List II (State List)</u> while limiting Parliament to imposing constraints to ensure mineral development isn't hindered.

○ However, some judges expressed concerns that unchecked state taxation could disrupt federal uniformity in mineral pricing and development, urging Parliament to intervene for consistency.

Goa Foundation v. Union of India Case, 2014: Against Dumping Outside Valid Lease Areas

➢ **Prohibition of External Dumping**: The Supreme Court ruled that dumping mine waste or overburden outside the boundaries of valid mining leases is **prohibited to prevent environmental and legal violations.**

➢ **Protection of Non-Lease Areas**: The ruling emphasized that **non-lease areas must not be used for mining-related activities**, ensuring their preservation and proper regulation.

➢ **Alignment with Mining Laws**: The Court's decision reinforced compliance with the **Mines and Minerals (Development and Regulation) Act, 1957**, and related laws that restrict unauthorized use of land.

➢ **Impact on Mining Practices**: Mining operations were required to include waste management within leased areas, prompting changes in planning and land allocation.

What are the Implications of the Recent Inclusion of Non-Mineralised Areas?

➢ **Streamlined Operations**: Including non-mineralised areas in **mining leases** ensures safe and **efficient management of overburden and waste,** addressing industry operational challenges.

○ **Overburden,** consisting of rocks, soil, and materials removed to access minerals, must be properly managed for safe mining.

○ **Non-mineralized areas**, lacking significant mineral deposits, can be allocated by state governments for overburden disposal and added to mining leases without auction if they are contiguous.

➢ **Aligned with 2014 Ruling**: The move aligns with the <u>Supreme Court's</u> 2014 ruling against dumping outside valid lease areas.

➢ **Efficient Land Utilisation**: Allowing **waste disposal** within lease areas ensures optimal use of non-mineralised zones without necessitating separate auctions for such purposes.

➢ **Industry Growth**: Eases operational hurdles, encouraging sustainable mineral extraction and fostering growth in the mining sector.

○ States can allocate contiguous or non-contiguous non-mineralised areas for <u>waste management</u> if it benefits mineral development, providing operational flexibility.

➢ **Safeguards Against Misuse**: States must ensure non-mineralised areas are verified, consult the <u>Indian Bureau of Mines (IBM)</u> for extent determination, and notify IBM about supplementary leases, preventing <u>illegal mineral extraction</u>.

What is the Mines and Minerals (Development and Regulation) Act, 1957?

➢ **Pivotal Legislation**: This Act governs India's mining sector, aiming to **develop the industry, conserve minerals, and ensure transparency** and efficiency in exploitation.

➢ **Initial Objectives**: Focused on promoting mining, conserving resources, and regulating concessions.

➢ **2015 Amendment**: The 2015 Amendment introduced key reforms, including the **Auction Method** for transparency, the establishment of <u>District Mineral Foundation (DMF)</u> for mining-affected areas, <u>National Mineral Exploration Trust (NMET)</u> to boost exploration, and stringent penalties for illegal mining.

➢ **2021 Amendment**: **Captive mines** are operated by **companies to extract minerals for their own use**, with up to 50% of their annual production allowed for sale in the open market after fulfilling the requirements of the end-use plant.

○ **Merchant mines** are operated to produce minerals for sale in the open market, with the extracted minerals sold to various buyers, including industries without their own mines.

○ **Auction-only concessions** ensure that all private-sector mineral concessions are granted through auctions.

Note:

➢ **2023 Amendment**: The Mines and Minerals (Development and Regulation) Amendment Act, 2023 aims to enhance the exploration and extraction of critical minerals vital for India's economic growth and national security.

○ Key changes include removing **six minerals** from the list of **12 atomic minerals** reserved for state agency exploration and allowing the government to exclusively auction concessions for critical minerals.

○ Exploration licenses have been introduced to attract foreign direct investment and engage junior mining companies in exploring deep-seated and critical minerals.

○ The amendments focus on **reducing import dependence** and encouraging private sector participation to accelerate the mining of essential minerals like **lithium, graphite, cobalt, titanium, and rare earth elements**, supporting India's energy transition and commitment to net-zero emissions by 2070.

Lake-Effect Snow

Why in News?

Recently, parts of upstate New York, Pennsylvania, Ohio, and Michigan, situated along the Great Lakes of North America, witnessed **"lake-effect snow."**

➢ A heavy snowstorm caused by this phenomenon near **Lake Erie in New York** has transformed homes into **ice-covered igloos.**

What is Lake-Effect Snow?

➢ **Definition:** Lake-effect snow is a **localized weather phenomenon** characterized by **heavy snowfall** that occurs near **large bodies of water,** such as the **Great Lakes in North America.**

○ It typically happens during colder months when cold air passes over relatively warmer lake surfaces, resulting in intense and narrow bands of snowfall.

➢ **Mechanism of Formation:**

○ **Cold Air Movement**: Cold air often from Canada, flows over the unfrozen, warmer waters of the Great Lakes in North America.

  ● The lakes transfer heat and moisture to the cold air at the surface.

○ **Cloud Formation**: The warm, moist air **rises, cools rapidly in the colder atmosphere above**, and **condenses to form clouds.**

○ **Snowfall**: These clouds develop into narrow bands that produce intense snowfall, often at rates of 2–3 inches or more per hour.

Lake effect snow forms when **cold air** moves over **warm water**
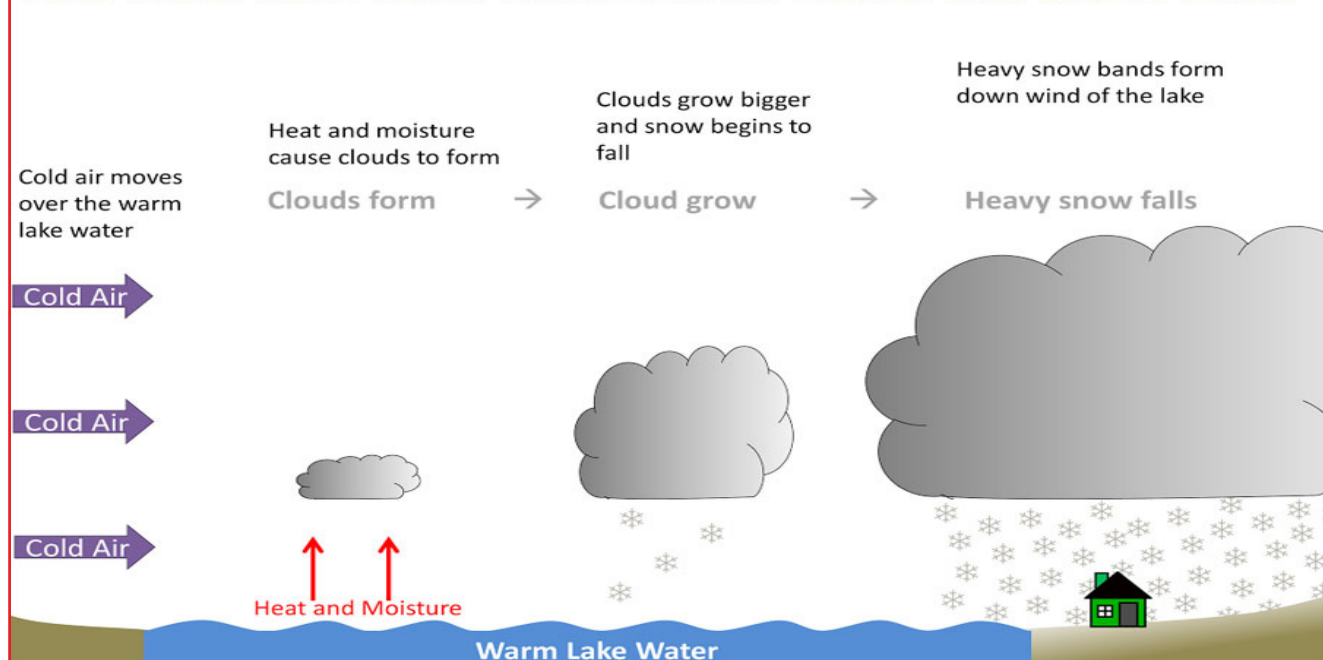
Great Lakes of North America

➢ The Great Lakes, consisting of **Superior, Michigan, Huron, Erie, and Ontario (from west to east),** are among the most significant freshwater ecosystems in the world.

➢ **Geography and Scope:** The Great Lakes basin encompasses large parts of two nations, the United States and Canada. Except for Lake Michigan, the **Great Lakes form a natural border between Canada and the United States.**

   ❍ The lakes connect to the **Atlantic Ocean via the Saint Lawrence River,** and to the **Mississippi River basin through the Illinois Waterway.**

➢ **Global Significance:** The American Great Lakes account for 21% of the Earth's surface freshwater.

■■■

Note:

Security

Highlights

- *Maritime Rescue Coordination Centres*
- *60th Raising Day of BSF*

Maritime Rescue Coordination Centres

Why in News?

Recently, a joint rescue operation by the **Indian Coast Guard (ICG)** and the **Pakistan Maritime Security Agency (MSA)** successfully saved 12 crew members from the sunken Indian vessel **MSV Al Piranpir** in the **North Arabian Sea**.

➢ This joint effort highlighted the critical role of the **Maritime Rescue Coordination Centres (MRCCs)** of both nations, which maintained seamless communication throughout the humanitarian search and rescue operation.

What are the Maritime Rescue Coordination Centres?

➢ **About MRCC:** MRCC is a unit responsible for promoting efficient organisation of **Search and Rescue (SAR)** services at sea and coordinating the conduct of M-SAR operations within a Search and Rescue Region (SRR).
  ❍ The MRCCs in India are specialized units within the **Indian Coast Guard (ICG)**.

➢ **Search and Rescue Region (SRR):** SRR is an area of **defined dimensions associated with an MRCC** within which SAR services are provided. The **Indian Coast Guard** coordinates SAR missions in the **Indian Maritime Search and Rescue Region (ISRR).**
  ❍ The Indian SRR is divided into three areas, each with an **MRCC in Mumbai, Chennai, and Port Blair.**

➢ **SAR Cooperation:**
  ❍ Related Conventions on SAR (ratified by India):
    ● International Convention on Maritime Search and Rescue (SAR) 1979
    ● **United Nations Convention on the Law of the Sea (UNCLOS) 1982**
    ● International Convention for the Safety of Life at Sea (SOLAS) 1974
 ❍ **Other Initiatives for SAR Cooperation:**
    ● India's SAGAR Vision
    ● **Djibouti Code of Conduct (DCoC):** It is a framework aimed at enhancing capacity to combat piracy in the Western Indian Ocean and Gulf of Aden.

➢ **India**, Japan, Norway, the UK and the USA hold the **observer status**.

Indian Coast Guard

➢ ICG was established by the Coast Guard Act, 1978 as an independent Armed force of India.
  ❍ It is an Armed Force, Search and Rescue and Maritime Law Enforcement agency under the Ministry of Defence. It is headquartered in New Delhi.
  ❍ The blueprint for a multidimensional Coast Guard was conceived by the visionary Rustamji Committee 1974.

➢ **ICG Duties for SAR:** Related to SAR, the Coast Guard charter of duties includes:
  ❍ Providing protection to fishermen including assistance to them at sea when in distress.
  ❍ Safety of life and property at sea
  ❍ Search and Rescue at sea
  ❍ Enforcement of Maritime laws at Sea

➢ The **Director General of the Indian Coast Guard** serves as the **National Maritime SAR Coordinating Authority (NMSARCA)**.

Note:
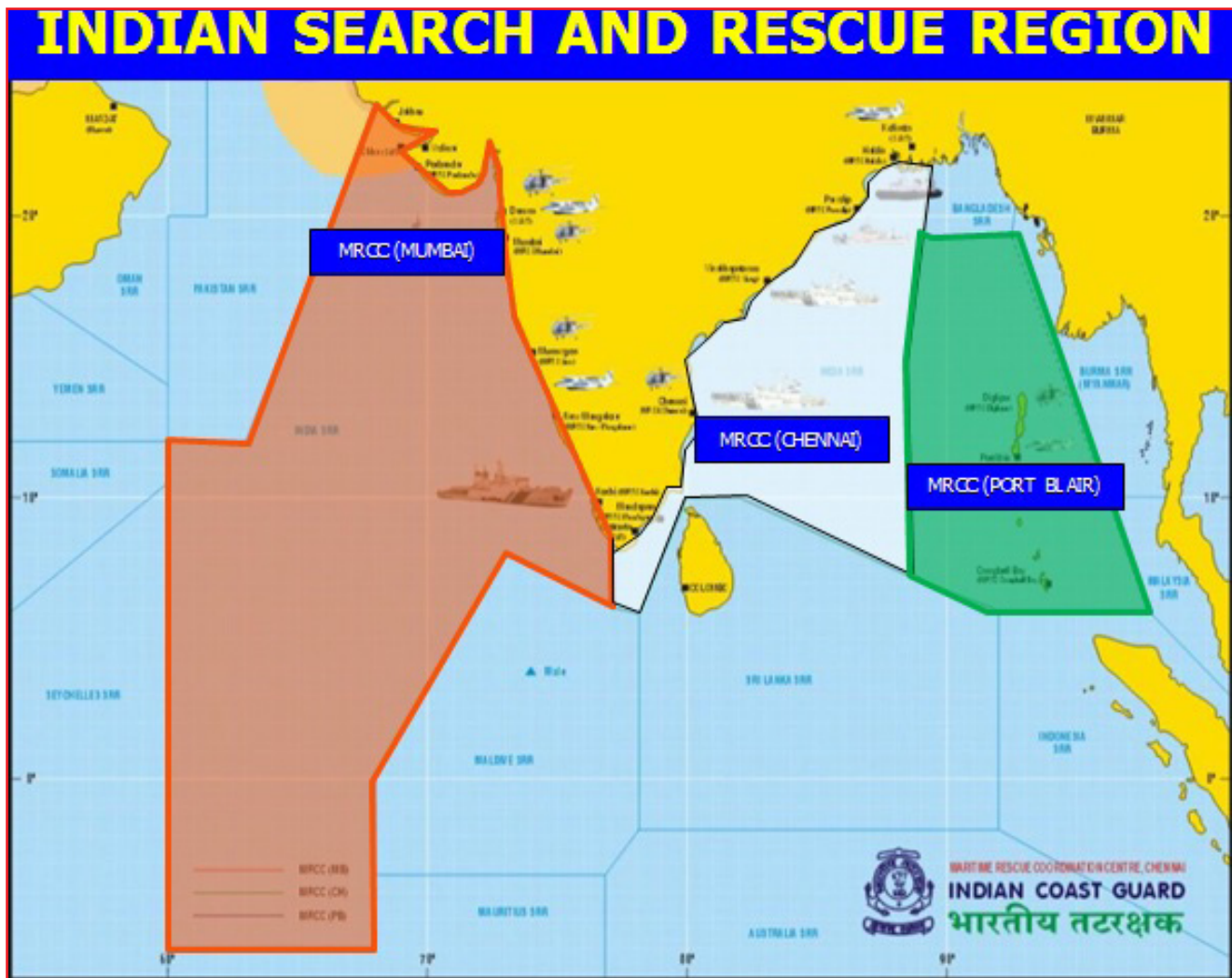
60ᵗʰ Raising Day of BSF

Why in News?

On **1ˢᵗ December, 2024**, Prime Minister extended his greetings to the **Border Security Force (BSF)** on their **60ᵗʰ Raising Day,** emphasizing the importance of the force in safeguarding India's borders.

What is BSF?

- **About:** BSF was established in 1965 following the **India-Pakistan war** to enhance border security.
  - The BSF has an **air wing, marine wing, an artillery regiment**, and **commando units**.
  - It works under the administrative control of the **Ministry of Home Affairs.**

- **Deployment:** T**he BSF,** comprising approximately **2.6 lakh personnel,** is deployed on the **Indo-Pakistan International Border, Indo-Bangladesh International Border**, **Line of Control (LoC)** along with the Indian Army and in **Anti-Naxal Operations** regions.

- **Specialized Operations:** The BSF plays a crucial role in safeguarding areas such as **Sir Creek in the Arabian Sea and the Sundarbans delta** in the Bay of Bengal, utilizing a modern fleet of watercraft.
  - Additionally, it contributes to the **UN peacekeeping Mission** by deploying trained personnel to various global locations each year.

- **Jurisdiction of BSF:** The BSF secures India's borders and is empowered to arrest, search, and seize under various laws, including the **Code of Criminal Procedure (CrPC) of 1973**, Passports Act 1967, **Passport (Entry into India) Act 1920**, and **Narcotic Drugs and Psychotropic Substances Act (NDPS), 1985**.

Note:

Note: Under Article 355, the **central government** has the authority to deploy its forces to safeguard a state from **external aggression and internal disturbance,** even in cases where the state has not requested assistance from the Centre and is hesitant to accept **central forces.**

CENTRAL ARMED POLICE FORCES (CAPF)

The CAPF includes the seven security forces in India functioning under the Ministry of Home Affairs.

Assam Rifles (AR)

- **Origin:** 1835, as militia called **'Cachar Levy'**
  - **Erstwhile objective:** To protect British Tea estates
- **Current Objectives:**
  - Conducting anti-terrorist operations in NER
  - Ensuring security at India-China and India-Myanmar borders
- **Imp Role in:**
  - Sino-India War 1962
  - Indian Peace Keeping Force (IPKF) to Sri Lanka (1987)

Due to long association with tribal belts, Assam Rifles are also called 'Friends of the North East'

Border Security Force (BSF)

- **Origin:** 1965
- **Objectives:**
  - Securing land borders with Pakistan and Bangladesh
  - Also performing Anti-Infiltration in Kashmir Valley
  - Counter Insurgency in NER
  - Anti-Naxal Operations in Odisha and Chhattisgarh
- **Wings:** Air wing, marine wing, an artillery regiment, and commando units

BSF is India's First Line of Defence and the world's largest border guarding force

Central Reserve Police Force (CRPF)

- **Pre-Independence Origin:** 1939 (Crown Representative's Police)
- **Post Independence:** 1949 - under CRPF Act, became Central Reserve Police Force
- **Objective:** Crowd control, riot control, counter militancy/insurgency operations, etc.

CRPF is the principle central police force for internal security

Indo-Tibetan Border Police (ITBP)

- **Origin:** 1962
- **Objectives:**
  - Deployed on border from Karakoram Pass (Ladakh) to Jachep La (Arunachal Pradesh) (~3488 km of Indo-China Border)
  - Manning Border Outposts on altitudes 9000 ft - 18700 ft in Western, Middle and Eastern sectors of Indo-China Border

ITBP is India's specialised mountain force & the first responder to natural disasters

National Security Guard (NSG)

- **Origin:** 1984 (came into being in 1986), following **Operation Blue Star**
- **Objectives:** Counter-terrorism unit/Federal Contingency Force
- **Task-oriented Force - Two complementary elements:**
  - Special Action Group (SAG)
  - Special Ranger Groups (SRG)

Sashastra Seema Bal (SSB)

- **Origin:** 1963
- **Objectives:**
  - Guarding Indo-Nepal and Indo-Bhutan borders
  - Enhance border security, curb trans-border crimes, prevent unauthorised entry/exit, halt smuggling, etc.

Central Industrial Security Force (CISF)

- **Origin:** Central Industrial Security Force Act, 1968
- **Objectives:** Ensuring security of major critical infrastructure installations

CISF is the sole CAPF unit with a specialised fire wing

दृष्टि Drishti IAS

Note:

drishti

Ethics

Highlights

- *UK's Assisted Dying Bill on Terminally ill Adults*

UK's Assisted Dying Bill on Terminally ill Adults

Why in News?

Recently, the **UK House of Commons** voted in favour of the **Terminally Ill Adults (End of Life) Bill**, allowing terminally ill patients to request assistance to end their own lives.

➢ This landmark decision reflects ongoing debates about end-of-life rights and raises questions about ethical considerations and legal frameworks.

> **Assisted dying** refers to both voluntary active euthanasia and physician-assisted death.
>
> **Euthanasia** involves a doctor actively ending the life of a terminally ill patient.

What are the Key Highlights of the UK's Assisted Dying Bill?

➢ **Current Position of UK on Assisted Dying:**
   ○ The **Suicide Act 1961** makes it illegal to encourage or assist a suicide in England, Wales and Northern Ireland.
      ● Assisted suicide is considered an offence and can be punished with up to **14 years in prison**.
   ○ Since 2013, at least three bills have been introduced to allow assisted dying in the UK.

➢ **Terminally Ill Adults (End of Life) Bill:**
   ○ **Definition of Terminal Illness:** A terminally ill person is defined as **someone with a worsening condition** that **cannot be reversed** by treatment and is **expected to die within 6 months**.
      ● The bill explicitly excludes individuals with disabilities or mental disorders.
   ○ **Eligibility Criteria:** Only terminally ill individuals **aged 18 and above** with mental capacity can request assisted dying.

- Patients must be registered and residing in **England or Wales** for at least 12 months prior to the request.

➢ In the United Kingdom, each nation and crown dependency is **responsible for its own health care**, so **Scotland and Northern Ireland** would have to **pass their own assisted-dying rules**.
   ○ Request Process:
      ● Patients must sign a **"first declaration"** in the presence of a **coordinating doctor and a witness**.

➢ **First Declaration:** A person who wishes to be provided with assistance to end their own life in accordance with this Act must make a declaration to that effect.
      ● The coordinating doctor conducts an **initial assessment** to confirm eligibility and voluntary consent.

➢ If approved, the request is referred to an **independent doctor** after a **minimum seven-day reflection period**.
   ○ **Judicial Oversight:**
      ● If both doctors (coordinating and independent) agree, the request is sent to the **High Court of Justice**, which verifies compliance with legal requirements.

➢ The **court can question** both the patient and the doctors involved.
   ○ **Final Confirmation:**
      ● A second **reflection period of 14 days** follows judicial approval, after which the patient signs a second declaration witnessed by both doctors and another person.
   ○ **Self-Administration of Substance:**
      ● The coordinating doctor provides an **"approved substance"** for self-administration by the patient, doctors are not authorized to administer it themselves.

Note:

Euthanasia Policies in Different Countries
➢ **Netherlands, Luxembourg, Belgium:** Allow both euthanasia and assisted suicide for those with "unbearable suffering" with no chance of improvement.
➢ **Switzerland:** Prohibits euthanasia but permits assisted dying with a doctor's presence.
➢ **United States:** Euthanasia laws vary by state, with allowances in states like Washington, Oregon, and Montana.
➢ **France:** Adults with French citizenship or residency, **suffering from a severe illness** and unbearable pain, can request lethal medication if they can express their wishes. Assistance is permitted if they cannot self-administer.

What are the Provisions of Living Will and Passive Euthanasia in India?

➢ **Passive Euthanasia: Passive euthanasia** involves withholding or withdrawing medical treatment to allow a person to die.

   ○ In contrast, active euthanasia involves actively ending a person's life through substances or external force, like a lethal injection.

➢ **Common Cause v. Union of India (2018):**

   ○ The Supreme Court of India in a landmark judgement **recognised a person's right to die with dignity,** saying that a **terminally ill person can opt for passive euthanasia and execute a living will** to refuse medical treatment.

■■■

Note:

Miscellaneous

Highlights

- 69th *Mahaparinirvan Diwas of Dr. Ambedkar*
- *Birth Anniversary of Raja Mahendra Pratap Singh*

69th Mahaparinirvan Diwas of Dr. Ambedkar

Why in News?

Recently, **69th Mahaparinirvan Diwas** was observed on **December 6** to commemorate the death anniversary of **Bharat Ratna Dr. Bhimrao Ramji Ambedkar**, the chief architect of the **Indian Constitution** and a stalwart for **social justice**.

➢ **Mahaparinirvan Diwas of Dr. B.R. Ambedkar**, honors his legacy, emphasizing his transformative impact on social reform, justice, and equality.

➢ The term "Mahaparinirvan" stems from **Buddhist philosophy,** symbolizing liberation from the **cycle of birth and death**, marking the most sacred day in the Buddhist calendar.

What was Dr. Ambedkar's Advocacy for Social Justice?

➢ **Champion of the Oppressed:** Dr. Ambedkar emerged as a beacon of hope for **Dalits**, **women**, and **laborers**, dedicating his life to eradicating **caste-based discrimination** and ensuring **social equality**.

- ❍ His advocacy extended to dismantling systemic barriers and empowering the marginalized.

➢ **Empowerment Initiatives:** Dr. Ambedkar advocated for **affirmative action** to uplift marginalized groups through **policies** like reservations in **education, employment**, and **politics** to address historical injustices faced by marginalized groups.

- ❍ Reservation, under **Articles 15(4), 16(4), and 334**, ensures representation for marginalized groups in education, public employment, legislative bodies and elections.
- ❍ Founded the **Bahishkrit Hitkarini Sabha (1923)** to promote education, improve socio-economic conditions, and empower outcast communities.

➢ **Voice for the Downtrodden:** Established the newspaper **Mooknayaka** (Leader of the Silent) to provide a platform for the oppressed and challenge societal inequalities.

➢ **Pioneering Movements:** Spearheaded landmark movements, including the **Mahad Satyagraha (1927)**, advocating for equal access to public water resources.

- ❍ Led the **Kalaram Temple entry movement 1930 (Nashik Satyagraha)** to break **caste-based restrictions** in places of worship, symbolising a broader fight against untouchability.

➢ **Poona Pact (1932):** Played a pivotal role in negotiating the **Poona Pact**, which replaced **separate electorates for Dalits** with reserved seats, paving the way for their political representation.

What was the Contribution of Dr. Ambedkar in Constitution Making?

➢ **Chairman of the Drafting Committee:** As the Chairman of the **Drafting Committee** appointed in **1947**, Dr. Ambedkar oversaw the meticulous process of crafting the **world's largest written Constitution**.

- ❍ Despite diverse opinions and challenges, he ensured that the Constitution was adopted in **1949** with provisions to protect the rights of all citizens.

➢ **Fundamental Rights:** Dr. Ambedkar played a key role in drafting **Part III** of the Constitution, which guarantees fundamental rights such as **equality before law**, **protection against discrimination (Articles 15, 17)**, and safeguards for minorities.

- ❍ Provisions for reservations in education and employment **(Articles 15[4], 16[4])** aim to uplift marginalized communities and ensure equality, forming the backbone of India's commitment to social justice and individual liberty.

➢ **Article 32:** Termed as the **"soul of the Constitution"**, **Article 32** empowers citizens to approach the **Supreme Court/ High Court** for enforcement of **fundamental rights**.

Note:

drishti

Dr. Bhimrao Ramji Ambedkar

Drishti IAS

Babasaheb Ambedkar-
The Father of Indian Constitution
14 April 1891- 06 December 1956

1. Brief Profile

- A social reformer, jurist, economist, author and thinker of comparative religions
- Labour member in the Executive Council of Viceroy (**1942**)
- **Chairman** of the Drafting Committee for the new Constitution
- **First Law Minister** of India
- Posthumously awarded Bharat Ratna (**1990**)

2. Contributions

- Led the Mahad Satyagraha in **1927** against Hindus
- Participated in all three Round Table Conferences
- Signed the **1932** Poona pact with Mahatma Gandhi to abandon the idea of separate electorates for the depressed classes

The reserved seats for depressed classes were increased from 71 to 147 in provincial legislatures and to 18% in the Central Legislature.

- Opposed the special status of J&K (Article **370**)
- Supported Uniform Civil Code
- Referred Article **32** as "soul of the Constitution and very heart of it"

3. Resignation and Buddhism

- Differences over Hindu Code Bill led to his resignation from Cabinet in **1951**
- Converted to Buddhism; his death is observed as Mahaparinirvan Diwas

4. Important Journals

- Mooknayak (**1920**)
- Samatha (**1929**)
- Bahishkrit Bharat (**1927**)
- Janata (**1930**)

5. Books

- Annihilation of Caste
- Buddha or Karl Marx
- **The Untouchable:** Who are They and Why They Have Become Untouchables
- The Rise and Fall of Hindu Women

6. Organisations

- Estd. 'Bahishkrit Hitkarini Sabha' (**1923**)
- Founded Independent Labour Party (**1936**)
- Founded Scheduled Castes Federation (**1942**)

- He emphasized its centrality in protecting constitutional guarantees.

> **Parliamentary Democracy:** Advocated for the **parliamentary form of government**, which he believed fostered **accountability**, **transparency**, and **social democracy**.
  - This system was designed to uphold egalitarian principles and address the nation's diverse needs.

> **Federal Structure:** Conceptualized a **dual polity**, balancing powers between the central and state governments.
  - This framework was designed to adapt to the unique socio-political dynamics of India, ensuring both **unity and flexibility**.

> **Directive Principles of State Policy:** Envisioned the **Directive Principles** as a guide for creating a **welfare state**, promoting goals like social security, gender equality, and better living standards.
  - Although non-justiciable, these principles remain integral to policymaking in India.

What were the Contributions of Dr Ambedkar in Nation Building?

> **Economic Framework:** Dr. Ambedkar's academic contributions laid the foundation for several economic institutions.
  - His doctoral thesis influenced the creation of the **Finance Commission of India** and the policy framework for the **Reserve Bank of India (RBI) Act, 1934**.

> **Infrastructure Vision:** Envisioned and promoted large-scale infrastructure projects such as the **Damodar**

Note:

drishti

Valley Project, **Hirakud Dam**, and **Sone River Project**, ensuring sustainable resource management and national development.

○ Conceptualized the **National Power Grid System**, demonstrating foresight in energy security and industrial growth.

➢ **Employment Reforms:** Founded **Employment Exchanges** to streamline job placement systems, providing systematic employment opportunities across the country.

➢ **Social and Economic Justice:** Advocated for bridging economic disparities through inclusive policies and championed the integration of social justice into governance structures to **empower marginalized communities**.

Government's Tributes to Dr. B.R. Ambedkar

➢ **Bharat Ratna Award:** Dr. Ambedkar was posthumously awarded India's highest civilian honor, the **Bharat Ratna**, in **1990**.

➢ **Ambedkar Circuit**: Five places associated with Ambedkar's life were developed as pilgrimage centers (**Panchteerth Development**):

○ Birthplace in **Mhow**

○ Memorial in **London (Shiksha Bhoomi)**

○ **Deeksha Bhoomi** in Nagpur

○ **Chaitya Bhoomi** in Mumbai

○ **Mahaparinirvan Bhoomi** in Delhi

➢ **BHIM App:** A digital payment app was launched in his honor to promote **digital transactions**, symbolizing financial inclusion and empowerment.

➢ **Dr. Ambedkar Centres of Excellence (DACE):** Launched in **31 Central Universities**, these centers provide free coaching to Scheduled Caste students for Civil Services Examinations.

➢ **Ambedkar Social Innovation and Incubation Mission (ASIIM):** Supports Scheduled Caste youth with startup ideas by funding.

➢ **Commemorative Stamps and Coins:** Coins of **Rs 10 and Rs 125 denominations** and a commemorative postal stamp were issued to honor Dr. Ambedkar's legacy.

➢ **Monuments of National Importance:** Sites like the **Sankalp Bhumi Banyan tree campus (Vadodara)** and Ambedkar's school in **Satara** were proposed as national monuments.

➢ **Constitution Day Celebrations:** Since **2015**, November 26 is observed as **Constitution Day**, commemorating Ambedkar's role as the architect of the Indian Constitution.

Birth Anniversary of Raja Mahendra Pratap Singh

Why in News?

Vice-President of India Jagdeep Dhankhar recently paid tributes on the **138th birth anniversary of Raja Mahendra Pratap Singh(1886-1979),** a visionary nationalist.
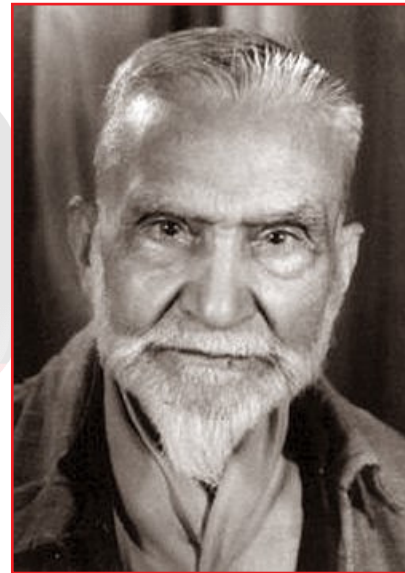
Who is Raja Mahendra Pratap Singh?

➢ **Background: Raja Mahendra Pratap Singh was born** on 1st December 1886, in Hathras, Uttar Pradesh.

○ He was a freedom fighter, revolutionary, writer, social reformer, and internationalist.

➢ **Contribution to Education**: Founded **Prem Mahavidyalaya** in 1909, a technical institute at Vrindavan, Uttar Pradesh. It is **India's first polytechnic,** to promote indigenous technical education.

➢ **Freedom Movement Contributions:**

○ Participated in the **1906 Congress session** in Kolkata and promoted indigenous industries. Mahendra Pratap was also deeply involved with the **Swadeshi movement** and would constantly promote small industries with indigenous goods and local artisans.

Note:

○ Mahendra Pratap was deeply involved in India's struggle for independence. In **1915, during World War I,** he proclaimed the **first Provisional Government of India** in **Kabul, Afghanistan,** with himself as its president, opposing British colonial rule.

- He sought support from countries like **Germany, Japan, and Russia** for India's fight against British colonial rule.

- He is said to have met **Vladimir Lenin in 1919,** two years after the **Bolshevik Revolution**.

○ He also formed the **Executive Board of India in Japan** in 1940 during the **Second World War.**

➢ **Internationalist and Peace Advocate:** Mahendra Pratap was nominated for the **Nobel Peace Prize** in **1932** for his global advocacy for peace and his efforts to expose **British atrocities in India and Afghanistan**.

○ The nomination described Raja as a **"Hindu patriot", "editor of the World Federation", and "unofficial envoy of Afghanistan".**

○ In 1929, Mahendra Pratap launched the **World Federation in Berlin,** which later influenced the creation of the **United Nations.**

➢ **Political Career**: After independence, he worked hard to promote the idea of **Panchayati Raj** and served as a **Member of Parliament** from **Mathura** (1957).

➢ **Legacy:** Remembered for his crucial role in the **Indian independence movement**, especially through **international diplomacy and creating awareness.**

◼◼◼

Note:

Rapid Fire Current Affairs

Highlights

- Birth Anniversary of Dr. Rajendra Prasad
- Thalassemia
- Campaign Against Tuberculosis
- Caspian Sea
- Gene Therapy Treatment for Haemophilia
- Ghost Guns and 3D Printing
- QS World University Rankings: Sustainability 2025
- Laysan Albatross
- INS Tushil
- Ayush Visa for Medical Value Travel
- DHARINI 3D Foetal Brain Atlas
- Google's Quantum Computing Breakthrough
- Capacity Building Program By NCGG
- Bima Sakhi Yojana
- Armed Forces Flag Day
- Human Rights Day
- Indian Star Tortoise
- World Soil Day 2024
- Recovery in Core Sectors
- Agroforestry's Impact to Endemic Frogs
- Turner Prize 2024
- World's Largest Grain Storage Plan in Cooperative Sector
- Google Safety Engineering Centre in Hyderabad
- 5.3 Magnitude Earthquake Strikes Telangana
- ICMR's 'First in the World Challenge' for Innovation
- India Dominates Admissions in the US
- Groundwater Subsidence in California
- SHe-Box Portal
- Addressing Pollution in Ashtamudi Lake
- International Cheetah Day
- PM-ABHIM
- World Wildlife Conservation Day
- Indian Navy Day 2024
- Reimposition of AFSPA in Manipur
- DNA Profiles and Levirate Marriages
- SC's Concern Over Voter Limit Increase
- Paryatan Mitra and Paryatan Didi
- PRAGATI
- World Diabetes Day 2024
- India Adopts CubeSat Standard
- PENCiL Portal
- World AIDS Day 2024
- Network Readiness Index 2024
- E-Daakhil Portal
- Zonal Cultural Centres

Birth Anniversary of Dr. Rajendra Prasad

The President of India, paid tributes to **Dr. Rajendra Prasad, the first President of India** on his birth anniversary (3rd December).

➤ **Birth and Early Life:** Rajendra Prasad was born on 3rd December 1884, in Zeradei, Siwan, Bihar.

  ○ He was influenced by Gandhi's views on **caste and untouchability,** and led a simple life.

➤ **Role in the Freedom Struggle:** Prasad gave up his legal career to join the independence movement in 1920 and was imprisoned during the **Salt Satyagraha** in 1931 and the **Quit India movement** in 1942.

  ○ Presided over the **Bombay session of the Indian National Congress in 1934** and became **Congress President after Subhash Chandra Bose's resignation in 1939**.

➤ **Role in Constitutional Making:** He was appointed **President of the Constituent Assembly in 1946.**

  ○ Led committees on **National Flag, Rules of Procedure, and Finance and Staff.**

➤ **Literary Works:** *Satyagraha at Champaran (1922), India Divided (1946), Atmakatha (1946), and Bapu ke Kadmon Mein (1954).*

Note:

➢ **Presidency and Legacy:** Elected as **India's first President in 1950,** serving for over 12 years. Only President to be re-elected unanimously in 1952 and 1957. **Rajendra Prasad was awarded with the Bharat Ratna in 1962.**
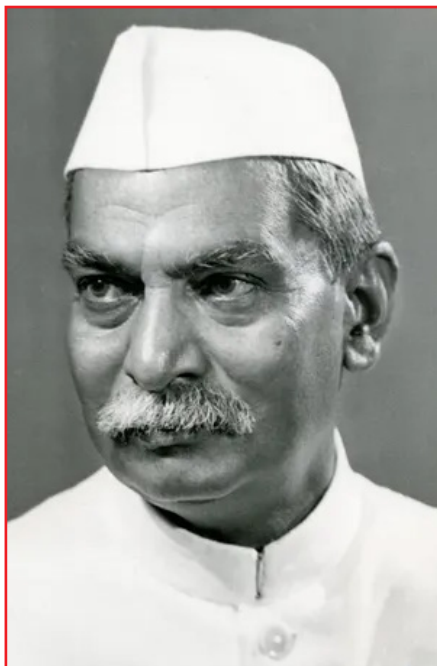
Read more: Dr. Rajendra Prasad

Thalassemia

A critical shortage of **Desferal (deferoxamine)** in Delhi government hospitals has put **thalassemia patients at risk of severe complications** from **iron overload**, as the drug is essential for those unable to tolerate oral chelators.

➢ **Thalassemia** is an inherited blood disorder that **reduces the body's ability** to produce normal hemoglobin, leading to fewer healthy red blood cells and anemia.

➢ **Symptoms** range from growth issues, **delayed puberty**, and bone abnormalities in mild cases to poor appetite, **jaundice, dark urine, and facial bone irregularities** in severe cases.

➢ **Types of Thalassemia:**
   ○ **Alpha Thalassemia**: Caused by defective alpha-globin genes inherited from both parents.
      ● Severity depends on the number of defective genes.
   ○ **Beta Thalassemia**: Caused by defects in **beta-globin genes.**

   ● Symptoms range from mild to severe, depending on the number and type of defective genes.

➢ Approximately 280 million people worldwide are affected by thalassemia, with an estimated 4.4 out of every 10,000 live births impacted by the **disorder globally.**

   Read more: Thalassemia Bal Sewa Yojna

Campaign Against Tuberculosis

Recently, the Ministry of Health and Family Welfare has launched a **100-day intensified nationwide** campaign to find and treat missing tuberculosis (TB) cases, especially in high-risk groups, and reduce TB deaths significantly. It will be implemented in 347 districts across the country.

➢ **About Campaign:** The 100-Day Campaign underscores India's commitment to achieving the goal of end-TB under the National TB Elimination Programme (NTEP).
   ○ It aligns with India's broader vision to eradicate TB well before the 2030 Sustainable Development Goals deadline.
   ○ National guidelines for the implementation of the new drug-resistant **TB regimen – BPaLM** were launched to standardize and streamline the administration of this advanced treatment.
      ● BPaLM regimen is a novel treatment for Multi-Drug-Resistant TB under the NTEP, consisting of four-drug combination – **Bedaquiline, Pretomanid, Linezolid and Moxifloxacin.**
   ○ **"Ni-kshay Vahaan"** – mobile vans to detect and treat patients all over the country were also launched.

➢ **Tuberculosis:** TB is an infectious disease caused by *Mycobacterium tuberculosis*, that mainly affects the lungs. It spreads through the air when infected people cough, sneeze or spit.
   ○ As per India TB Report 2024, mortality rate due to Tuberculosis (TB) had declined from 28 per lakh population in 2015 to 23 per lakh population in 2022.

➢ **India's Initiatives against TB:**
   ○ National Strategic Plan (NSP) for Tuberculosis Elimination (2017-2025)
   ○ TB Harega Desh Jeetega Campaign

Note:

○ **Ni-kshay Poshan Yojana**

○ **Pradhan Mantri TB Mukt Bharat Abhiyan**

Read More: Tuberculosis, Global Tuberculosis Report 2024, India TB Report 2024

Caspian Sea

Kazakhstan's state-owned energy company, KazMunayGas, has successfully decontaminated **significant oil waste along the Caspian Sea's shores**, which has been hit by pollution and the effects of global warming.

➢ **Location**: Lies between **Asia and Europe,** east of the Caucasus Mountains and west of the Central Asian steppe.

○ It is bordered by Russia (northwest), Azerbaijan (west), Iran (south), Turkmenistan (southeast) and Kazakhstan (northeast).

➢ **Formation and Characteristics:** The Caspian Sea was once part of a **prehistoric sea known as the Paratethys. Tectonic forces** uplifting the land and a drop in **sea level** left the **Caspian landlocked** more than 5 million years ago.

○ It is technically a lake, as it is landlocked without a direct outlet to the ocean. It is the **world's Largest Inland Water Body.**

➢ **Rivers:** Three major rivers **Volga, Ural, and Terek** empty into the Caspian.

➢ **Rich in Resources:** Contains significant oil and natural gas reserves in offshore and onshore fields. Caspian Sea Known for producing most of the **world's caviar (eggs of various large fish).**

Read more: Caspian Sea

Gene Therapy Treatment for Haemophilia

Indian scientists have developed a novel **gene therapy for haemophilia A**, offering a **one-time treatment to replace frequent clotting factor injections**.

➢ In a trial at Christian Medical College, Vellore, five patients have been free of bleeding episodes for over a year.

➢ Haemophilia A is a **genetic disorder** caused by **insufficient Factor VIII,** preventing **proper blood clotting.** India, with 40,000 to 100,000 affected patients, has the second-largest haemophilia population globally.

○ Haemophilia A is inherited in an **X-linked recessive pattern.** Males with a **defective X chromosome have hemophilia,** while females **need two defective X chromosomes to be affected.**

○ Current treatments are lifelong and expensive, costing up to Rs 2.54 crore over ten years, making gene therapy a cost-effective alternative.

➢ Gene therapy replaces defective genes in a patient's cells with healthy ones.

➢ **Roctavian,** the only USFood and Drug Administration approved gene therapy, uses an **adenovirus vector to deliver a gene for Factor VIII production** in the liver but is **not approved for children.**

➢ The Vellore trial used a **lentivirus vector,** considered **safer and potentially suitable for children,** offering new possibilities for gene therapy in resource-constrained settings.

Read more: World Haemophilia Day

Ghost Guns and 3D Printing

Ghost guns are untraceable firearms assembled at home, often using kits or **3D-printed parts.**

➢ These weapons **lack serial numbers**, making them difficult for law enforcement to track.

➢ **Printing Enable Ghost Guns:** In the context of firearms, 3D printers can produce components like receivers, barrels, or grips using materials such as plastic or metal.

○ These parts, when combined with other easily sourced components, create a **functional firearm.**

Note:

○ Ghost guns pose **serious safety risks**, with advocacy groups labeling them the **"fastest-growing gun safety problem**."

➤ **3D Printing: 3D printing**, or additive manufacturing, creates objects layer by layer from digital designs. **Key Features of 3D Printing are:**

○ **Customization:** Precise designs tailored to specific needs.

○ **Accessibility:** Affordable printers and open-source designs make it easy for individuals to experiment.

○ **Rapid Prototyping:** Quickly turns digital designs into physical objects.

Read More: 3D Printing and Its Applications

QS World University Rankings: Sustainability 2025

The **Quacquarelli Symonds (QS)** **World University Rankings: Sustainability 2025**, in its third edition, evaluates global institutions' progress in tackling **environmental and social challenges** through education and research.

➤ These rankings assess universities' contributions to sustainability, focusing on three pivotal pillars: **Environmental Impact, Social Impact, and Governance.** 78 Indian universities are featured in the 2025 rankings.

➤ **Top Performers in India:**

○ **IIT Delhi:** Ranked **1st in India** and 171st globally.

○ **IIT Kharagpur:** Ranked 2nd in India and 202nd globally.

○ **IIT Bombay:** Ranked 3rd in India and 234th globally.

○ **IIT Kanpur:** Ranked 4th in India and 245th globally.

○ **IIT Madras:** Ranked 5th in India and 277th globally.

➤ **Notable Performances:**

○ **Environmental Impact:** IIT Delhi (55) and IIT Kanpur (87) ranked in the global top 100.

   ● **Environmental Sustainability:** IIT Bombay is **at top in India (ranks globally at 38th).**

   ● **Environmental Education:** IISc is placed 32nd worldwide.

○ **Governance and Equality:** Manipal Academy of Higher Education (MAHE) **leads India in the Governance** category and **ranks highest in India for Equality (ranks globally at 390th).**

○ **Social Impact:** IIT Delhi ranked 362nd globally, with top performance in India in Employability and Outcomes **(ranks globally at 116th).**

   ● **Knowledge Exchange:** DU is at top in India **(ranks globally at 121st).**

○ However, Indian universities need to improve in **Health and Wellbeing and Impact of Education**, where **no Indian institute has featured in the top 350.**

➤ **QS** is a London-based global higher education analyst best known for its widely recognized **QS World University Rankings.**
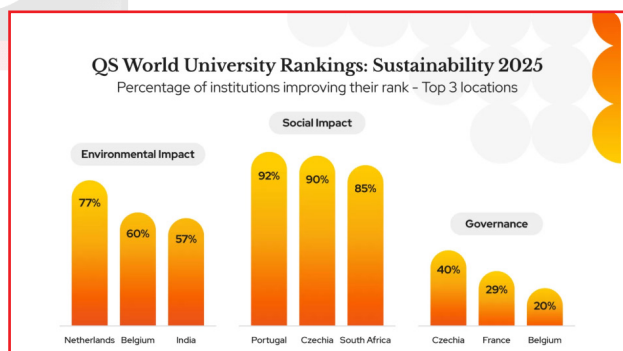
Read More: QS World University Rankings 2025

Laysan Albatross

Wisdom, a **74-year-old Laysan albatross *(Phoebastria immutabilis)*,** laid an egg at the Midway Atoll National Wildlife Refuge, her first in four years. She was **initially banded there in 1956**.

➤ Laysan albatross is a large, abundant seabird whose breeding range is centered in Hawai'. Like all albatrosses, they are accomplished fliers using dynamic soaring to cover great distances. They mainly feed at night and often far from breeding colonies.

Note:

- ○ According to the <u>National Oceanic and Atmospheric Administration</u>, the average lifespan of a Laysan albatross is typically **around 68 years**.
- ○ **Note: Snowy Albatross** or **Wandering Albatross** (*Diomedea exulans*) is the largest flying seabird in terms of wingspan.
- ➢ Laysan albatross matures slowly, starting to **breed at three or four years old**, but typically achieving successful breeding **only at eight or nine years of age**.
  - ○ They nest in colonies, have long-term pair bonds and high site fidelity. They lay only one egg per season and the egg is incubated by both the parents in turn.
- ➢ **Conservation Status – <u>IUCN Red list</u>:**
  - ○ Laysan Albatross: **Near Threatened**
  - ○ Snowy Albatross (Wandering Albatross): **Vulnerable**
  - ○ Waved Albatross: **Critically Endangered**
  - ○ Tristan Albatross: **Critically Endangered**

Read More: <u>Wandering Albatross</u>

INS Tushil

    INS Tushil (F70), India's advanced **multi-role stealth-guided missile frigate,** was commissioned into the <u>Indian Navy</u> in Russia, marking a significant milestone in <u>India-Russia defense cooperation</u> and maritime strength.

- ➢ **About:** INS Tushil is an upgraded <u>Krivak III-class frigate</u> of <u>Project 1135.6 (Talwar Class)</u>. It is the 7th in the series after three **Talwar-class and three Teg-class frigates**.
  - ○ INS Tushil, is the first of two upgraded frigates under a 2016 contract between the Indian Government and **JSC Rosoboronexport (a Russian company)**.

- • A frigate is a versatile warship used for escorting, patrolling, and combat operations, crucial in modern navies.
  - ○ The name **Tushil means "protector shield,"** reflects the Indian Navy's commitment to protecting maritime frontiers.
- ➢ **Advanced Weaponry:** INS Tushil is equipped with <u>BrahMos supersonic cruise missiles,</u> **Shtil Surface-to-Air Missiles,** <u>anti-submarine torpedoes</u>, and electronic warfare systems.
- ➢ **Operational Versatility:** Designed for **blue-water operations** across air, surface, underwater, and electromagnetic dimensions, aligning with <u>India's SAGAR (Security and Growth for All in the Region),</u> ensuring stability in the <u>Indian Ocean Region (IOR).</u>
- ➢ **India - Russia Defense Cooperation:**
  - ○ <u>Agreement on Military Technical Cooperation (2021-2031)</u>
  - ○ <u>India-Russia 2+2 Dialogue</u>.
  - ○ **Bilateral Projects:** <u>T-90 tanks</u>, <u>Su-30-MKI aircraft</u>, <u>MiG-29-K aircraft</u>
  - ○ **Military Exercises**: <u>INDRA(Tri-Services)</u>, **Avia Indra(** Air Force**), and** <u>Ex Vostok</u> (Army).

Image posted on X by @PRO_Vizag

Read more: <u>India-Russia Ties: The Art of Diplomacy</u>

Ayush Visa for Medical Value Travel

    Recently, the Ministry of Ayurveda, Yoga and Naturopathy, Unani, Siddha, and Homoeopathy (AYUSH) highlighted the **Ayush Visa,** an initiative to promote **medical value travel (MVT)** for foreigners seeking treatment in <u>India's traditional medicine systems.</u>

Note:

drishti

➤ **About: Ayush Visa** introduced in 2023 with four sub-categories: Ayush Visa (AY-1), Ayush Attendant Visa (AY-2), e-Ayush Visa, and e-Ayush Attendant Visa.

➤ **Purpose**: To allow foreigners to receive treatment through **Ayush systems** like therapeutic care and wellness in accredited hospitals or wellness centers.

➤ **Accreditation**: Treatment is available at facilities accredited by government authorities or **National Accreditation Board for Hospitals & Healthcare Providers (NABH)**, **National Commission for Homoeopathy (NCH)**, and **National Commission for Indian System of Medicine (NCISM)** accredited hospitals providing Ayush services.

➤ **Medical Value Travel Initiatives:**

  ❍ **Advantage Healthcare India Portal**: A one-stop portal for international patients seeking medical or wellness treatment in India.

  ❍ **Ayush Medical Value Travel Summit 2024**: Organized in September 2024 in Mumbai, focusing on integrating traditional Indian medicine with modern healthcare for global synergy.

  Read more: National Strategy and Roadmap for Medical and Wellness Tourism

DHARINI 3D Foetal Brain Atlas

Researchers at Indian Institute Of Technology (IIT) Madras have developed a revolutionary tool known as **DHARINI, a detailed 3D map of foetal (**unborn offspring that develops in the uterus of a mammal**) brain,** that holds significant implications for understanding brain disorders.

➤ 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.

➤ The tool can help identify brain disorders such as **autism** and provide insights into conditions like **cerebral palsy** and mental health issues like depression and **bipolar disorder.**

  ❍ The research utilized thin slices of still-born brains, allowing for detailed cellular-level imaging.

➤ DHARINI is the only brain atlas to capture the growing brain in fetuses. The only other similar publicly available atlas, released by the **US Allen Institute in 2016, mapped the brain of an adult woman**.

➤ DHARINI is expected to support future advancements in **Artificial Intelligence** and **machine learning,** helping scientists better understand the human brain and improve **artificial intelligence models.**

HOW THE BRAIN ATLAS WAS CREATED

▼ Researchers from IIT Madras used the brains of five still–borns in the second trimester — at weeks 14, 17, 21, 22, and 24 of pregnancy

▼ These thin, transparent slices were then stained and microscopically imaged in extreme detail

▼ The brains were frozen and thinly sliced using complex robotic instrumentation

▼ The digitised images were then put together to create a 3D map — offering a rare insight into the insides of a foetal brain

Read more: Brainware

Google's Quantum Computing Breakthrough

Google has unveiled a **new quantum computer** featuring a chip called **Willow**, capable of performing calculations in **under five minutes** that would take the most advanced **supercomputers** over **10 septillion years** (a length of time that exceeds the age of the known universe).

➤ This achievement, described as "**quantum supremacy,**" signifies that Google's quantum computer can perform tasks beyond the reach of traditional computers.

  ❍ However, these tasks, such as generating random numbers, are **primarily theoretical** and lack immediate practical applications like **drug discovery**.

Note:

- A significant breakthrough includes surpassing the **"error correction threshold,"** an important milestone toward reducing computational errors and enabling practical applications.

- Scientists are now shifting focus toward achieving **"quantum advantage,"** where quantum computers could drive advancements in practical fields like AI, chemistry, and medicine.

- **Traditional Computing vs Quantum Computing:** Traditional computers process information as **"bits,"** each representing either a 1 or a 0, to perform calculations.

  ❍ In contrast, **quantum computers** leverage **"qubits,"** which can exist as both 1 and 0 simultaneously, harnessing the principles of quantum mechanics.

  ❍ This unique property **allows qubits to exist in multiple states** at once, enabling exponential increases in computational power.

  Read More: India & Quantum Computing

Capacity Building Program By NCGG

Recently, the **6th** edition of the **Capacity Building Program** for **Sri Lankan Civil Servants** commenced at the **National Centre for Good Governance (NCGG)** in Mussoorie.

- The program hosted 40 mid-career civil servants from Sri Lanka, focusing on **governance, policy frameworks, AI in governance,** and India's successful models in **public administration.**

- **NCGG:** It was established in **2014** by the Government of India as an **autonomous institution** under the **Ministry of Personnel, Public Grievances, and Pensions.**

  ❍ It evolved from the **National Institute of Administrative Research (NIAR)**, founded in **1995** by the **Lal Bahadur Shastri National Academy of Administration (LBSNAA)**.

  ❍ NIAR was later integrated and renamed as NCGG, which focuses on training civil servants from India and **over 20 countries**, covering diverse topics like governance reforms, **Digital India, SVAMITVA, SDGs**, and Ayushman Bharat.

  Read More: Capacity Building Program at NCGG Mussoorie

Bima Sakhi Yojana

The Prime Minister recently launched the **'Bima Sakhi Yojana'** of **Life Insurance Corporation**, with an aim to provide jobs to 2 lakh women, reinforcing the commitment towards women empowerment and **financial inclusion**.

- LIC's **Bima Sakhi is a stipend-based program** exclusively for women, offering specialised training and financial support for a period of three years.

- **Eligibility:** Women aged between **18 and 70 years** who have **completed their 10th-grade education.**

- Each Bima Sakhi will earn a monthly stipend of **Rs 7,000 in the first year**, Rs 6,000 in the second year, and **Rs 5,000 in the third year**.

  ❍ Additionally, women agents can earn commissions based on the insurance policies they secure.

- After training, they can serve as LIC agents and the graduate Bima Sakhis would have the opportunity to qualify for being considered for **Development Officer roles in LIC.**

  Read More: Beti Bachao Beti Padhao Scheme

Armed Forces Flag Day

Armed Forces Flag Day (AFFD) has been held every year on **7th December since 1949** to honor the bravery and sacrifices of Indian Armed Forces personnel, especially veterans.

- The day recognizes not only the sacrifices of fallen soldiers but also the contributions of their families, especially the war-disabled soldiers and **War Widows (Veer Naris).**

- **Support Initiatives:**

  ❍ **AFFD Fund:** It was created by the **Ministry of Defence in 1949.** In 1993, it was unified with other welfare funds, including those for war victims and ex-servicemen, into a single fund.

  - The **Kendriya Sainik Board (KSB)** administers the **AFFD Fund (AFFDF).**

- KSB formulates and implements welfare and rehabilitation schemes for ex-servicemen and their families across India.

  ❍ **Digital Solutions: SAMBANDH**, a WhatsApp-based chatbot, allows veterans to **easily report and**

Note:

resolve grievances. The platform has helped address over 1,700 cases in less than a year.

○ **Skill Development for Women:** The **Nari Sashaktikaran** initiative focuses on empowering women, including widows of fallen soldiers, by providing job training and opportunities for economic independence.

○ **Project NAMAN:** It aims to **simplify pension services for veterans,** ensuring easier access to services such as life certificate submissions and pension disbursements.

Read more: Advancing Defense Integration in India

Human Rights Day

Human Rights Day, observed every year on **10th December** highlights the importance of human rights as a foundation for justice, peace, and equality.

➤ **2024 Theme:** *"Our Rights, Our Future, Right Now"* emphasizes the relevance of human rights in shaping a peaceful and sustainable future.

➤ **Historical Significance:** Human Rights Day was established in 1950 to commemorate the **Universal Declaration of Human Rights (UDHR)**, adopted by the United Nations on **10th December**, 1948, which outlined **fundamental human rights for all.**

○ The **UN Human Rights Council,** established in 2006, promotes global human rights protection through its 47 member States(including India) and works on addressing violations and emergencies.

● The Council's secretariat is the **Office of the High Commissioner for Human Rights (OHCHR),** based in Geneva, **Switzerland.**

➤ **Advocacy and Action:** The day calls for collective action to counter **hate speech, misinformation,** and **human rights abuses,** while promoting equality and non-discrimination.

➤ **Human Rights and India:** The Indian Constitution enshrines human rights through **Fundamental Rights (Part III)** and **Directive Principles of State Policy (Part IV).**

○ The Preamble's commitment to **justice, liberty, equality, and fraternity reflects the spirit of the UDHR.**

○ The **National Human Rights Commission (NHRC),** established in 1993 under the **Protection of Human Rights Act (PHRA),** oversees human rights adherence in India.

THE UNIVERSAL DECLARATION OF HUMAN RIGHTS

1 **Equality** — Everyone is born **free** and **equal** in **dignity** and with rights.

2 **Freedom from Discrimination** — You should never be discriminated against for any reason.

3 **Life, Liberty and Security** — Everyone has the right to life, liberty and personal security.

4 **Freedom from Slavery** — No-one shall be held in slavery or servitude.

5 **Freedom from Torture** — No-one shall be subjected to torture or to cruel or degrading treatment.

6 **Recognition as Person Before Law** — You have the right to be treated as a person in the eyes of the law.

7 **Equality Before the Law** — You have the right to be treated by the law in the same way as everyone else

8 **Remedy by Tribunal** — Your have the right to remedy by competent tribunal.

9 **Freedom from arbitrary arrest** — No-one shall be subject to arbitrary arrest, detention or exile.

10 **Fair Public Hearing** — You have the right to a fair public hearing.

11 **Innocent until Proven Guilty** — You have the right to be considered innocent until proven guilty.

12 **Privacy** — No-one has the right to interfere with your privacy, family, or home.

13 **Freedom of Movement** — You have the right to freedom of movement in and out of the country.

14 **Asylum** — You have the right to seek asylum in other countries from persecution.

15 **Nationality** — You have the right to a nationality.

16 **Marriage and Family** — You have the right to marriage and to raise a family.

17 **Property** — You have the right to own property.

18 **Freedom of Belief** — You have the right to freedom of belief and religion.

19 **Freedom of Opinion** — You have the right to freedom of opinion and expression.

20 **Freedom of Assembly** — You have the right to freedom of peaceful assembly and association.

21 **Take Part in Government** — You have the right to take part in the government of your country.

22 **Social Security** — You have the right to social security.

23 **Work** — You have the right to desirable work and to join trade unions.

24 **Rest and Leisure** — You have the right to rest and leisure.

25 **Adequate Living Standard** — You have the right to a decent life, including food, clothing, housing, and medical care.

26 **Education** — You have the right to education

27 **Participate in Cultural Life** — You have the right to Participate in the Cultural Life of Community.

28 **Social Order** — You have the Right to a Social Order that Articulates this Document.

29 **Mutual Responsibility** — We all have a responsibility to the people around us and should protect their rights and freedoms.

30 **Freedom from State or Personal Interference** — There is nothing in this declaration that justifies any person or country taking away the rights to which we are all entitled.

HRE USA — Human Rights Educators USA — A national network dedicated to building a culture of human rights. — hreusa.org

Read more: Universal Declaration of Human Rights

Indian Star Tortoise

The **Indian star tortoise** (*Geochelone elegans*) faces severe threats from **habitat loss, illegal trade, and genetic disruption**, making its conservation a critical priority.

Note:

- **Appearance:** It has an **obsidian shell with striking Sun-yellow star patterns.**
- **Habitat**: It is native to the **Indian subcontinent** and is found in **northwestern India, South India, and Sri Lanka** in arid grasslands and savannahs.
- **Conservation Status**: Listed as **Vulnerable** under IUCN Red List, **Appendix I of CITES.**
- **Threat:** According to the **Wildlife Crime Control Bureau,** **90%** of the trade of Star Tortoise occurs as part of the **international pet market.**
- **Genetic Study Insights**: Researchers identified two distinct groups of Indian star tortoises: **Northwestern (genetically stable)** and **Southern (genetically diverse)**.
  - **Microsatellite markers** were used to **track genetic relationships** and population changes.
  - Microsatellite markers are **short DNA sequences** that **repeat in a particular location** in the genome.

     Read More: Indian Star Tortoise

World Soil Day 2024

     World Soil Day is held annually on **5th December** focussing on **healthy soil** and advocating for the **sustainable management** of soil resources.

- **Theme:** Caring for soils: measure, monitor, manage.
- **Adoption:** It was adopted by the **UN General Assembly** in December 2013, with the first World Soil Day observed on **5th December 2014.**
  - 5th December marks the birth anniversary of the **late King Bhumibol Adulyadej of Thailand**, a key supporter of this initiative.
- **Conservation Efforts:** In India, **Mitti Bachao (Save the Soil) Movement** started in **Hoshangabad (Narmadapuram)**, Madhya Pradesh in **1977** against **soil degradation** caused by the **Tawa Dam** in Madhya Pradesh.
  - **Over 95%** of our food comes from **soils**. Besides, they supply 15 of the 18 naturally occurring chemical elements essential to plants.
- **Sustainable Soil Management Practices: Minimum tillage, crop rotation, organic matter addition, and cover cropping.**

     Read More: Global Soil Conference 2024 and Soil in India

Recovery in Core Sectors

     The output of India's **eight core sectors** recorded a **3.1% year-on-year growth** in **October 2024,** marking the highest performance in three months.

- However, this growth is relatively modest compared to the **12.7%** seen in October 2023.
- **Eight Core Sectors:** It consists of **cement, coal, crude oil, electricity, fertilizers, natural gas, refinery products**, and **steel**.
  - It accounts for over **40%** of industrial production.
- The **Index of Core Industries (ICI),** a metric that measures the combined performance of production across eight key industries in India .
  - The ICI is **released monthly** by the **Office of the Economic Adviser (OEA), DPIIT, Ministry of Commerce & Industry**.
  - The **current weightage of the eight core industries** is: Petroleum Refinery Products (28.04%), Electricity (19.85%), Steel (17.92%), Coal (10.33%), Crude Oil (8.98%), Natural Gas (6.88%), Cement (5.37%), and Fertiliser (2.63%).
  - The **base year** for the current ICI series is **2011-12.**

     Read More: Core Sector Industries.

Agroforestry's Impact to Endemic Frogs

     A recent study by the **Nature Conservation Foundation (NCF-India)** and the **Bombay Environmental Action Group (BEAG)** assessed the impact of **agroforestry** on **endemic frog** species in the northern **Western Ghats.**

- **Findings of the Study: Amphibian** diversity was **lowest in paddy fields**; abundance was least in orchards compared to **undisturbed plateaus.**
  - **Endemic species** like **CEPF burrowing frog** (*Minervarya cepfi*) and **Goan fejervarya** (*Minervarya gomantaki*) were less abundant in modified habitats.
  - Generalist species like *Minervarya syhadrensis* were more common in **paddy** fields indicating **habitat-driven shifts.**
- **Western Ghats: Western Ghats**, made up of **lateritic plateaus** (flat-topped landscapes rich in **iron and aluminum)** were formed millions of years ago through **volcanic activity.**

Note:

❍ It is a biodiversity **hotspot** and home to around **252 amphibian species**, including 226 frogs.

❍ However, globally, **40.7%** of amphibian species (8,011 species) are **threatened** due to **habitat destruction, pollution, climate change**, and diseases like **chytridiomycosis**.

Read More: Charles Darwin's Frog

Turner Prize 2024

Recently, **Jasleen Kaur**, an **Indian-origin Scottish artist**, won the prestigious **Turner Prize 2024** for her exhibition **"Alter Altar",** showcasing a blend of personal, political, and spiritual themes.

➢ **Alter Altar** featured everyday objects like a **doily-covered car** and **family photos, blending cultural symbols** to explore the Sikh concept of **Miri Piri** (**political-spiritual balance)**, offering new perspectives on **coexistence through art.**

➢ **Turner Prize:** It was established in **1984**, founded by a group called the **Patrons of New Art,** and is one of the most esteemed awards in **contemporary British art.**

❍ This year marked the **40th anniversary** of the award. Previous Indian-origin winner: **Anish Kapoor (1991).**

Read more: Booker Prize 2024

World's Largest Grain Storage Plan in Cooperative Sector

Recently, the Ministry of Cooperation highlighted the progress of **World's Largest Grain Storage Plan in the Cooperative Sector,** focusing on the construction of **godowns at Primary Agricultural Credit Societies (PACS)** across India.

➢ The plan aims to empower PACS by establishing **decentralized storage facilities, processing units, and custom hiring centres.**

❍ **Warehouses** and other infrastructure will be developed at PACS in 24 States/Union Territories, improving storage and reducing food wastage.

➢ Under the Pilot Project of the Grain Storage Plan, grain storage godowns were constructed at **11 PACS across** Maharashtra, Uttar Pradesh, Tamil Nadu, Karnataka, Gujarat, Madhya Pradesh, Uttarakhand, Assam, Telangana, Tripura, and Rajasthan.

❍ The Pilot Project has been extended, with over **500 additional PACS** identified for the construction of godowns.

➢ Subsidies and interest subvention are provided to PACS through the **Agriculture Infrastructure Fund (AIF)** and **Agricultural Marketing Infrastructure Scheme (AMI).**

➢ PACS are village level cooperative credit societies that serve as the last link in a three-tier cooperative credit structure headed by the **State Cooperative Banks (SCB)** at the state level.

Read more: Grain Storage Plan in Cooperative Sector

Google Safety Engineering Centre in Hyderabad

Hyderabad has been chosen as the site for **India's first Google Safety Engineering Centre (GSEC),** marking a significant milestone in the **country's cybersecurity** landscape.

➢ GSEC, Hyderabad **will be the first of its kind in the Asia-Pacific region,** and only the **5th globally,** following similar facilities in Dublin, Munich, and Malaga.

➢ GSEC will specialise in advanced research, **Artificial Intelligence (AI)**-driven security solutions, and skill development while addressing India's unique cybersecurity challenges.

❍ The project is expected to **bring thousands of direct and indirect employment** opportunities to Hyderabad and Telangana.

➢ Google and the Telangana state government are exploring collaborations in education, startups, and smart city initiatives.

➢ Hyderabad is already home to **five major tech companies: Alphabet (Google), Microsoft, Apple, Amazon, and Meta.**

❍ Telangana registered over 1,800 startups during 2022-23 and has supported over 550 startups through incubation.

➢ **T-Hub,** along with initiatives like **T Works (**India's largest prototyping centre in Hyderabad**)**, has catalyzed growth in **deep tech** and manufacturing startups, positioning Hyderabad as a key player in India's startup landscape.

Read more: Startup Surge: Fueling India's Growth

Note:

5.3 Magnitude Earthquake Strikes Telangana

A magnitude 5.3 **earthquake struck** the **Eturnagaram forest** area in **Telangana**, originating from a **depth of 40 km**. This quake was associated with the historically **seismic Godavari fault system**.

➢ Tremors were reported across several regions, including **Warangal, Bhadrachalam, Khammam, and Vijayawada**.

➢ **India's seismic activity** is categorized into four zones namely, **Zone II, Zone III, Zone IV**, and **Zone V**.

  ❍ **Zone V** has the **highest seismic risk**, while **Zone II has the lowest**. Telangana is in Zone II, indicating low seismic activity.

  ❍ In India, **approximately 59%** of the **landmass is susceptible** to earthquakes of varying intensities.

Read More: Types of Earthquake and Causes

ICMR's 'First in the World Challenge' for Innovation

Recently, the **Indian Council of Medical Research (ICMR)** has announced the **"First in the World Challenge"** aimed at encouraging innovative solutions to pressing health issues.

➢ This initiative seeks to foster **novel, out-of-the-box ideas** and promote the discovery and development of breakthrough **health technologies**, including **vaccines, drugs, and diagnostics**.

➢ Proposals must present bold, impactful global health research concepts, **not 'incremental innovations' or 'process innovation'**. The **high risk, high reward challenge** aims for revolutionary biomedical breakthroughs, despite potential failures.

  ❍ **Proposals** can be submitted by **individuals or teams** from single or multiple institutes, evaluated by a selection committee of experts.

➢ In a recent advancement, ICMR has formalised agreements under its **'Network for Phase 1 Clinical Trials',** which includes collaborations for developing treatments for various diseases such as **multiple myeloma** and **Zika virus**.

  ❍ This initiative aims to position India as a leader in the clinical development of pharmaceutical agents and innovative health solutions.

Note:

➤ **ICMR** is the **apex body** in India for the **formulation, coordination** and **promotion of biomedical research.**

○ It comes under the **Department of Health Research, Ministry of Health and Family Welfare (MoH&FW).**

Read more: Sansad TV Vishesh: CAR T-Cell Therapy

India Dominates Admissions in the US

Indian students, for the first time in 15 years, **make up 29.4% of international students in the US**, surpassing all other countries.

➤ **India has overtaken China**, which now has 277,398 students, as the leading country of origin for international students in the US.

○ This academic year (2023-24) saw 331,602 Indian students enrolled, marking a **23% increase** from the previous year.

➤ **Indian students lead in graduate enrollments (master's and PhD levels)** for the second consecutive year, with a 19% increase to reach 196,567 students.

○ Undergraduate enrollment also grew by 13%, totaling 36,053, while non-degree student numbers fell by 28% to 1,426.

➤ The total number of international students in the US reached 1,126,690 for the 2023-24 academic year, reflecting a 7% increase from the previous year.

➤ The primary funding sources for international students include personal and family funds (54.5%), current employment (21.8%), and US college or university funding (19.0%).

➤ **Initiative Taken by Indian Government:**

○ Education Services & Internationalization of Higher Education (ES-IHE)-Champion Services Sector Scheme (CSSS).

○ **Scheme for Promotion of Academic and Research Collaboration (SPARC)**

○ Study in India

○ **UGC** guidelines for campuses of foreign universities in India.

Read more: Scheme for Promotion of Academic and Research Collaboration (SPARC)

Groundwater Subsidence in California

Recently, a study reveals that **California's San Joaquin Valley** has been **sinking at a record pace** due to overpumping groundwater, with some areas experiencing declines of over one foot per year since 2006.

➤ The **Valley** has a history of subsidence, with significant land sinking occurring from 1925 to 1970 due to aggressive **groundwater pumping**.

➤ Researchers employed **interferometric synthetic aperture radar (InSAR)** to accurately measure land elevation changes.

○ This technology allows for frequent monitoring of subsidence across large areas, providing valuable data for addressing the issue.

➤ **Land Subsidence:**

○ According to the **NOAA**, **land subsidence** is sinking off the ground because of underground material movement.

○ **Overexploitation of underground resources,** such as water, petroleum and minerals, decreases pore pressure and increases effective stress, causing ground subsidence.

○ **Flood-managed aquifer recharge** strategies can mitigate subsidence by recharging aquifers.

➤ **Land Subsidence in India: Joshimath sinking**

Note:

drishti

Readmore; Land Subsidence in Chenab Valley

SHe-Box Portal

Recently, the **SHe-Box portal** has been launched by the **Ministry of Women and Child Development** to enhance the implementation of **the Sexual Harassment of Women at Workplace (Prevention, Prohibition, and Redressal) Act, 2013**.

➢ The portal is designed to mask the details of the **complainant, ensuring confidentiality**, **with only** the **Chairperson of the Internal Committee (IC)** or **Local Committee (LC)** having access to this information.

➢ Complaints can be filed by the aggrieved woman or a **representative on her behalf**. The process requires basic details such as **work status, name, phone number**, and **email**.

    ❍ If the workplace's IC or LC is registered on the portal, complaints are automatically forwarded for action.

➢ The portal includes a **monitoring dashboard for nodal officers** at various administrative levels to track the number of complaints filed, resolved, and pending.

    ❍ Time prescribed under the Act for inquiry is **90 days.**

     Read More: Government Constitutes Panel on Sexual Harassment

Addressing Pollution in Ashtamudi Lake

The **State Level Monitoring Committee (SLMC)** in Kerala, appointed by the **National Green Tribunal**, has recommended urgent projects to **prevent the illegal discharge of biowaste**, including faecal sludge, into **Ashtamudi Lake**.

➢ A preliminary examination indicates the presence of an **excessive algae bloom** is attributed to the discharge of biowaste and septage into the waterbody.

➢ **Ashtamudi Lake:**

    ❍ A designated **Ramsar site**, located in **Kollam district, Kerala**, is a vital part of the **backwater ecosystem** and is often referred to as the gateway to Kerala's backwaters.

    ❍ Covering 170 square kilometers, it has a unique eight-armed shape and is fed by the **Kallada River**, eventually draining into the **Arabian Sea**.

    ❍ Historically, it has been an important trade center and is known for its traditional coir industry.

➢ **Government Initiatives to Protect Wetlands:**

    ❍ Wetland (Conservation and Management) Rules, 2010

    ❍ National Wetland Decadal Change Atlas

    ❍ Centre for Wetland Conservation and Management (CWCM)

   ❍ Amrit Dharohar Scheme

RAMSAR CONVENTION

About

➤ Also known as the Convention on Wetlands.
➤ An intergovernmental treaty, adopted in 1971, in Ramsar, Iran.
   ➤ Entered into force in 1975.
➤ Wetlands that are of international importance are declared as Ramsar sites.
➤ **Largest Ramsar Site in World:** Pantanal: South America

Montreux Record

➤ Adopted in Montreux (Switzerland) in 1990.
➤ Identifies Ramsar sites that need priority conservation attention at national or international level.

Wetlands

➤ A place in which the land is covered by water – salt, fresh, or somewhere in between – either seasonally or permanently.
➤ Take many forms including rivers, marshes, bogs, mangroves, mudflats, ponds, swamps, billabongs, lagoons, lakes, and floodplains.
➤ **World Wetlands Day:** 2nd February
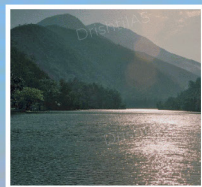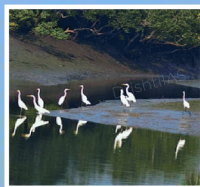
India & Ramsar Convention

➤ **Came into force in India:** 1982
➤ **Total Number of Ramsar Sites:** 85
   ➤ Chilika Lake (Odisha), Keoladeo National Park (Rajasthan), Harike Lake (Punjab), Loktak Lake (Manipur), Wular Lake (Jammu and Kashmir), etc.
➤ Related Framework in India
   ➤ The Ministry of Environment, Forest and Climate Change (MoEF&CC) has notified Wetlands (Conservation and Management) Rules, 2017 under the provisions of the Environment (Protection) Act, 1986 as regulatory framework for conservation and management of wetlands.
   ➤ The 2017 Rules decentralise wetlands management and provide for the constitution of the State Wetlands Authority or Union Territory Wetlands Authority.

Key Facts

➤ **Largest Ramsar Site:** Sunderbans, West Bengal
➤ **Smallest Ramsar Site:** Vembannur Wetland Complex, Tamil Nadu
➤ **State with the maximum number of Ramsar Sites:** Tamil Nadu (14)
➤ Wetlands in Montreux Record:
   ➤ Keoladeo National Park: Rajasthan
   ➤ Loktak Lake: Manipur

Read More: Wetlands

International Cheetah Day

Every year **4th December** is marked as **International Cheetah Day** since **2010**. The day is dedicated to **emphasizing global efforts to prevent the cheetah's extinction** and **promote its conservation.**

➢ American zoologist, **Dr. Laurie Marker,** founder of the *Cheetah Conservation Fund* in 1991, designated this day in honor of *Khayam*, a cheetah she raised.

➢ **About Cheetah:**

   ○ Cheetahs *(Acinonyx jubatus)* are part of the **felidae family** and are among the **oldest big cat species**, with their ancestry dating back over **5 million years** to the **Miocene era** (geological period from 23.03 to 5.333 million years ago).

   ○ They are the **world's fastest land mammals**, found in parts of **Africa** and **Asia.**

   ○ They have vanished from over **75% of their historic range in Africa,** with their population declining by more than 30% in the past two decades.

   ○ **Namibia** has the **world's largest population** of cheetahs.

   ○ Under the **Cheetah Reintroduction Project**, cheetahs were **translocated to India** from **Namibia and South Africa** in 2022 and 2023.

Note:

Cheetah

Common Name – Cheetah

Scientific Name – *Acinonyx jubatus*
  ◦ *Acinonyx jubatus jubatus* (African Cheetah)
  ◦ *Acinonyx jubatus venaticus* (Asiatic Cheetah)

Reintroduction of Cheetah to India:

- The "Action Plan for Introduction of Cheetah in India" was released by MoEF&CC at the **19th** meeting of the National Tiger Conservation Authority (NTCA) (January 2022).
  ◦ Such a plan was first proposed in 2009.
- In September 2022, **eight cheetahs landed in India from Namibia.**
  ◦ The 8 cheetahs have been relocated to the Kuno-Palpur National Park, Madhya Pradesh.
- The relocation of cheetahs to India from Namibia is the **world's first inter-continental large wild carnivore translocation project.**

Slightly brownish and golden **skin; thicker than the Asiatic Cheetahs**

More prominent spots and lines on the face

Found all over the African continent

IUCN Red List Status – Vulnerable

African Cheetah

Slightly smaller than the African ones.

Pale yellowish fawn coloured skin – **more fur under body, belly specifically.**

Found only in Iran; the country claims there are only 12 of them left. **Year 1952** – Asiatic Cheetah officially declared extinct from India.

IUCN Red List Status – Critically Endangered

Asiatic Cheetah

Drishti IAS

Read More: One Year of Project Cheetah

PM-ABHIM

Recently, the **Union Minister of State for Health and Family Welfare** provided updates on the **Pradhan Mantri Ayushman Bharat Health Infrastructure Mission (PM-ABHIM)** in a written reply in the **Lok Sabha.**

➤ **About:** The **PM Atmanirbhar Swasth Bharat Yojana (PMASBY),** which has now been **renamed as PM-ABHIM** is one of the largest pan-India **Centrally Sponsored Scheme (CSS)** with certain Central Sector Components.
  ❍ It was **launched in 2021** by the **Union Ministry of Health and Family Welfare** with the outlay of **Rs. 64,180 Crores** for the scheme period **(2021-22 to 2025-26).**

➤ **Objective:** It aims to strengthen India's healthcare infrastructure systems at **all levels- primary, secondary, and tertiary-** and **enhance pandemic preparedness.**
  ❍ It supplements the **National Health Mission (NHM)** by addressing **infrastructure gaps** in public health facilities.

➤ **The initiative includes** constructing 17,788 **Ayushman Arogya Mandirs** in rural areas, 11,024 urban **Health & Wellness Centres,** 3,382

Note:

drishti

Block Public Health Units, 730 District **Integrated Public Health Labs**, and 602 Critical Care Hospital Blocks in districts with over 5 lakh population.

- ➢ **Other Related Government Initiatives:**
  - ❍ **Ayushman Bharat**
  - ❍ **PM Atmanirbhar Swasth Bharat Scheme**.

  Read More: **India's Health Infrastructure**

World Wildlife Conservation Day

World Wildlife Conservation Day (4th December) serves as a reminder of India's rich biodiversity and the urgent need for action to protect its **critically endangered species.**

- ➢ **History:** Originating from a 2012 pledge by the US State Department, the day encourages global action for wildlife preservation and sustainability.
- ➢ **India's Biodiversity:** India, a **megadiverse country** with only 2.4% of the world's land area, accounts for **7-8% of all recorded species, including 91,000 species of animals.**
  - ❍ India hosts four out of 34 globally recognized biodiversity hotspots, namely the **Himalayas, Indo-Burma, Western Ghats-Sri Lanka, and Sundaland.**
- ➢ **Threats to Wildlife:** Rapid economic development and population growth in India increase demand for natural resources, **conflicting with wildlife habitats**.
  - ❍ **Poaching, trafficking, and land cultivation** lead to significant man-animal conflicts. Despite

the importance of **wildlife sanctuaries** and **Biosphere Reserves,** they lack fencing and face ongoing challenges.

- ❍ While big cats like **tigers and lions** receive attention, **birds like the Great Indian Bustard** are often overlooked despite threats.
- ❍ As of 2022, India has 73 critically endangered species, up from 47 in 2011, including 9 endemic mammal species.

WILDLIFE CONSERVATION INITIATIVES

Constitutional Provisions for Wildlife

- **42nd Amendment Act, 1976:** Forests & Protection of Wild Animals and Birds (moved from State to Concurrent List)
- **Article 48 A:** State shall endeavor to protect & improve environment and safeguard forests and wildlife of country
- **Article 51 A (g):** Fundamental duty to protect & improve natural environment including forests and Wildlife

Legal Frameworks

- Wildlife (Protection) Act, 1972
- Biological Diversity Act, 2002

Major Conservation Initiatives

- **Integrated Development of Wildlife Habitats (IDWH):**
  - ⊙ Financial assistance provided to State/UT Governments for protection and conservation of wildlife
  - ⊙ A Centrally Sponsored Scheme
- **National Wildlife Action Plan (2017-2031)**
- **Guidelines for Eco-tourism in Protected Areas**
- **Human-Wildlife Conflict Mitigation**
- **Wildlife Crime Control Bureau:** To combat wildlife-related crimes
- **Wildlife Division (MoEFCC):**
  - ⊙ Policy and law for conservation of biodiversity and Protected Area network
  - ⊙ Technical and financial support to the State/ UTs under IDHW, Central Zoo Authority and Wildlife Institute of India

Wildlife Crime Control Bureau (WCCB): Collection, collation of intelligence & its dissemination, establishment of centralized Wild Life crime databank, coordination etc.

Wildlife Crime Control:
- ⊙ Operation Save Kurma
- ⊙ Operation Thunderbird

Species-Specific Initiatives

- Protection and conservation of Greater Adjutant in Gangetic riverine tract
- Dolphin Conservation in Non-Protected Area Segment of Ganga River
- Conservation Breeding Centre for Wild water buffalo (2020)
- Recovery programme for Snow leopard (2009)
- Recovery programme for Vultures (2006)
- Project Elephant (1992)
- Project Tiger/National Tiger Conservation Authority (NTCA) (1973)

India's Collaboration with Global Wildlife Conservation Efforts

- ⊙ Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)
- ⊙ Convention on the Conservation of Migratory Species of Wild Animals (CMS)
- ⊙ Convention on Biological Diversity (CBD)
- ⊙ World Heritage Convention
- ⊙ Ramsar Convention
- ⊙ The Wildlife Trade Monitoring Network (TRAFFIC)
- ⊙ United Nations Forum on Forests (UNFF)
- ⊙ International Whaling Commission (IWC)
- ⊙ International Union for Conservation of Nature (IUCN)
- ⊙ Global Tiger Forum (GTF)

Drishti IAS

Read more: **Revamping Wildlife Conservation in India**

Indian Navy Day 2024

Recently, on **4th December, Indian Navy Day** was celebrated, honoring the **1971 Indo-Pakistan War** and **Operation Trident**, which highlighted the Indian Navy's strategic success in attacking Pakistan's Karachi port.

- ➢ **The theme** for 2024 is **"Strength and Power through Innovation and Indigenization".** The day underscores the critical role of the Indian Navy

in maintaining national security and protecting maritime interests

➢ **Indian Navy:**

○ On **1st May 1830**, the **East India Company** came under the British Crown and gained combatant status, becoming the Indian Navy. In 1858, it was renamed Her Majesty's Indian Navy.

● The Indian Navy adopted the Vedic invocation to Lord Varuna, **"Sam no Varunah,"** as its emblem motto, meaning **"Be auspicious unto us, O Varuna."**

○ On **21st October 1944**, Navy Day was celebrated for the first time.

● Since 1972, Navy Day has been celebrated on **4th December** to honor the successful **1971 naval operations** in the **Arabian Sea**, **Bay of Bengal**, and the Karachi harbor missile attack, and to pay tribute to war martyrs.

○ The **Navy has three Commands,** each under the control of a Flag Officer Commanding-in-Chief: The **Western** (HQ- Mumbai), **Eastern** (Visakhapatnam) and **Southern** Naval Command (Kochi).

Read More: Indian Navy Day

Reimposition of AFSPA in Manipur

Recently, the **Ministry of Home Affairs (MHA)** has reimposed the **Armed Forces Special Powers Act (AFSPA)** in six police station areas of Manipur due to a volatile security situation and the active involvement of insurgent groups in violence.

➢ **Manipur has been under AFSPA since 1980,** with periodic reviews reflecting the changing security landscape.

➢ **Background:**

○ On **15th August 1942,** the British issued the **Armed Forces Special Powers Ordinance** to suppress the **Quit India movement**, which led to ordinances for **"Assam disturbed areas"** in 1947.

● The **Armed Forces (Assam and Manipur) Special Powers Act, 1958,** succeeded the **Assam Disturbed Areas Act of 1955**, that was later replaced by the AFSPA.

➢ A disturbed area is one that is declared **under Section 3** of the **AFSPA.**

○ Currently, **AFSPA is in effect in parts of Nagaland, Assam, Manipur, and Arunachal Pradesh.**

○ **The Governor of State, administrator of Union Territory and MHA** can notify AFSPA enforcement and can declare any area as disturbed**.**

➢ Under the **Disturbed Areas (Special Courts) Act, 1976**, a region declared 'disturbed' remains so for a continuous three months.
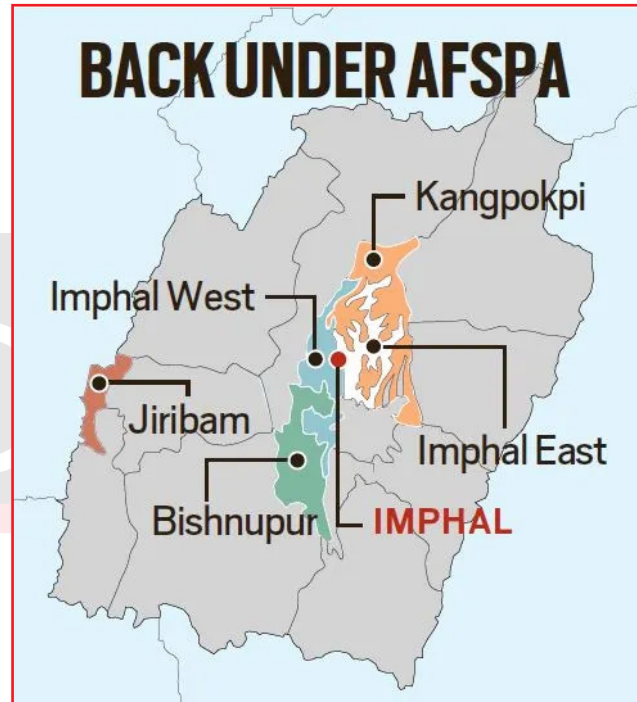
Read more: Armed Forces (Special Powers) Act, 1958 (AFSPA)

DNA Profiles and Levirate Marriages

Recently, during **DNA profiling** for an **organ transplant**, it was discovered that a father was not the biological parent of his son, revealing a case of **levirate marriage.**

➢ The exposed sensitive family information, raising concerns about **genetic privacy** and the unintended consequences of **DNA** analysis.

➢ **DNA profiling: DNA profiling** is a technique to **identify individuals** based on unique variations in their **DNA** sequences.

- While 99.9% of human DNA is identical, the 0.1% variation, especially in **Short Tandem Repeats (STRs)**, forms the basis of DNA profiling, enabling precise identification.

➤ **Levirate:** Levirate marriage is a custom where the **brother of a deceased (or physically incapacitated) man** can marry to **his brother's widow**, ensuring the continuation of the family line.

  - It has been practiced in India by several tribes, including the **Santhal** and **Munda.**

  - During **Vedic times**, **niyoga**, the practice of a younger brother or kinsman marrying the **widow of an elder brother**, was practiced but **later disallowed** during the **Gupta** and earlier periods.

➤ **Sororate** is the custom of a man marrying his wife's sister if his wife dies.

  Read More: DNA Profiling in the Justice System

SC's Concern Over Voter Limit Increase

Recently, **Chief Justice** Sanjiv Khanna emphasised that **"no voter should be turned down,"** indicating the court's commitment to ensuring accessible voting for all citizens.

➤ Earlier, **Election Commission of India (ECI)** has pushed the maximum limit per polling station from 1,200 (in rural) and 1,400 (urban) to a uniform 1,500 voters, which has raised concerns regarding potential disenfranchisement.

➤ A **petition challenged the ECI's decision**, arguing that it **would lead to overcrowded polling stations and longer wait times**.

  - A voter takes around 90 seconds to cast their vote, allowing 45 voters per hour. Over 11 hours, a polling station can accommodate only 495 voters (660 voters with maximum efficiency).

  - The petition highlights that ECI's rationale for increasing the **limit lacks fresh data** like updated **census**.

➤ **Rules for Setting up Polling Station:**

  - **Representation of People Act, 1951** mandates the Election Commission to provide for a 'sufficient number of polling stations for every constituency'.

- A polling station should be located so that voters typically travel **no more than 2 kilometers** to vote, with exceptions for sparsely populated hilly or forest areas.

➤ **ECI Programs to Increase Voter Turnouts:**

  - SVEEP

  - Voter Helpline App

  Read More: Increasing Voter Turnouts

Paryatan Mitra and Paryatan Didi

Recently, the Ministry of Tourism highlighted a national **responsible tourism** initiative called **Paryatan Mitra/Paryatan Didi** in the Lok Sabha.

➤ Paryatan Mitra/Paryatan Didi launched in September 2024, aims to provide a better tourist experience through training local stakeholders to be **tourist-friendly ambassadors and storytellers.**

  - Special emphasis on training women and youth to create innovative tourism products like heritage walks, food tours, and nature treks.

  - The initiative was piloted in **6 tourist destinations across India namely -** Orchha (Madhya Pradesh), Gandikota (Andhra Pradesh), Bodh Gaya (Bihar), Aizawl (Mizoram), Jodhpur (Rajasthan) and Sri Vijaya Puram (Andaman & Nicobar Islands).

  - 3,000 individuals trained so far with a focus on digital literacy to make local experiences visible globally. Paryatan Mitra/Paryatan Didi is expanded to 50 tourist destinations as of **World Tourism Day 2024.**

  Read more: Experiencing India's Diverse Tourism Offerings

PRAGATI

A recent study by **Oxford University** praised India's **PRAGATI (Pro-Active Governance and Timely Implementation)** platform for **transforming infrastructure development**, successfully accelerating 340 delayed projects valued at **USD 205 billion.**

➤ **About:**

  - PRAGATI is a **multi-purpose and multi-modal Information and Communication Technology**

Note:

(ICT) platform launched in **2015** under the **Digital India program**.

○ It aims at bringing **e-transparency** and **e-accountability** with **real-time presence** and **exchange among the key stakeholders**.

➢ **Key Features:**

○ It uses a **digital dashboard and video-conference reviews chaired by the PM** to **streamline decision-making**, cut **red tapeism,** and **reduce project timelines**.

○ It aimed at **addressing common man's grievances**, and simultaneously **monitoring and reviewing important programmes and projects** of the **Government of India** as well as projects flagged by **State Government**

○ The platform emphasizes **green technologies** and **sustainable practices.**

➢ **Notable Projects Accelerated by PRAGATI:**

○ **Chenab Bridge (Jammu & Kashmir)**

○ **Bogibeel Bridge (Assam)**

○ **Jal Jeevan Mission:** Increased rural tap water connections **from 17% in 2019 to 79% by 2024,** enhancing water access nationwide.

Read More: PRAGATI Meeting

World Diabetes Day 2024

Recently, **World Diabetes Day** was celebrated on **14th November** to raise awareness about diabetes, which affects millions globally. The **2024 theme, "Breaking Barriers, Bridging Gaps,"** highlights the need for inclusive healthcare and equitable access to diabetes management.

➢ **Diabetes:**

○ Diabetes is a **Non-communicable disease** (NCD) that occurs either when the **pancreas does not produce enough insulin** (a hormone that regulates blood sugar, or glucose), or when the **body cannot effectively use the insulin it produces.**

● Uncontrolled diabetes can lead to severe health complications, including **heart disease, kidney failure, and vision loss.**
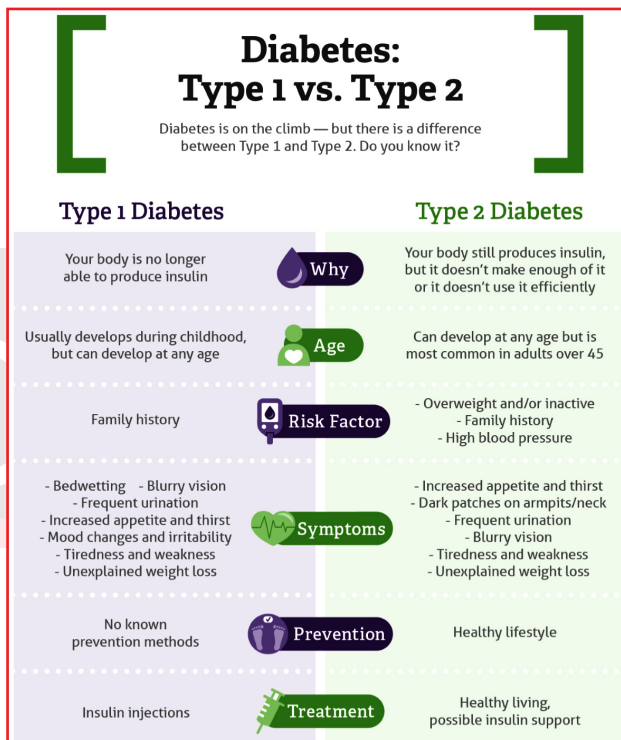
➢ **Types: Type 1 diabetes** and **Type 2 diabetes**

➢ **Statistics:**

○ India has approximately 212 million individuals with diabetes, and 133 million of them are untreated.

● In India, only 28% of women and 29% of men with diabetes receive treatment.

● The prevalence of diabetes in India has quadrupled since 1990, now affecting 11.4% of the population.

➢ **Government Initiatives in India:**

○ **National Programme for Prevention and Control of Non-Communicable Diseases (NP-NCD)**

○ **Pradhan Mantri Bhartiya Janaushadhi Pariyojana (PMBJP)**

Diabetes: Type 1 vs. Type 2

Diabetes is on the climb — but there is a difference between Type 1 and Type 2. Do you know it?

	Type 1 Diabetes		**Type 2 Diabetes**
Why	Your body is no longer able to produce insulin		Your body still produces insulin, but it doesn't make enough of it or it doesn't use it efficiently
Age	Usually develops during childhood, but can develop at any age		Can develop at any age but is most common in adults over 45
Risk Factor	Family history		- Overweight and/or inactive - Family history - High blood pressure
Symptoms	- Bedwetting - Blurry vision - Frequent urination - Increased appetite and thirst - Mood changes and irritability - Tiredness and weakness - Unexplained weight loss		- Increased appetite and thirst - Dark patches on armpits/neck - Frequent urination - Blurry vision - Tiredness and weakness - Unexplained weight loss
Prevention	No known prevention methods		Healthy lifestyle
Treatment	Insulin injections		Healthy living, possible insulin support

Readmore: Government Programme for NCD Renamed

India Adopts CubeSat Standard

Recently, India adopted the **global CubeSat standard**, marking a significant step in its ambition to enhance its footprint in the **global space economy**.

➢ **CubeSat:**

○ **CubeSat standards** define a modular satellite framework **(1 unit (U) = 10 cm³, ≤1.33 kg)** compatible with standard deployers, requiring uniform dimensions, low-outgassing materials, kill switches, and rigorous testing.

- The standard CubeSat size uses a **"one unit"** or **"1U"** measuring **10x10x10 cms** and is extendable to larger sizes like **1.5, 2, 3, 6, and even 12U**.

➢ The **Bureau of Indian Standards** (an arm of the **Department of Consumer Affairs),** helps educational and research organisations **develop CubeSats with commercial components,** offering a cost-effective satellite alternative.
  ❍ **Examples:** Indian universities, with **ISRO** support, have launched several student-built satellites. Notable examples like **JUGNU** (**IIT** Kanpur) and **KalamSAT** (Space Kidz India).

➢ **India's Space Sector:**
  ❍ India's **space economy**, currently at **USD 8 billion,** aims to reach **USD 100 billion by 2040**
  ❍ The government is opening the space sector to private companies and has earmarked a **Rs 1,000 crore venture capital fund** to stimulate growth and innovation.

➢ Under the **amended FDI policy,** 100% FDI is allowed in the space sector.

  Read More: INSPIRESAT-1 Cubesat Satellite

PENCiL Portal

The **PENCiL (Platform for Effective Enforcement for No Child Labour)** portal was launched in 2017 by the Ministry of Labour and Employment to ensure effective enforcement of the provisions of the **Child and Adolescent Labour (Prohibition and Regulation) Act, 1986**.

➢ **Five key components of the portal include:**
  ❍ **Central Government**
  ❍ **State Government**
  ❍ **District Project Societies**
  ❍ **Child Tracking System**
  ❍ **Complaint Corner**

➢ **Other Initiatives to Curb Child Labour:**
  ❍ **Child Labour:** Constitutional And Legal Provsions:
    - **Article 24** states that a child under 14 years cannot be employed to perform any hazardous work.
    - **Article 39 states that** "the health and strength of workers, men and women, and the tender age of children are not abused".
  ❍ **Right to Education Act (2009)**
  ❍ **Child Labour (Prohibition and Regulation) Act (1986)**
  ❍ **The Factories Act (1948)**
  ❍ **National Policy on Child Labour (1987)**

➢ **International Conventions that India has Ratified:**
  ❍ Minimum Age Convention, 1973
  ❍ UN Convention on the Rights of the Child (UNCRC) of 1989
  ❍ The Worst Forms of Child Labour Convention, 1999.
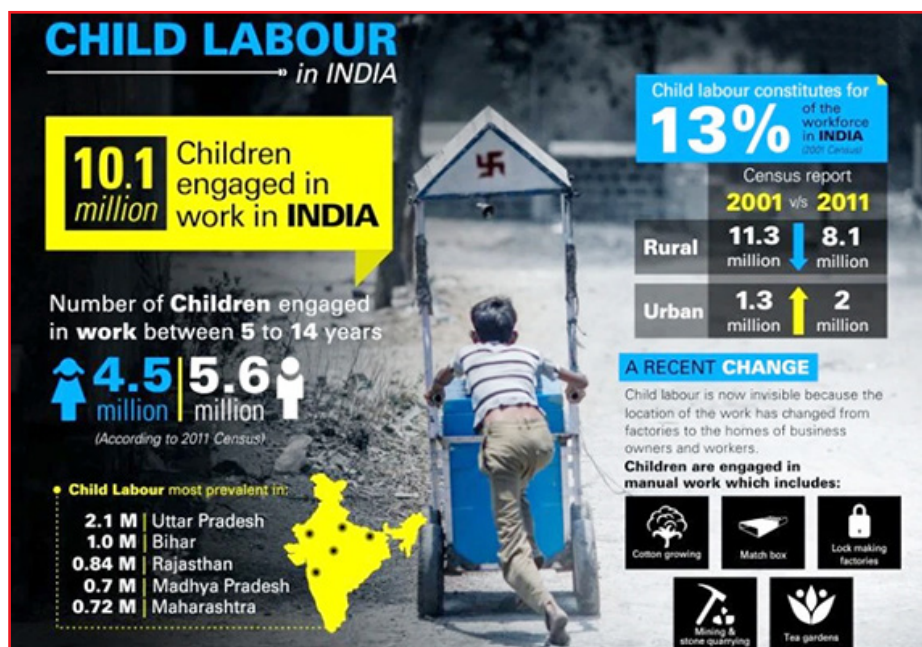
Read More: Children and Domestic Labour

Note:

World AIDS Day 2024

World AIDS Day, observed on **1st December every year**, serves as a platform to raise awareness about **HIV (Human Immunodeficiency Virus)/AIDS (Acquired Immune Deficiency Syndrome)**, reflect on the progress made, and highlight ongoing efforts to eliminate the disease.

➢ **2024 Theme:** *"Take the rights path: My health, my right!"*.

➢ **AIDS:** It is a chronic, life-threatening condition caused by HIV, which attacks the immune system, **targeting CD4 cells (**white blood cells, vital for the immune system**).** It spreads through **unprotected sex, infected blood, and sharing needles.**

○ While there is no cure, **antiretroviral therapy (ART)** can suppress the virus and help restore CD4 cells.

➢ **Global and National Progress:** The **Global AIDS Update 2023** highlights a decline in new infections, **aiming to eliminate AIDS by 2030**. In India, **over 2.5 million people live with HIV,** with a **44% reduction in new infections since 2010.**

➢ **India's Response to the HIV/AIDS:**

○ **NACP Phase-V (2021-2026):** Phase-V aims to reduce new infections and **AIDS deaths by 80%** (baseline: 2010), eliminate vertical transmission, and **combat HIV-related stigma."**

● The National AIDS and STD Control Programme (NACP), launched in 1992, has been implemented in **five phases (Phase I-IV: 1992-2017)**.

Read more: UNAIDS Global AIDS Update

Network Readiness Index 2024

Recently, India has climbed 11 positions to **rank 49th** in the **Network Readiness Index (NRI) 2024**, up from 60th in 2023. This reflects a noteworthy advancement in its **digital infrastructure** and capabilities.

➢ **About:** The **Portulans Institute** publishes the NRI, which evaluates **133 economies using 54 variables** across **four key pillars namely Technology, People, Governance, and Impact.**

➢ **India's Achievements:**

○ India's score improved from **49.93 in 2023 to 53.63 in 2024**, indicating substantial progress in various digital metrics and innovations.

Note:

- India secured **global rankings** across key sectors:
  - **1st rank globally: AI scientific publications**, AI talent concentration, ICT services exports.
  - **2nd rank globally: Fiber to the Premises (FTTH)** Internet subscriptions, mobile broadband traffic, international internet bandwidth.
  - **3rd rank globally**: Domestic market scale.
  - **4th rank globally**: Annual telecom investments.
- **Telecom Advancements:**
  - **India's telecom sector** has grown significantly, with **tele-density at 84.69%, wireless connections at 119 crore**, and internet subscribers rising from **25.1 crore to 94.4 crore.**
  - The launch of **5G services in 2022** boosted India's mobile broadband speed ranking from **118th to 15th** with the **Bharat 6G Vision** positioning India as a future telecom leader.

  Read more: Network Readiness Index 2022

E-Daakhil Portal

The **E-Daakhil portal**, launched nationwide by the **Department of Consumer Affairs**, is now operational in all states and union territories, with its latest launch in **Ladakh** in **November 2024**.

- **About:** The E-Daakhil portal was launched on **7th September 2020** by the **National Consumer Dispute Redressal Commission** under the **Consumer Protection Act 2019**, amid the COVID-19 pandemic.
- **Features:**
  - It provides an **inexpensive, speedy, and hassle-free mechanism** for filing consumer complaints online.
  - It lets consumers file complaints, pay fees, and track cases from home. Registration is simple via **OTP** on mobile phones or email addresses.
- **Usage and Impact:**
  - Over **281,024 users** have registered on the portal, with **198,725 cases filed** and **38,453 resolved**, addressing issues like **faulty product compensation** and financial grievances.
- **Integration with E-Daakhil:** The government is also developing **e-Jagriti**, a platform to enhance case filing and resolution, aiming to transform consumer justice in India.

  Read more: Consumer Protection Act, 2019

Zonal Cultural Centres

The Ministry of Culture has established **7 Zonal Cultural Centres (ZCCs)** across the country to **preserve, promote, and celebrate the diverse cultural heritage** of different regions.

- ZCCs **aim** to conserve and disseminate the diverse forms of arts and culture from different regions.
- Festivals such as **Hornbill Festival (Nagaland),** Octave, Tribal Dance Festival, Adi Bimb, Adi Sapta Pallav, Adi Lok Rang, and Adiwasi Mahotsav are organized through ZCCs.
- **Tribal Research Institutes and Tribal Research, Information, Education, Communication and Events (TRI-ECE)** work to conserve and promote tribal culture, archives, artifacts, customs, and traditions.
  - Reputed organizations and universities conduct **research studies** on **tribal culture** and pressing issues faced by the tribes.

Zonal Cultural Centres	Headquarter
North Zone Cultural Centre	Patiala
South Zone Cultural Centre	Thanjavur
South Central Zone Cultural Centre	Nagpur
West Zone Cultural Centre	Udaipur
North Central Zone Cultural Centre	Prayagraj
Eastern Zonal Cultural Centre	Kolkata
North East Zone Cultural Centre	Dimapur

Read More: Tribes in India

■■■

Note: