



drishti

**Current
Affairs
(CONSOLIDATION)**

**AUGUST 2024
(PART – II)**

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Polity and Governance

Highlights

- Gender Budget Statement 2024-25
- Ten Years of Pradhan Mantri Jan-Dhan Yojana
- Formation of 5 New Districts in Ladakh
- Supreme Court Ruling on the SC and ST Act 1989
- Speedy Grievances Redressal under CPGRAMS
- Hema Committee Report on Malayalam Film Industry
- Polygraph Test
- Lateral Entry in Civil Services
- Uniform Civil Code

Gender Budget Statement 2024-25

Why in News?

The **2024-25 Budget** emphasises women-led development, with **Gender Budget Statement (GBS)** allocations reaching **1% of Gross Domestic Product (GDP)** for the first time and pro-women funding exceeding **₹3 lakh crore**.

What are the Key Highlights of the GBS 2024-25?

- **Rise in Pro-Women Allocations:** The share of allocations to pro-women schemes has risen to **approximately 6.8% of total budget expenditure** for 2024-25, up from the historical average of **around 5%**.
- **New Reporting Structure - Inclusion of Part C:** A new section, **Part C**, now includes pro-women schemes with **up to 30% allocation** for women, such as the **PM Kisan scheme**.
 - Earlier the GBS comprised two parts – **Part A** reflecting Women Specific Schemes, such as those with **100% allocation for women such as, SAMARTHYA**, which now accounts for nearly **40% of GBS allocations**, partly due to the full inclusion of the **Pradhan Mantri Awas Yojana (PMAY)**.
 - **Part B** reflects the schemes with **30% to 99% expenditure** on women-related components, such as, **PM AJAY - Adarsh Gram Yojana**

What is Gender Budgeting?

- **Definition:** Gender budgeting is a **strategic tool used by governments** to ensure the **efficient collection**

and allocation of public resources according to the diverse needs and priorities of different genders.

- Gender budgeting **does not involve creating a separate budget exclusively for women** but focuses on addressing **women's specific needs** through existing budgetary frameworks.
- **Background:** India ratified the **Convention on the Elimination of All Forms of Discrimination Against Women (CEDAW) (1979)** in **1993**, signalling its commitment to gender equality.
 - This commitment led to the introduction of the **first Gender Budget Statement in the Indian Budget of 2005-2006**. Since then, the government has consistently released the Gender Budget Statement alongside the Union Budget.
- **Nodal Agency:** The **Ministry of Women and Child Development (MWCD)** acts as the **central nodal agency** for gender budgeting, and the Ministry of Finance has mandated the establishment of **Gender Budget Cells** in all central ministries and departments to support this process.
 - Gender budgeting falls under the **Samarthya sub-scheme of Mission Shakti**, an initiative by the **MWCD** aimed at empowering women.
- **Framework for Gender Budgeting:** It involves five steps such as:
 - **Situation Analysis:** Assess the status of different gender groups in a sector.
 - **Policy Assessment:** Evaluate if policies address identified gender issues.
 - **Budget Evaluation:** Check if budget allocations are adequate for gender-sensitive measures.
 - **Expenditure Monitoring:** Verify if funds were used as intended and assess results.

Note:



- **Impact Assessment:** Measure the impact of policies on the conditions initially analysed.
- **Significance:**
 - **Optimises Resource Allocation:** Directs funds to areas where gender gaps are significant, addressing critical needs.
 - **Supports SDGs:** Aligns with **Sustainable Development Goal 5**, contributing to global efforts for gender equality.
 - **Enhances Accountability:** Provides transparency in fund allocation and usage, ensuring commitments to **gender equality** are met.
 - **Strengthens Governance:** Integrates gender perspectives into public financial management, leading to more inclusive and effective governance.

What gender budgeting IS

- Use of fiscal policy to promote gender equality
- Outcome oriented expenditure allocation
- Tax based incentives for women and girls
- Dissection of govt. budgets to establish gender differential impacts
- Ensure that gender commitments are translated in to budgetary commitments through monitorable targets

What gender budgeting ISNT

- not a separate budget for women
- not about spending the same on men and women

What are the Challenges Related to Gender Budgeting in India?

- **Over-Reporting:** Programs like the **PM Employment Generation Programme (PMEGP)** show inflated allocations in the Gender Budget Statement (GBS).
 - For example, **₹920 crore (40% of the total allocation)** is reported without sufficient justification, and more such inflated allocations is a key challenge to gender budgeting.
- **Under-Reporting and Missing Allocations:** Critical allocations for women's needs are often understated.
 - For instance, the **National Rural Livelihoods Mission (NRLM)** is now correctly reported as fully dedicated to women and girls, but this accuracy should have been reflected earlier.
 - In another instance, **MGNREGS**, which benefits women significantly, is reported under **Part B with only 33.6% of its total budget**. This is inconsistent with the fact that women account for **59.3% of all person days worked** under the scheme, and they should have received a larger share of the total MGNREGS budget.

○ Additionally, schemes for women entrepreneurs such as **PM Vishwakarma, SVANidhi** and **Stand-Up India** are not fully reported.

- **Neglect of Key Sectors:** Important areas like **transportation, water collection, and water security**, which have a significant impact on women, are often neglected in gender budgeting.

Ten Years of Pradhan Mantri Jan-Dhan Yojana

Why in News?

The year **2024** marks the **tenth year** of the **Pradhan Mantri Jan-Dhan Yojana (PMJDY)**. PMJDY was launched ten years ago on **28th August, 2014**.

- The government aims to open more than **3 crore accounts** under the PMJDY during the current financial year **2024-25**.

What are the Achievements of Pradhan Mantri Jan-Dhan Yojana?

- **Account Expansion:** PMJDY has moved from the modest beginning with **147 million accounts** opened in **March 2015** to a mammoth **520 million accounts** in **March 2024**.
- **Deposit Mobilisation:** The deposit mobilisation was **Rs 15,600 crore** in March 2015 which increased to **Rs 2.32 trillion** in March 2024.
 - The deposit mobilisation grew at a compound average growth rate of **30%** over the last 10 years.
 - Average balance increased from **Rs 1,065** in March 2015 to **Rs 4,476** in March 2024, nearly quadrupling in the last decade.
- **Expansion of Banking Infrastructure:** Over **1.3 million banking touch points** have been mapped on the **Jan Dhan Darshak (JDD) App**.
 - A total of **601,000 villages** are mapped on the JDD app as of July 2023. Out of these, **599,468 (99.7%)** of total mapped villages are covered with **banking outlets** (bank branch, banking corner, or **Indian Post Payment Banks** within 5 km radius).
 - The **Jan Dhan Darshak App** is a mobile application that helps citizens **locate banking touchpoints** like branches, **ATMs**, **Banking Correspondents (BCs)**, IPPBs etc.

Note:



- **Rural-Urban Parity:** As per **Ministry of Finance**, PMJDY achieved a milestone of a total of **53.13 crores PMJDY accounts** out of which **55.6% (29.56 crores)** Jan-Dhan account holders are **women** and **66.6% (35.37 crores)** Jan Dhan accounts are in **rural and semi-urban areas**.
- **Boost in Digital Payments:** The total number of **UPI** financial transactions have increased from **920 million** in Financial Year (FY) 2018 to **131.2 billion** in FY 2024.
 - Similarly, total number of **RuPay card transactions** at **point of sale (PoS)** and **e-commerce** have increased from **670 million** in FY 2018 to **1.26 billion** in FY 2023.
- **Direct Benefit Transfer (DBT):** PMJDY transferred about **USD 361 billion** directly to beneficiaries from **53 central government ministries** through **312 key schemes**.
 - During **Covid-19**, the **PMJDY accounts** were instrumental in one-time ex gratia payment of **Rs 500 per month** for three months (April, May and June 2020) under **Pradhan Mantri Garib Kalyan Yojana (PMGKY)**, benefiting 206.4 million women account holders..
- **Overdraft (OD) Accounts:** As of March 2024, a total of **1,17,701 overdraft facility** have been opened with a sanctioned amount of **Rs 190 crore** to such PMJDY account holders. The limit utilisation stands at **80.5%**.
 - It has ensured access to credit from the **formal financial system** for the poorest of the poor.
- **Low Zero Balance Accounts:** Although **zero balance accounts** are permitted under PMJDY and maintenance of minimum balance is not mandatory, **only 8.4%** accounts have zero balance.
- **Praised by the World Bank:** As per the **World Bank**, India has achieved as much in just **six years** what would have taken about **five decades**.
 - The **Jan Dhan-Aadhaar-Mobile (JAM) trinity** has propelled the **financial inclusion** rate to 80% of adults from 25% in 2008, a journey shortened by up to 47 years and made possible due to **Digital Public Infrastructure (DPI)**.

What is PMJDY?

- PMJDY is a financial inclusion program that aims to ensure access to financial services, namely, **basic**

savings & deposit accounts, remittance, credit, insurance, pension in an affordable manner.

- Under the scheme, a basic savings bank deposit (BSBD) account can be opened in **any bank branch** or **Business Correspondent (Bank Mitra) outlet**, by persons not having any other account.
- **Features:**
 - **No Minimum Balance:** There is **no** requirement to maintain any **minimum balance** in PMJDY accounts.
 - **Free Debit Card:** **Free Rupay Debit card** is provided to PMJDY account holders.
 - **Accident Insurance:** **Accident Insurance Cover** of Rs.1 lakh (enhanced to Rs. 2 lakh to new PMJDY accounts opened since 2018) is available with RuPay card issued to the PMJDY account holders.
 - **OD Facility:** An **overdraft (OD) facility** up to Rs. 10,000 to eligible account holders is available.
 - **DBT Benefits:** PMJDY accounts are eligible for **DBT, Pradhan Mantri Jeevan Jyoti Bima Yojana (PMJJBY), Pradhan Mantri Suraksha Bima Yojana (PMSBY), Atal Pension Yojana (APY), Micro Units Development & Refinance Agency Bank (MUDRA) scheme**.
 - However, there is **no mandatory free** cheque book facility with a PMJDY account. Banks can issue cheque books on PMJDY accounts which **may/ may not be priced**.

What are the Challenges Associated with PMJDY?

- **Multiple Accounts:** The lure of getting a large insurance cover, accidental death benefit cover and overdraft facility prompts people to **open multiple accounts** in different banks using **different identification documents** like Aadhaar card, PAN card etc.
- **Economic Burden on Banks:** Too many accounts with persistent low balance creates financial problems for banks in managing them.
- **Money Laundering:** There are concerns that Jan Dhan accounts owned by the poor are used in **money laundering** by black money operators.
 - Jan Dhan accounts were used to launder money after **demonetisation**.

Note:

- **Declining Overdraft facility:** Providing OD facility is the **discretion** of the concerned banks. Many banks **decline** to extend the OD facility therefore defeating the purpose.
- **Misusing Authority:** Sometimes Business correspondents (BCs) **misuse the authority** and make the life of people below poverty line miserable.
 - BCs may **charge extra fees** for services that are supposed to be **free or have minimal costs**, such as opening bank accounts, processing transactions, or providing loans.
- **Bad Loans:** It is a possibility that the **overdraft facility** could end up as **bad loans** for banks as the scheme **does not spell out how the banks can collect debts**.
 - With many **debt waivers** in the past, **people may end up treating the loans as freebies**.
- **Financial and Technology Illiteracy:** There is a lack of awareness, knowledge and skills among rural people to make informed decisions about savings, borrowings, investments and expenditure.
 - A survey conducted by financial services giant Visa revealed that **65% of Indians lack financial literacy**.

Formation of 5 New Districts in Ladakh

Why in News?

Recently, the Ministry of Home Affairs Minister granted “**in-principle approval**” for the **formation of five new districts in Ladakh**, increasing the Union Territory’s total number of districts to seven.

- This move, aimed at improving **governance and development in the region**, has been widely discussed and welcomed by various stakeholders.

What are the New Districts in Ladakh and Their Purpose?

- **Significance:** Ladakh is one of **India’s largest and least populated Union Territories**. The current administrative structure, with **just two districts Leh and Kargil** has struggled to address the needs of its vast and difficult terrain.

- Due to its **large area and inaccessibility**, the existing administration faced challenges in reaching grassroots levels effectively.
- The new districts are expected to alleviate these challenges by providing more localised administrative units.
- Ladakh’s geopolitical significance and strategic location have made it a focus of development efforts, **aiming to enhance both civilian and military infrastructure**.
- **New Districts:** The **five new districts are Zaskar, Drass, Sham, Nubra, and Changthang**.
 - After **Article 370’s removal in 2019**, Ladakh became a Union Territory under the **Union Home Ministry’s direct administration**.
 - The creation of these districts aims to bring governance closer to the people, ensuring that benefits and services reach even the most remote areas.
 - Ladakh is part of the **Prime Minister’s Development Package (PMDP)**, which includes significant funding and infrastructure projects aimed at the region’s growth.
 - The creation of new districts will further support these developmental efforts.
- **Next Steps:** The Home Ministry has directed the Ladakh administration to form a **committee to assess various aspects of the new districts**, including headquarters, boundaries, structure, and staffing.
 - The committee is **required to submit a detailed report within three months**, after which the final proposal will be reviewed by the Union Home Ministry for further action.
- **Political and Public Reactions:** Political parties questioned whether the new districts would have elected **Autonomous Hill Development Councils**, like Leh and Kargil, to ensure meaningful local governance.
 - While many welcomed the move, some social activists and former politicians called for **greater political representation and functional autonomy** to make the new districts effective in local governance.

Note:



How New Districts are Created in India?

- The power to create, **alter, or abolish districts** lies with **State governments**, done either through an executive order or by passing a law in the State Assembly.
 - States believe smaller districts improve administration and governance.
- The **Centre has no role in creating or altering districts** but is **involved when a State wants to change a district's name**, requiring clearances from multiple agencies.
- **Trends in District Creation:** According to the **2011 Census**, there were **593 districts in India**. Between 2001-2011, 46 new districts were created by States.
 - As of 2024, there are currently **718 districts in the country**, partly due to the bifurcation of Andhra Pradesh into Andhra Pradesh and Telangana in 2014, with **Telangana having 33 districts and Andhra Pradesh having 13 districts** (the state now has 26 districts).

Supreme Court Ruling on the SC and ST Act 1989

Why in News?

Recently, the **Supreme Court (SC) of India** made a significant ruling regarding the **Scheduled Castes and Scheduled Tribes (Prevention of Atrocities) Act, 1989**. The Court addressed a key issue, **whether insults or intimidations** directed at individuals from **Scheduled**

Castes (SC) or Scheduled Tribes (ST) automatically constitute an offense under the Act.

- This ruling came in the context of granting **anticipatory bail** to an editor of a YouTube channel, who faced accusations under the Act.

What is the Supreme Court Ruling on Insults Under the SC/ST Act, 1989?

- **Case Background:** The case was based on allegations that the editor (YouTuber) had made derogatory remarks about a **Member of the Legislative Assembly (MLA)** who belongs to the **SC community**.
- **SC Ruling:**
 - **Scope of the Act:** The SC ruled that insults or intimidations aimed at members of SCs or STs **do not automatically constitute an offense under the SC/ST (Prevention of Atrocities) Act, 1989**.
 - For the Act to apply, the **insult or intimidation must be specifically linked to the caste identity of the victim**.
 - Under Section 3(1)(r) of the Act, the Court interpreted 'intent to humiliate' as **needing to be closely associated with the caste identity of the victim**.
 - Simply knowing the victim's SC/ST status is not sufficient; the insult must be intended to humiliate based on caste.
 - **Clarification on Section 18:** The Court clarified that Section 18 of the Act, which **traditionally bars anticipatory bail**, does not completely prevent the granting of such bail.

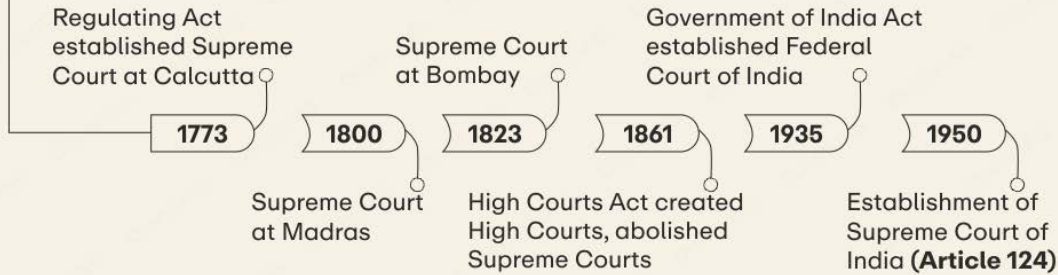
Note:

- Courts must conduct a **preliminary inquiry to determine whether the allegations meet the criteria** for an offense under the Act before applying Section 18.
- The Court granted anticipatory bail to the editor, finding no prima facie evidence that his remarks were made with the intent to humiliate the MLA due to his caste identity.
- The Court concluded that the editor's comments did not demonstrate an intent to insult based on the MLA's Scheduled Caste status.

SUPREME COURT OF INDIA

The Supreme Court of India is the apex judicial body under the Constitution of India.

HISTORY



COMPOSITION

- ④ **Strength:** 34 judges including CJI, appointed by the President
- ④ **Eligibility:** Indian Citizen; High Court judge for 5 years/Advocate for 10 years/Distinguished jurist
- ④ **Tenure:** Until age 65 (unless resigns/impeached by President)
- ④ **Salaries:** Determined by Parliament
- ④ **Impeachment:** By President on Parliament's approval with a special majority

JURISDICTION

Original, Writ, Appellate and Advisory Jurisdictions:

- ④ **Original:** Disputes between Government and States (Article 131); Constitutional Remedies (Article 32)
- ④ **Writ:** Powers to issue writs for enforcement of fundamental rights (Article 139)
- ④ **Appeals From HCs:**
 - ④ Constitutional Matters (Article 132)
 - ④ Civil Matters (Article 133)
 - ④ Criminal Matters (Article 134)
 - ④ Special Leave (Article 136; Discretionary Power)
- ④ **Advisory:** Presidential referrals (Article 143)

OTHER POWERS

Court of Record, Judicial Review, Constitutional Interpretation etc.

- ④ **Articles 129:** Powers to punish for contempt
- ④ **Article 137:** Supreme Court review of its judgments
- ④ **Article 141:** Supreme Court's decisions are binding on all courts
- ④ **Article 142:** Orders and decrees of the Supreme Court are enforceable
- ④ **Article 147:** SC is the **ultimate interpreter of the Constitution**

Acting Chief Justice, Ad Hoc Judge, & Retired Judge of SC

- **Acting Chief Justice:** Appointed by the President as needed
- **Ad Hoc Judge:** Appointed temporarily by the CJI for quorum issues
- **Retired Judge:** Chief Justice can reappoint retired judges temporarily



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Note:

What is the Scheduled Castes and Scheduled Tribes (Prevention of Atrocities) Act, 1989?

- **About:** The SCs and the STs (Prevention of Atrocities) Act, 1989, also known as the **SC/ST Act 1989**, was enacted to safeguard the members of SCs and STs from caste-based discrimination and violence.
 - Rooted in **Articles 15 and 17 of the Indian Constitution**, the Act aims to ensure the protection of these marginalised communities and to address the inadequacies of previous laws.
- **Historical Context:** The Act builds on the **Untouchability (Offences) Act, 1955**, and the **Protection of Civil Rights Act, 1955**, which were established to abolish untouchability and discrimination based on caste.
- **Rules and Implementation:** The **Central Government** is authorised to frame rules for the Act's implementation, while **State Governments and Union Territories** administer it with central assistance.
- **Key Provisions:** The Act defines specific offenses against SC/ST members, including **physical violence, harassment, and social discrimination**. It recognizes these acts as "atrocities" and prescribes stringent penalties for perpetrators.
 - The Act prescribes stringent punishments for those found guilty of committing atrocities against SCs/STs. These include **higher penalties than those provided under the Indian Penal Code**.
 - **Anticipatory Bail Provisions**, Section 18 of the SC and ST Act, 1989 excludes the application of **Section 438 of the Code of Criminal Procedure**, which provides for anticipatory bail.
 - The Act mandates the **establishment of special courts** for speedy trial and SC/ST Protection Cells at the state level, led by senior police officers, to oversee the implementation of the Act.
 - Investigations into offenses under the Act must be conducted by officers **not below the rank of Deputy Superintendent of Police (DSP)** and must be completed within a stipulated time frame.
 - The Act provides for **relief and rehabilitation of victims**, including financial compensation, legal aid, and support services.
- **Exclusions:** The Act does **not cover offences between SCs and STs; neither can invoke the Act against another**
- **Recent Amendments:**
 - **Scheduled Castes and Scheduled Tribes (Prevention of Atrocities) Amendment Act, 2015:** The 2015

Amendment aimed to strengthen the protection offered to SCs and STs by **introducing more stringent provisions and expanding the scope of the Act**.

- New categories of offenses, such as **garlanding with footwear, forcing manual scavenging, and imposing social or economic boycotts** and any form of social ostracism are now considered offenses.
- Sexual exploitation and intentional touching of SC/ST women without consent are defined as offenses. Practices like **dedicating SC/ST women as devadasis** are explicitly outlawed.
- Public servants **who neglect duties related to SCs and STs face imprisonment**.
- **Scheduled Castes and Scheduled Tribes (Prevention of Atrocities) Amendment Act, 2018:** The requirement for Senior Superintendent of Police approval before arresting an accused is removed. Immediate arrests are permitted without prior approval.

What are the Drawbacks of SC and ST Act, 1989?

- **Inadequate Resources for Special Courts:** Special Courts designated to handle atrocity cases often lack adequate resources and infrastructure.
 - Many of these courts handle cases beyond the scope of the SC/ST Act, resulting in a **backlog and slow resolution of atrocity cases**.
- **Insufficient Rehabilitation Provisions:** The Act provides limited details on the rehabilitation of victims, focusing only on **social and economic support** in a vague manner.
 - Victims face significant challenges, including **physical, psychological, and social difficulties**. There is a need for more comprehensive rehabilitation measures to support victims in becoming economically self-sufficient.
- **Lack of Awareness:** Beneficiaries, including victims and law enforcement officials, often lack awareness about the Act's provisions.
 - The Act's stringent provisions, including warrantless arrests and non-bailable offenses, have led to **allegations of misuse**. Critics argue that the broad scope of the law **can result in false accusations and harassment of individuals from non-SC/ST backgrounds**.

Note:

- **Limited Scope of Covered Crimes:** Certain crimes, such as **blackmailing** that leads to atrocities among SC/STs, are not explicitly covered under the Act.
 - The Act's definition of atrocities may not encompass all forms of abuse faced by SCs and STs, necessitating amendments to include such crimes.

Judicial Insights Regarding the SC and ST Act, 1989

- **Kanubhai M. Parmar v. State of Gujarat, 2000:** Gujarat High Court ruled that the Act does not apply to crimes committed between members of SCs or STs.
 - The rationale is that the Act is intended to protect SCs/STs from atrocities committed by individuals outside their communities.
- **Raj Mal v. Ratan Singh, 1988:** The Punjab & Haryana High Court clarified that **Special Courts, established under SC and ST Act**, are exclusively designated to try offences related to the Act.
 - The ruling emphasised that these courts should not be confused with regular magistrate or session courts.
- **Arumugam Servai v. State of Tamil Nadu, 2011:** The Supreme Court emphasised that insulting a member of an SC/ST community is an offence under SC and ST Act.
- **Subhash Kashinath Mahajan v. State of Maharashtra and Others, 2018:** The SC clarified that the exclusion of anticipatory bail provisions under Section 18 of the Act **does not constitute an absolute bar**.
 - This means that even if Section 18 bars anticipatory bail, the court can still grant it in cases where the allegations of atrocities or violations appear to be untrue.

Speedy Grievances Redressal under CPGRAMS

Why in News?

Recently, the Centre has issued revised guidelines for timely redressal of public grievances raised on the **Centralised Public Grievance Redress and Monitoring System (CPGRAMS) portal**.

- During the Prime Minister's interaction with **government secretaries**, he asked to make CPGRAMS more sensitive, accessible and meaningful to the citizens.

What are the Key Highlights of Revised Guidelines on Public Grievance Redressal?

- **Reduction in Grievance Redressal Time:** The **maximum time** for resolving public grievances has been reduced to **21 days** from the previous 30 days.
 - If more time is needed, an **interim reply** must be provided, indicating the reason and expected timeline for **resolution**.
- **Dedicated Officers and Nodal Officers:** Ministries with high grievance volumes should appoint a **nodal officer** with sufficient rank to ensure timely and quality resolution..
- **Whole of Government Approach:** Officers need to handle complaints emphasising "**whole of the government approach**".
 - This means that in **no case** grievance shall be **closed** by stating '**Does not pertain to this Ministry/ Department/ Office**' or its equivalent language.
 - Efforts shall be made to **transfer** the same to the **right authority** if the subject of the grievance does not pertain to the receiving Ministry.
- **Use of Technology and AI Tools:** Technology improvements like **integration** of grievance portals, **root cause analysis** using **AI** enabled dashboards and assessment matrix like the **Grievance Redressal Assessment Index (GRAI)** should be adopted to improve quality of grievance redressal.
 - **GRAI** offers an organization-wise **comparison** and provides valuable insights into the strengths and areas for **improvement** in the grievance redressal mechanism.
- **Escalatory Appeal Mechanism:** The appeal process in **CPGRAMS** currently requires appointing an officer of Additional or Joint Secretary rank as the **Nodal Appellate Authority (NAA)**.
 - **Sub Appellate Authorities (SAA)** may be appointed by the Ministries/Departments under the NAA for **speedy grievance redressal**.
- **Establishment of Dedicated Grievance Cells:** A dedicated **grievance cell** shall be set up in every ministry with staff having domain knowledge of **schemes/ programmes**, experience and skill for **data analytics** and **root cause analysis** of grievances.
- **Handling of Serious Complaints:** Complaints relating to **corruption**, **bribery**, **harassment** or having any other vigilance angle of citizens shall be examined

Note:

closely under the guidelines of **Department of Personnel and Training (DoPT)** and **central Vigilance Commission (CVC)**.

- **Feedback Mechanism:** If the citizen is not satisfied with the redressal, they can provide feedback on the portal and raise an appeal on it.
 - Feedback process will be integrated with **WhatsApp, chatbot** etc so that unsatisfied citizens can file an appeal through any of the above modes of feedback.
- **Capacity Building and Training:** Capacity building for grievance redressal officers will be done through state administrative training institutions.

CPGRAMS

- **CPGRAMS** is an online platform available to the citizens **24x7 to lodge their grievances** to the public authorities on any subject related to **service delivery**.
- It was launched by the **Department of Administrative Reforms & Public Grievances (DARPG)** under the **Ministry of Personnel, Public Grievances & Pensions**.
- It is a **single portal** connected to all the **Ministries/ Departments** of Government of India and States.
- **CPGRAMS** also provides an **appeal facility** to the citizens if they are not satisfied with the resolution by the Grievance Officer.
- Issues not addressed for redressal include **RTI** matters, court-related or sub-judice matters, religious matters, and grievances of government employees related to their service issues.

Hema Committee Report on Malayalam Film Industry

Why in News?

Recently, the **Hema committee report** on the **Malayalam film industry** was released. It has revealed alarming instances of **sexual abuse, gender discrimination, and inhuman treatment of women** in the Malayalam film industry.

- It was led by retired Kerala High Court judge **Justice K Hema**, with members including veteran actor **Sharada** and retired IAS officer **K B Valsala Kumari**.

What are the Key Issues

Highlighted in the Report?

- **Sexual Abuse:** It include unwanted **physical advances** even before commencing work, **rape threats**, code

names for women who would agree to **compromise** among other shameful acts.

- **Casting Couch:** The report highlights the prevalence of the casting couch, where women are often forced to **exchange sexual favours for job opportunities**.
 - Directors and producers often coerce female actors into making compromises, with those who comply being termed "**cooperating artists**."
 - Women were forced to work with abusers, resulting in significant **emotional trauma**.
 - The casting couch is a euphemism for the practice of **soliciting sexual favours** from a job applicant in exchange for **employment** in the entertainment industry, primarily **acting roles**.
- **Safety on Film Set:** Many female film workers frequently bring their **parents or close relatives** to the set due to fears of **sexual demands** and harassment.
- **Criminal Influence:** The report indicates that the Malayalam film industry is plagued by **criminal influence**.
 - Many industry men, sometimes under the influence of liquor or drugs, insistently knock the hotel doors of female artists, causing significant distress.
- **Fear of Consequences:** Although such crimes are covered by the **Indian Penal Code** and the **Sexual Harassment of Women at Workplace (Prevention, Prohibition, and Redressal) Act 2013**, women in the film industry are apprehensive about the consequences of lodging an official complaint.
 - The stigma surrounding **sexual harassment**, particularly for public figures, frequently deters actors from reporting such incidents.
- **Cyberthreats:** **Online harassment** poses a significant challenge for women in cinema, with both female and male artists facing **cyberbullying, public threats, and defamation**.
 - Social media platforms become avenues for vulgar comments, images, and videos, where female artists are especially targeted with explicit and threatening messages.
- **Inadequate Facilities:** Female artists often refrain from drinking water on set due to **inadequate toilet facilities**, especially in outdoor locations.
 - The situation worsens during **menstruation** when female artists struggle significantly with changing or disposing of their sanitary products.

Note:

- **Inhumane Working Conditions:** The junior artists lack a **minimum remuneration**. Junior artists are in some cases “treated worse than slaves” with work extending up to 19 hours. **Intermediaries misappropriate a good part of their payments**, which are not given on time.

What is the Legal Framework to Address Sexual Exploitation in the Film Industry?

- **Indian Penal Code, 1860 (now replaced as **Bharatiya Nyaya Sanhita**):** Sections 354 (assault or criminal force to woman with intent to outrage her modesty), 354A (sexual harassment) and 509 (word, gesture, or act intended to insult the modesty of a woman) deal with sexual offences.
- **Sexual Harassment of Women at Workplace (Prevention, Prohibition and Redressal) Act, 2013:** This law mandates the establishment of **Internal Complaints Committees (ICC)** in workplaces to address complaints of sexual harassment.
- **Information Technology (IT) Act, 2000: **IT Act**** addresses the publication and transmission of **obscene material** in electronic form, which can include **digital content** in films.
- **Protection of Children from Sexual Offences (POCSO) Act, 2012:** This act specifically **protects children** from sexual exploitation and abuse, including in the context of films.
- **Immoral Traffic (Prevention) Act, 1956 (ITPA):** This act aims to prevent trafficking for commercial sexual exploitation.

Casting Couch

- The term “**casting couch**” refers to a practice in the entertainment industry where individuals, usually **women**, are expected to provide **sexual favours in exchange for job opportunities**, particularly **acting roles**.
- This **unethical and exploitative practice** involves a person in a position of power, such as a **director, producer, or casting agent**, using their authority to coerce or pressure aspiring actors into **compromising situations**.
- The term highlights the **abuse of power** and the **exploitation** that can occur in the casting process within the film, television, and broader entertainment industries.

What are Key Recommendations of the Report?

- **Internal Complaints Committee (ICC):** It proposed the mandatory establishment of the **Internal Complaints Committee (ICC)** under the **Sexual Harassment of Women at Workplace (Prevention, Prohibition, and Redressal) Act, 2013**.
 - It should include members from **Film Employees Federation of Kerala (FEFKA)** and **Association of Malayalam Movie Artists (AMMA)**.
- **Independent Tribunal Proposal:** Some members advocated for an **independent tribunal** to handle cases of **harassment** and **discrimination** in the **cinema industry**.
 - The report also advocated **in-camera proceedings** at the tribunal to ensure complete **privacy**, with names being withheld from media reports.
- **Written Contracts:** Signing **written contracts** to protect the interest of all those who work in cinema should be made **mandatory** for all categories of employees including coordinators of junior artists.
- **Gender Awareness Training Program:** It should be made mandatory that all cast and crew attend a basic **gender awareness training program** before starting the production work.
 - Training materials could be made in both **Malayalam** and **English** and can be made available online.
- **Women in Producer Role:** There should be adequate and timely budgetary support to incentivize movies that are predicated on **gender justice** both thematically and in the production process.
 - A **single-window system** should be established to provide **loans at nominal interest rates** for movies produced by **women** (not by proxies of men) and to **streamline permissions** for shooting. This will simplify production and encourage more women to enter the film industry.

Polygraph Test

Why in News?

Recently, the **Central Bureau of Investigation (CBI)** has been authorised to perform a **polygraph test** on the key suspect in the rape and murder case of a postgraduate doctor at Kolkata Medical College.

Note:

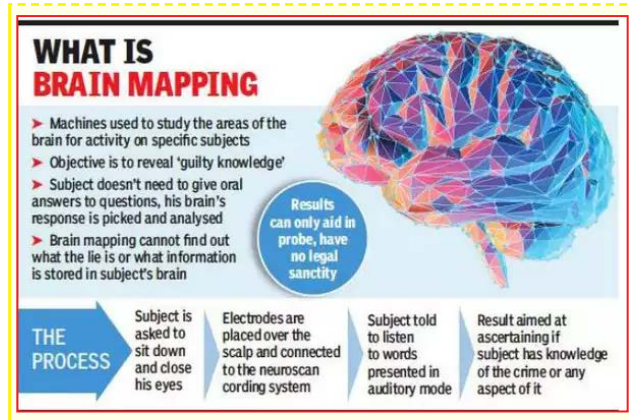
- The polygraph test will help investigators check the consistency of the suspect's statements and identify potential deception.

What is a Polygraph Test?

- **About:**
 - **Polygraph** or **Lie Detector Test** is a procedure that measures and records several **physiological indicators** such as **blood pressure, pulse, respiration, and skin conductivity** while a person is asked and answers a series of questions.
 - This test is based on the **assumption that physiological responses** that are triggered when a person is **lying** are **different** from what they would be otherwise.
 - A **numerical value** is assigned to each response to conclude whether the person is telling the truth, is deceiving, or is uncertain.
 - A test similar to polygraph was **first done in the 19th century** by the **Italian criminologist Cesare Lombroso**, who used a machine to measure changes in the **blood pressure** of criminal suspects during interrogation.
- **Different From Narco-Analysis Test:**
 - A narco analysis test involves injecting **sodium pentothal** into the accused, inducing a **hypnotic or sedated state** that supposedly neutralises their imagination.
 - In this state, the individual is considered **incapable of lying** and is expected to reveal truthful information.
- **Accuracy of Tests:**
 - Polygraph and narco tests are **not scientifically proven to be 100% accurate** and remain controversial in the medical field.
 - Despite this, investigative agencies have recently used these tests as a "**softer alternative**" to torture to extract the truth from suspects.

Note:

- **Brain Mapping:** It is a test that uses imaging to study the **brain's anatomy and function**. It can help doctors determine if brain function is normal, and identify areas of the brain that control movement, speech, and vision.



What is the Legal Admissibility of a Polygraph Test?

- **Violation of Article 20(3): Polygraph, narco-analysis, and brain mapping tests** conducted **without the accused's consent** violate **Article 20(3)** of the Indian Constitution, which protects the **right against self-incrimination**.
 - This article ensures that **no person accused of an offence is compelled** to be a witness against themselves.
- **Necessity of Consent:** As these tests involve the accused providing potentially **self-incriminating information**, obtaining their **consent is mandatory** to avoid breaching constitutional rights.
- **Judicial and Human Rights Concerns:** The use of narco-analysis and similar tests raises **significant concerns about judicial integrity and human rights**, particularly regarding individual rights and freedoms.
- **Criticism from Courts:** Courts have often criticised these tests as they can constitute mental torture, **violating the right to life and privacy** guaranteed under **Article 21** of the Constitution.

What are the Landmark Judgments Related to Polygraph Tests?

- **Selvi v. State of Karnataka & Anr Case 2010:** The SC ruled on the **legality and admissibility of narco tests** establishing that the **involuntary administration of narco or lie detector tests** constitutes an **intrusion into an individual's "mental privacy"**.
 - The apex court held that narco tests **violate the fundamental right against self-incrimination under Article 20(3)** of the Constitution, which states

Note:

that no person accused of any offence shall be compelled to be a witness against himself.

- **Self-incrimination** is a legal principle under which a person cannot be compelled to provide information or testify against themselves in a criminal case.
- **D.K. Basu v. State of West Bengal case, 1997:** The SC ruled that **involuntary administration of the polygraph and narco test** will amount to **cruel, inhuman, and degrading treatment** in the context of **Article 21** or the **Right to Life and Liberty**.
- **State of Bombay v. Kathi Kalu Oghad, 1961,** the Supreme Court of India ruled that the **right against self-incrimination under Article 20(3)** of the Constitution **does not extend** to the **physical evidence** (like fingerprints, handwriting, blood, and voice samples), **voluntarily given information** and **identification procedures** (like line-ups and photo arrays).
- **Other Observations of the SC:** Narco tests are **not reliable or conclusive** as evidence, as they are based on assumptions and probabilities.
 - Any information or material that is subsequently discovered with the help of voluntarily administered test results can be admitted, under **Section 27** of the Evidence Act, 1872 (now **Bharatiya Sakshya Adhinyam**).
 - Section 27 of the Indian Evidence Act, 1872, allows the **admissibility of information provided by an accused in police custody** if it leads to the discovery of a fact.
 - Only the portion of the information that **directly relates to the discovered fact** can be proved, regardless of whether it amounts to a confession.
 - The court also emphasised that the '**Guidelines for the Administration of Polygraph Test on an Accused**', published by the **National Human Rights Commission (NHRC)** in 2000, **must be strictly followed**.

NHRC Guidelines of Polygraph Test

- **Voluntary Consent:** The accused must willingly agree to undergo the polygraph test, with the option to refuse.
- **Informed Consent:** Before agreeing, the accused should be fully informed by the police and their lawyer about the test's purpose, procedure, and legal consequences.

- **Recorded Consent:** The accused's consent must be **formally recorded in the presence of a Judicial Magistrate**.
- **Documentation:** During court proceedings, the **police must provide evidence that the accused voluntarily agreed to the test**, which is documented by the lawyer and presented to the judge.
- **Clarification of Statements:** The accused should be made aware that any statements made during the **polygraph test are treated as statements to the police, not as confessions**.
- **Judicial Consideration:** Judges consider various factors, such as the **length of the accused's detention and the nature of the interrogation**, when evaluating the results of a polygraph test.

Lateral Entry in Civil Services

Why in News?

Recently, the **Union Public Service Commission (UPSC)** issued a notification for recruiting 45 joint secretaries, directors and deputy secretaries as specialists in government departments through **lateral entry scheme**.

- Due to opposition from several groups who argued that the scheme compromised the reservation rights of **Other Backward Classes (OBCs), SCs, and STs**, the government decided to withdraw its plan to proceed with recruitment through the Lateral Entry Scheme

What is a Lateral Entry Scheme?

- **About:**
 - Lateral entry refers to the process of **appointing individuals from outside the government** directly to **mid-level and senior** positions.
 - It aims to bring in **domain-specific expertise** and **fresh perspectives** to enhance governance.
 - These '**lateral entrants**' are appointed on contracts for **3 years**, which can be extended to a **maximum of 5 years**.
- **Origin and Implementation:**
 - The concept of lateral entry was first introduced under the 2004-09 and was strongly endorsed by the **Second Administrative Reforms Commission (ARC)** established in **2005**.
 - It was later recommended by **NITI Aayog** in **2017** to bring in expertise and fresh perspectives.

Note:

- In 2017, NITI Aayog, in its 3-year Action Agenda, and the Sectoral Group of Secretaries (SGoS) on Governance recommended the induction of **personnel at middle and senior management levels** in the central government.
- **Eligibility:**
 - Individuals with **domain expertise and a proven track record** in relevant fields from the private sector, state governments, autonomous bodies, or public sector undertakings **are eligible to apply for these positions.**
 - The selection criteria typically **emphasise professional accomplishment** and subject matter expertise.
- **Reservation in Lateral Entry:**
 - Lateral entries have been **excluded from the reservation system** because of the “**13-point roster**” policy.
 - The “13-point roster” policy establishes a **method for determining a candidate’s placement** on a list of job openings by calculating their group’s quota percentage (SC, ST, OBC, and **EWS**) as a fraction of one hundred.
 - Since each lateral entry position is considered a “**Single Post,**” the **reservation system does not apply**, allowing these appointments to be made without following reservation guidelines.
 - In the current round of recruitment, **45 openings have been advertised separately for each department.** If considered as a single group, reservations would apply with specific allocations for SC, ST, OBC, and EWS candidates.
 - However, since the **vacancies are treated as individual posts**, they bypass the reservation policy, effectively excluding reserved categories from these positions.
- **Number of Recruitments So Far:**
 - Since the lateral recruitment process began in 2018, **a total of 63 individuals have been appointed** to various Ministries/Departments.
 - As of August 2023, **57** of these lateral entrants currently hold positions in the central government.

ARC Recommendations on Lateral Entry Scheme

- **First Administrative Reforms Commission (ARC) (1966):** It was established under chairmanship of Morarji Desai which focused on **professionalising and reforming training and personnel management within the civil services.**
 - While it **did not specifically** advocate for lateral entry, it **laid the groundwork** for addressing the **need for specialised skills in the bureaucracy.**
- **Second Administrative Reforms Commission (ARC) (2005):** It recommended reforms to improve the Indian administrative system’s effectiveness, transparency, and citizen-friendliness.
 - In its **10th Report**, the ARC **emphasized the need for lateral entry into higher government positions** to bring in specialised knowledge and skills not always available within traditional civil services.
 - It **proposed recruiting professionals from the private sector**, academia, and public sector undertakings, creating a **talent pool for short-term** or contractual roles.
 - The **ARC also recommended a transparent, merit-based selection process** and stressed integrating lateral entrants while preserving civil service integrity.

Ensuring Social Justice in the Bureaucracy by Age-Based Recruitment to Fixed Tenure System

- Currently, SC/ST officers make up only **4%** and **4.9%** of top bureaucratic positions (Joint secretaries, directors and deputy secretaries etc).
- There has been a proposal of **replacing age-based retirement** with a **fixed tenure system**, allowing all officers **equal chances to reach senior roles.**
 - Fixed tenure system means having a **fixed tenure system of 35 years** for all civil servants (**Unreserved, SC,ST, OBCs**), **regardless of entry age**, to ensure equal opportunities and **focus on merit rather than age.**
 - The current age-based eligibility criteria for the civil services examination **disadvantages SC/ST and PwBD candidates**, as they are **unable to reach top positions** due to **late entry and mandatory retirement before** reaching the top position.

Note:

➤ Arguments in Favour:

- **Increased Representation:** Fixed tenure could help SC/ST and OBC officers reach senior positions, enhancing their representation.
- **Focus on Merit:** Prioritising competence over age at entry ensures skilled individuals can advance.
- **Promoting Social Justice:** Aligns with goals for a **more inclusive bureaucracy**.
- **Feasibility:** Extended working years are **feasible with rising life expectancy** and regular fitness checks.

➤ Arguments Against:

- **Age Concerns:** Extending tenure could lead to **officers serving into their seventies**, potentially requiring age limits to be lowered to **ensure retirement around 67**.
- **Resistance to Change:** The traditional **seniority-based system is deeply entrenched**, and changes could face strong opposition.
- **Political Issues:** Fixed tenure might be seen as **undermining merit-based promotions and could spark debates over age, experience, and performance**.

What are the Arguments in Favour of Lateral Entry Scheme in Civil Services?

- **Specialised Skill and Expertise:** Lateral entry allows the government to **recruit specialists with expertise** in areas like technology, management, and finance, **addressing gaps in knowledge** that generalist civil servants may not have as governance becomes more complex.
- **Innovation and Reforms:** Lateral recruits can bring **valuable experiences from the private sector, NGOs, or other organisations**, helping to **reform and enhance administrative processes** and governance.
- **Filling The Gap:** According to Department of Personnel and Training data, there is a **shortage of about 1500 IAS officers**. Lateral entry can help bridge this deficit.
- **Bringing a Change in Work Culture:** It will help in bringing **change work culture in the Government sector** which is criticised for **red-tapism, rule-book bureaucracy, and status-quoist**.
- **Participatory Governance:** Presently, governance is becoming a **more participatory and multi-actor endeavour** and lateral entry provides stakeholders such as the private sector and non-profits an **opportunity to participate in the governance process**.

What are the Criticisms of Lateral Entry Scheme in Civil Services?

- **Short Tenure:** The Central government has set the tenure for joint secretaries at **3 years**, which is **insufficient for newcomers to fully acclimate to the complex governance systems** and make meaningful contributions.
- **Maintaining Objectivity and Neutrality:** Bringing in individuals from diverse backgrounds can **challenge objectivity and neutrality due to potential conflicts of interest and impartiality concerns**, especially if recruits have prior ties to private companies or interest groups.
- **Impact on Permanent Officers' Morale:** The increasing number of lateral entrants could create a **divide between them and permanent officers**, potentially harming the morale of career bureaucrats.
- **Potential Dilution of Merit-Based Recruitment:** Lateral entry might **dilute the merit-based recruitment system** that underpins the civil services. If not conducted transparently, it could lead to perceptions of **favouritism or nepotism** in the selection process.
- **Outsider Syndrome:** Traditional bureaucrats **may resist lateral entrants due to concerns about hierarchy and disruption**, often treating them as outsiders and displaying hostility towards their inclusion.
- **Experience Requirement for Senior Positions:** In the permanent system, IAS officers are promoted to the joint secretary level **after 17 years of service**, typically around the age of 45, and remain at that level for ten years.
 - If similar experience requirements **are applied to lateral entrants, it may deter the best candidates from joining**, as they often reach the peak of their professions in the private sector at that age.

Uniform Civil Code

Why in News?

In his speech on the occasion of 78th Independence Day, the Prime Minister called for a **uniform civil code (UCC)**, framing it as a **secular civil code**.

What is the Uniform Civil Code?

- **About:**
 - **The Uniform Civil Code (UCC)** is outlined in **Article 44** of the Constitution as part of the **Directive Principles of State Policy**, which states that the

Note:

government should strive to establish a uniform civil code for all citizens across India.

- However, its implementation is left to the discretion of the government.
- Goa is the only state in India where a UCC is in place, following the **Portuguese Civil Code of 1867**.
- **Historical Context:**
 - While the **British established uniform criminal laws in India**, they avoided standardising family laws due to their sensitive nature.
 - During the debates the **Constituent Assembly** discussed the UCC and Muslim members raised concerns about its impact on community personal laws, proposing safeguards for religious practices.
 - On other hand supporters like **K.M. Munshi, Alladi Krishnaswami, and B.R. Ambedkar** argued for the UCC to promote equality.
- **Supreme Court of India's Stance on UCC:**
 - **Mohd. Ahmed Khan vs Shah Bano Begum Case, 1985:** The Court noted with regret that "**Article 44 has remained a dead letter**" and advocated for its implementation.
 - **Sarla Mudgal v. Union of India, 1995** and **John Vallamattom v. Union of India, 2003:** The Court reiterated the need for implementing the UCC.
 - **Shayara Bano v. Union of India, 2017:** The Supreme Court ruled that the practice of **triple talaq was unconstitutional** and violated the dignity and equality of Muslim women.
 - It also suggested that Parliament should pass legislation to regulate Muslim marriages and divorces.
 - **Jose Paulo Coutinho v. Maria Luiza Valentina Pereira Case, 2019:** The Court praised Goa as a "shining example" where "the uniform civil code is applicable to all, regardless of religion except while protecting certain limited rights" and called for its implementation across India.
- **Law Commission's Stance:**
 - In 2018, the **21st Law Commission**, led by former Supreme Court judge Justice Balbir Singh Chauhan, released a consultation paper on "Reforms of family law," stating that the "**formulation of a Uniform Civil Code is neither necessary nor desirable at this stage.**"

What are the Significances of the UCC?

- **National Integration and Secularism:**
 - **Promotes Unity:** The UCC would foster **national integration and secularism** by creating a shared identity and sense of belonging among all citizens.
 - **Reduces Conflicts:** It would decrease **communal and sectarian conflicts** arising from different personal laws.
 - **Upholds Constitutional Values:** The UCC would reinforce the principles of equality, fraternity, and dignity for all individuals.
- **Gender Justice and Equality:**
 - **Ensures Equality:** The UCC would address **gender discrimination and oppression** by providing equal rights and status to women in marriage, divorce, inheritance, adoption, and maintenance.
 - It would **empower women** to challenge patriarchal and regressive practices that violate their fundamental rights.
- **Simplification and Rationalisation of the Legal System:**
 - **Simplifies Laws:** The UCC would streamline and rationalise the legal system by **eliminating the complexities and contradictions** of multiple personal laws.
 - **Harmonizes Legal Frameworks:** It would reconcile **civil and criminal laws** by addressing anomalies and loopholes arising from diverse personal laws.
 - **Enhances Accessibility:** The UCC would make the legal system more accessible and understandable for the general public.
- **Modernisation and Reform of Outdated Practices:**
 - **Updates Practices:** The UCC would modernise and **reform outdated and regressive practices** in some personal laws.
 - **Eliminates Harmful Practices:** It would remove **practices contrary to human rights and constitutional values**, such as triple talaq, polygamy, and child marriage.


What are Challenges in Implementing the UCC?

- **Diverse Personal Laws:** India's numerous communities follow distinct personal laws for **marriage, divorce, inheritance, and succession**. Harmonising these diverse practices into a single code poses a significant challenge.
- **Religious Sensitivities:** Different religious communities have deeply rooted traditions and laws.

Note:

- They also argue that the **UCC** would infringe upon their constitutional rights under **Article 25**, which guarantees freedom of conscience and the right to freely profess, practice, and propagate religion.
- **Political and Social Opposition:** The UCC is often seen through a political lens. Parties and leaders may resist or support the UCC based on electoral considerations, leading to inconsistent policies and delays.
- **Social Concerns:** There is a fear that the UCC could disrupt traditional practices and create social unrest.
- **Legislative and Legal Hurdles:** Crafting a comprehensive UCC requires **extensive legislative work** and **detailed legal drafting** along with **administrative capacities** to address the nuances of various personal laws.

Preamble to the Indian Constitution



PREAMBLE TO THE INDIAN CONSTITUTION

Background

- **Adopted:** 26 November, 1949
- **Inspiration behind Ideals:** Jawaharlal Nehru's **Objectives Resolution**

Preamble Gives the Idea of

- **Source** of the Constitution, **Nature** of Indian State, **Statement** of its **objectives** and **Date** of its adoption

Related Cases

- **Berubari Union Case, 1960:**
 - ◆ Preamble is key to open the mind of the makers but **not to be considered as part of the Constitution**
- **Kesavananda Bharati Case, 1973:**
 - ◆ Preamble **is part of the Constitution** and hence, could be amended under **Article 368** (but its basic structure not to be altered)
 - ◆ Preamble is not the supreme power or source of any restriction but important in interpretation of statutes
- **Union Government vs LIC of India, 1995:**
 - ◆ Reiterated that Preamble is an integral part of the Constitution but **not legally enforceable** before the court

What does Preamble Declare?

- The **source of authority** of the Constitution **lies with the people** of India
- India as a **sovereign, socialist, secular** and **democratic republic** country
- **Objectives:**
 - ◆ Secure justice, liberty and equality to all citizens
 - ◆ Promote fraternity to maintain unity and integrity of the nation

42nd Amendment (1976) added "Socialist," "Secular," and "Integrity" to the Preamble.

THE CONSTITUTION OF INDIA

PREAMBLE

WE, THE PEOPLE OF INDIA, having solemnly resolved to constitute India into a '**SOVEREIGN SOCIALIST SECULAR DEMOCRATIC REPUBLIC**' and to secure to all its citizens :

JUSTICE, social, economic and political;

LIBERTY of thought, expression, belief, faith and worship;

EQUALITY of status and of opportunity and to promote among them all;

FRATERNITY assuring the dignity of the individual and the 'unity and integrity of the Nation];

IN OUR CONSTITUENT ASSEMBLY this twenty-sixth day of November, 1949 do **HEREBY ADOPT, ENACT AND GIVE TO OURSELVES THIS CONSTITUTION.**

1. Subs. by the Constitution (Forty-second Amendment) Act, 1976, Sec.2, for 'Sovereign Democratic Republic' (w.e.f. 3.1.1977)

2. Subs. by the Constitution (Forty-second Amendment) Act, 1976, Sec.2, for 'Unity of the Nation' (w.e.f. 3.1.1977)

Economic Scenario

Highlights

- RBI's Five Strategic Priorities for India's Financial Future
- Lakhpati Didi
- NITI Aayog's Strategies for Growth in Edible Oils
- Cryptocurrency and Blockchain
- Shortage of Natural Rubber in India
- Discount on New Vehicles Against Scrapping Certificates
- RBI to Launch Unified Lending Interface
- High Attrition Rates in Regional Rural Banks
- 165th Anniversary of Income Tax Day
- Unified Pension Scheme
- Cross-Border Payments
- Revamping Crop Data Collection by E-technology
- CBDT to Overhaul Income Tax Act 1961
- Bharatmala Pariyojana
- Jan Poshan Kendras
- Key Reforms Needed for India's Economic Growth
- Fundamental Principles and Rights at Work (FPRW) Project
- Centre's Assistance to States for Land Reforms
- State of Poultry Industry in India
- Possible Decline in Coffee Production

RBI's Five Strategic Priorities for India's Financial Future

Why in News?

At the **Global Fintech Festival (GFF) 2024** in Mumbai, **Reserve Bank of India (RBI) Governor** Shaktikanta Das outlined **five strategic priorities for India's financial future**, underscoring the country's ambitious plans to establish itself as a leading global economy.

What are the Five Priorities for India's Financial Future?

- **Financial Inclusion:** RBI Governor highlighted the significant progress in financial inclusion, with the **RBI's Financial Inclusion Index** rising from **53.9 in March 2021 to 64.2 in March 2024**.
 - The **Pradhan Mantri Jan Dhan Yojana (PMJDY)**, a flagship financial inclusion initiative, has been central to this progress, with over **530 million bank accounts opened**, 66% in rural and semi-urban areas, and **55% benefiting women**.
 - Looking ahead, the RBI Governor stressed the importance of leveraging **technology over the next two decades to address the financial needs of underserved regions**, highlighting the crucial role of fintech companies in bridging gaps and ensuring seamless access to financial services.
- **Enhancing Digital Public Infrastructure (DPI):** The second priority outlined was the enhancement of **DPI**, which he identified as a key driver in integrating advanced technologies into India's financial system.
 - Highlighted the **RBI's pilot project on the Unique Lending Interface (ULI)**, which is set to be launched on a full scale soon. This initiative, combined with the existing **JAM (Jan Dhan-Aadhaar-Mobile) trinity** and **Unified Payments Interface (UPI)**, represents a new era in India's financial journey.
 - DPI has the potential to revolutionise financial services in India, bringing greater financial inclusion and efficiency across the country.
- **Strengthening Cybersecurity:** In an increasingly digital world, **cybersecurity is a critical pillar in safeguarding India's financial ecosystem**.
 - Real-time monitoring and regulatory compliance are essential, especially with the recently enacted **Digital Personal Data Protection Act 2023**, which empowers individuals with greater control over their data, thereby enhancing trust in digital financial services.
 - Banks and fintech firms, particularly **Non-Banking Finance Companies (NBFCs)**, are expected to adopt a **customer-centric approach, ensuring transparency in financial products** and fair lending practices.
 - There is a need for continuous vigilance against cyber threats and the importance of promoting

Note:

cybersecurity awareness to build a secure digital economy.

- **Promoting Sustainable Finance:** The RBI Governor highlighted **RBI's initiatives like sovereign green bonds and green deposits** as steps towards promoting sustainability in the financial sector, while noting the need for further expansion of the green bond market.
 - Emphasised the transformative role of technology, particularly **Artificial Intelligence(AI) and big data**, in assessing environmental risks and accelerating the transition to sustainable finance.
 - Fintech firms are expected to lead this transition, positioning India as a sustainable finance leader.
- **Reinforcing Financial Infrastructure:** RBI Governor underscored the need to strengthen India's financial infrastructure, with a focus on **cross-border payments**, and highlighted the RBI's efforts to make UPI and RuPay global.
 - He cautioned about the careful adoption of AI, and emphasised the importance of innovation in reinforcing India's financial infrastructure, including the potential of the **Internet of Things**.

What is the Global Fintech Festival 2024?

- **About:** The GFF 2024 stands as one of the largest and most influential fintech conferences globally. Organised annually by the **Payments Council of India (PCI)**, the **National Payments Corporation of India (NPCI)**, and the **Fintech Convergence Council (FCC)**.
 - Central to GFF is the **Global Fintech Awards (GFA)**, which recognizes exceptional fintech initiatives and contributions from around the world, celebrating innovation and excellence in the industry.
- **Fifth Edition GFF 2024 Theme: "Blueprint for the Next Decade of Finance: Responsible AI | Inclusive | Resilient".**
 - The GFF 2024 in Mumbai showcased India's fintech growth, with over 11,000 startups and USD 6 billion in funding in the last three years.

What is the Current State of India's Financial Services Industry?

- **About:** India's financial services industry is characterised by rapid expansion and diversification. The sector

includes **commercial banks, insurance companies, NBFCs, cooperatives, pension funds, mutual funds, and smaller financial entities.**

- Recent developments have seen the introduction of new entities such as **payment banks**, although **commercial banks remain dominant, holding over 64% of the total assets.**
- **Developments:**
 - **Unified Payments Interface (UPI):** Recorded 12.10 billion transactions worth Rs 18.28 lakh crore in February 2024.
 - **Immediate Payment Service (IMPS):** Recorded 534.6 million transactions worth Rs 5.58 trillion in February 2024.
- **Government Initiatives:**
 - **Credit Guarantee Scheme:** Revamped in 2023 with an inflow of Rs 9,000 crore to **support MSMEs with collateral-free loans.**
 - **International Payments: NPCI International Payments (NIPL)** partnered with Liquid Group to enable **QR-based UPI payments in 10 countries (Malaysia, Thailand, Philippines, Vietnam, Singapore, Cambodia, South Korea, Japan, Taiwan, and Hong Kong).**
 - **e-RUPI:** Launched in August 2021 as a digital payment solution via QR code or SMS string, facilitating one-time payments.
 - **Financial Inclusion:** Programmes such as **Deendayal Antyodaya Yojana - National Rural Livelihoods Mission (DAY-NRLM), Direct Benefit Transfer, Atal Pension Yojana** among others have accelerated the digital revolution and brought more citizens, especially in rural areas, within the ambit of digital financial services.
 - **Inter-Ministerial Steering Committee (IMSC):** Established 2018, under the **Department of Economic Affairs (DEA)** to address fintech development issues and enhance regulatory flexibility.
 - **Joint Working Groups (JWGs):** Foster fintech collaboration by facilitating faster remittances and exploring connectivity between India's UPI and international payment platforms.

Note:

➤ Future Prospects:

- **Private Wealth Management:** Expected to grow significantly, with 16.57 lakh **High Net-Worth Individuals (HNWIs)** anticipated by 2027, making India the fourth-largest private wealth market globally by 2028.
- **Insurance Market:** Projected to reach USD 250 billion by 2025, with potential for USD 78 billion in additional life insurance premiums from 2020-30.
- **Mutual Funds:** The **Association of Mutual Funds in India (AMFI)** aims for a nearly fivefold increase in AUM to USD 1.15 trillion and a threefold increase in investor accounts by 2025.
- **Stock Market Growth:** India's stock market regained its position as the **fourth-largest global equity market, surpassing Hong Kong** with a market value exceeding USD 5 trillion.

What are the Growth Opportunities of India's Financial Services Sector?

- **Growing Demand:** The investment corpus in India's insurance sector is projected to **rise to USD 1 trillion by 2025**, reflecting strong growth prospects.
 - India is the **2nd largest Insurtech market in Asia-Pacific** and is expected to grow by 15 times to reach USD 88.4 Bn by 2030. India is poised to emerge as **one of the fastest-growing insurance markets in the world**.
 - India is the **fifth largest life insurance market** in the world's emerging insurance markets, growing at a rate of 32-34% each year.
- **Innovation:** India is broadening the reach of its financial services through various channels, including start-ups like **PhonePe**, which enhance accessibility and customer engagement.
 - Emerging **digital gold investment** options are gaining traction, offering new avenues for investors.
 - India's financial services sector is expanding with several key government initiatives leveraging technology. The PMJDY provides universal banking access and financial services, while the **Pradhan Mantri Gramin Digital Saksharta Abhiyaan (PMGDISHA)** boosts digital literacy in rural areas.

- **Digital India** enhances digital infrastructure and services, and the **Aadhaar Enabled Payment System (AePS)** enables secure transactions via Aadhaar. Additionally, the **UPI integrates various banking functions into a single app for seamless transactions**.

- India's digital lending market was worth USD 270 Bn in 2022 and is expected to reach USD 350 Bn by 2023.
- By 2025, digital finance could boost India's GDP by USD 950 billion and create 21 million new jobs.
- **Increased Foreign Investment:** Expected growth in **Foreign Direct Investment (FDI)** and **Foreign Portfolio Investment (FPI)** will drive development, particularly in infrastructure.
 - While India has seen some capital inflow from relaxed FDI limits, there is potential for **further growth if new financing models and reduced risks are introduced**.

Lakhpati Didi

Why in News?

Recently, the Prime Minister (PM) of India participated in the **Lakhpati Didi Sammelan** in Maharashtra, a significant event focused on empowering rural women through **Self-Help Groups (SHGs)**.

What are the Key Highlights of the Lakhpati Didi Sammelan?

- **Certificates and Felicitations:** PM handed out certificates and felicitated **11 lakh new Lakhpati Didis** who recently became **Lakhpati** during the third term of the present government.
- **Financial Disbursements:** A revolving fund of Rs 2,500 crore was released, benefiting about 48 lakh members of 4.3 lakh SHGs.
 - Additionally, Rs 5,000 crore in bank loans were disbursed to benefit 25.8 lakh members of 2.35 lakh SHGs.
- **Cultural and Economic Significance:** The PM emphasised women's vital role in the rural economy and their contribution to **India's rise as the third-largest global economy within three years**, highlighting a shift

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from **historical neglect** to recent initiatives aimed at alleviating their burdens.

What is the Lakhpati Didi Initiative?

- **About:** A “Lakhpati Didi” is a member of a SHG who has successfully achieved an **annual household income of Rupees One Lakh or more**.
 - This income is sustained across at least four agricultural seasons or business cycles, ensuring that the average monthly income exceeds Rupees Ten Thousand (Rs. 10,000).
 - It was initiated by the **Deendayal Antyodaya Yojana-National Rural Livelihoods Mission (DAY-NRLM)**, wherein each SHG household is encouraged to take up multiple livelihood activities coupled with value chain interventions, resulting in a sustainable income of **Rs. 1,00,000 or more** per year.
- **Purpose:** The initiative aims to **empower women not only by improving their income but by transforming their lives through sustainable livelihood practices**.
 - These women serve as role models in their communities, demonstrating the power of effective resource management and entrepreneurship.

➤ Lakhpati Didi Strategy:

- **Diversified Livelihood Options:** The initiative emphasises deepening, strengthening, and expanding livelihood options for SHG members.
 - Trained Community Resource Persons facilitate livelihood planning for SHG members using digital tools for resource linkages.
- **Implementation Support:** SHG members receive timely support in the form of **assets** (inputs, equipment, infrastructure), **skills** (knowledge and practical skills), **access to finance** (bank linkage, departmental schemes), and **market access** (branding, packaging, **e-commerce**).
- **Capacity Building:** Regular and structured training programs are provided to Mission Staff, community institutions, and SHG members on various aspects of livelihood activities.
- **Convergence and Partnerships:** The initiative leverages convergence with various government schemes and partnerships with private sector players to mobilise technical, financial, and capacity-building resources.

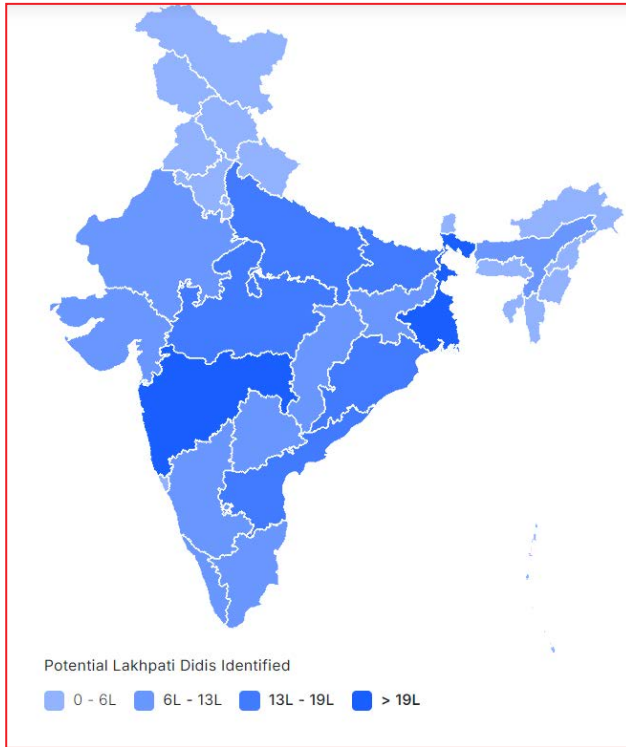
Ministry	Schemes for Convergence
Ministry of Rural Development, MORD	1. Mahatma Gandhi National Rural Employment Guarantee Scheme (MGNREGS) 2. Deendayal Upadhyay Grameen Kaushal Yojana (DDU- GKY) 3. Rural Self Employment Training Institutes (RSETIS) 4. Pradhan Mantri Awas Yojana -Grameen (PMAY-G)
Ministry of Agriculture & Farmers' Welfare (MoA&FW)	1. Mission for Integrated Development of Horticulture (MIDH), 2. Sub Mission on Agriculture Mechanization (SMAM), 3. National Bamboo Mission, 4. National Mission on Honey and Bee keeping, 5. Promotion of Millet, 6. Pradhan Mantri Krishi Sinchayi Yojana (PMKSY), 7. 10K FPO, Agri Infra Fund (AIF), 8. Natural Farming and Engagement of Community Resource Persons (CRPs) as extension agents for service delivery etc
Department of Animal Husbandry and Dairying (DAHD)	1. Accredited Agent for Health and Extension of Livestock Production (A-HELP), 2. National Livestock Mission, Animal Husbandry Infrastructure Fund, 3. Rashtriya Gokul Mission etc.
Ministry of Food Processing Industries (MoFPI)	Pradhan Mantri Formalization of Micro Food Processing Enterprises Scheme (PMFME)
Dept. of Fisheries	PM Matsya Sampada Yojana
Ministry of Small & Medium Enterprises (MSME)	Scheme of Fund for Regeneration of Traditional Industries (SFURTI)

- **Achievements:** Since the inception of the Lakhpati Didi Yojana in 2023, **one crore women have already been made Lakhpati Didis** and the government announced the enhancement of the target for **Lakhpati Didi from 2 crore to 3 crore**, recognising the success of 83 lakh SHGs with 9 crore women transforming the rural socio-economic landscape.

Note:



- More than Rs 6000 Crore were disbursed for lakhs of Women SHGs spanning across India.



Other Initiatives Related to Women Empowerment

- [Pradhan Mantri Mudra Yojana](#)
- [Mahila E-Haat](#)
- [Pradhan Mantri Awas Yojana](#)
- [Mission Shakti](#)
- [Nari Shakti Puraskar](#)

NITI Aayog's Strategies for Growth in Edible Oils

Why in News?

Recently, a report titled "Pathways and Strategies for Accelerating Growth in Edible Oils towards Goal of Atmanirbharta" was released by [NITI Aayog](#).

- The report analyses the **current edible oil sector**, outlines its future potential, and **provides a detailed roadmap to address challenges**, aiming to close the demand-supply gap and achieve self-sufficiency.

What are the Key Highlights of the Report?

- **Oilseed Production and Area:** Nine major **oilseed** crops (groundnut, rapeseed-mustard, soybean,

sunflower, sesame, safflower, niger seed, castor and linseed) **cover 14.3%** of the gross cropped area, contributing **12-13% to dietary energy** and about **8%** to agricultural exports.

- Soybean leads with **34% of total oilseed production**, followed by rapeseed-mustard (31%) and groundnut (27%).
- **Regional Production Distribution: Rajasthan and Madhya Pradesh are the top producers**, each contributing about 21.42% of national production.
 - Gujarat (17.24%) and Maharashtra (15.83%) also play major roles.
- **Rising Consumption and Import Dependence:** Per capita consumption (over the last decade) of edible oil has surged to 19.7 kg/year.
 - Domestic production meets only 40-45% of the demand, overall consumption surged, leading to increased imports from **1.47 MT (million tonne) in 1986-87 to 16.5 MT in 2022-23**, raising the **import dependency ratio to 57%**.
 - **Palm oil dominates these imports, accounting for 59%**, followed by soybean (23%) and sunflower (16%).
- **Growth Trends:** From 1980-81 to 2022-23, oilseed area, production, and yield grew at rates of 0.90%, 2.84%, and 1.91%, respectively.
 - In the recent decade, production and yield growth rates improved to 2.12% and 1.53%. The area under oilseeds increased in all decades except 1991-2000.
 - The report projects that production of the nine major oilseeds will rise to **43 MT by 2030 and 55 MT by 2047**, up from 37.96 MT in 2021-22 under the Business as Usual (BAU) scenario.
- **Approaches for Demand Forecasting:**
 - **Static/Household Approach:**
 - Uses population projections and baseline per capita consumption data.
 - Assumes short-term static consumption behavior.
 - Projects a demand-supply gap of 14.1 MT by 2030 and 5.9 MT by 2047.
 - **Normative Approach:**
 - Based on recommended intake levels by **ICMR-NIN (Indian Council of Medical Research - National Institute of Nutrition)**.
 - Indicates a potential surplus of 0.13 MT by 2030 and 9.35 MT by 2047.

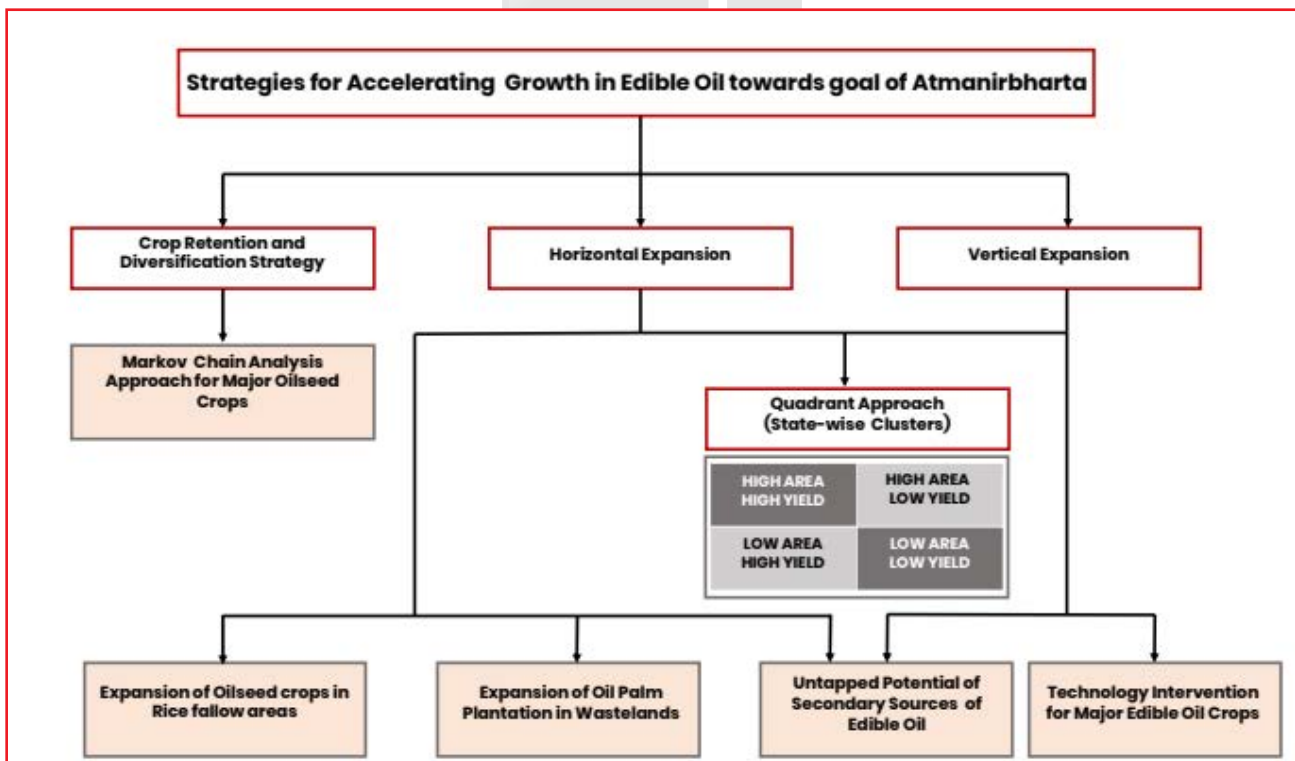
Note:

- **Behavioristic Approach:**
 - Considers behavioural shifts due to changing lifestyles and income levels.
- **Scenario I:** Consumption capped at 25.3 kg per capita.
 - **Demand-Supply Gap:** 22.3 MT by 2030, 15.20 MT by 2047.
- **Scenario II:** Higher consumption at 40.3 kg per capita.
 - **Demand-Supply Gap:** 29.5 MT by 2030, 40 MT by 2047.
 - **BAU Situation:** Gap projected to be Scenario-I by 2028 and Scenario-II by 2038.
 - **High-Income Growth Scenario:** Advanced demand to Scenario-I by 2025 and Scenario-II by 2031.

What Steps are Needed to Achieve Self-sufficiency in Edible Oil?

- The Niti Aayog report suggested **strategic interventions to bridge the gap** and ensure long-term sustainability.

- The strategy centers on three pillars:
 - **Crop Retention and Diversification in Potential Regions:**
 - Retaining and diversifying oilseed crops could increase production by 20% adding 7.36 MT and cutting imports by 2.1 MT.
 - **Horizontal Expansion:**
 - Expand cultivation area, utilise rice fallow lands and wastelands for oilseed and palm cultivation.
 - ◆ Utilising one-third of rice fallow areas for oilseeds could boost production by 3.12 MT and reduce imports by 1.03 MT.
 - **Vertical Expansion:**
 - Enhance oilseed yields via improved farming practices, **high-quality seeds**, and advanced technologies.



- The report's '**state-wise quadrant approach**' is a key strategy for achieving self-sufficiency in edible oils
 - The report identifies state clusters using four quadrants:
 - **High Area-High Yield (HA-HY) States:** Focus on efficiency and adopting global best practices.
 - **High Area-Low Yield (HA-LY) States:** Implement vertical expansion to boost yields.
 - **Low Area-High Yield (LA-HY) States:** Prioritise horizontal expansion to increase cultivation.

Note:



- **Low Area-Low Yield (LA-LY) States:** Address both horizontal and vertical expansion to enhance area and yield.
- **Strategic Interventions:** This could achieve **edible oil supplies of 36.2 MT by 2030 and 70.2 MT by 2047**, potentially ensuring self-sufficiency in most scenarios.
- **Technological Interventions:** Optimising seed utilisation and processing could increase production by **15-20%, potentially up to 45% with improved management**. The current **Seed Replacement Ratio (SRR)** is low, ranging from 25% (groundnut) to 62% (rapeseed mustard), impacting yield.
 - Modernising mills and investing in **processing infrastructure are essential, as current mills operate at only 30% of refining capacity**, with many being small-scale and low-tech.

What are the Challenges in the Edible Oil Sector in India?

- **Rainfed Production Dependence:** 76% of oilseed cultivation is rainfed, contributing 80% of total production, making it vulnerable to erratic weather patterns.
 - Irrigation coverage has only marginally increased by 4% over the past decade (from 23% to 27%).
- **Demand-Supply Gap:** India continues to face a substantial demand-supply gap, leading to heavy reliance on imports to meet domestic needs.
 - Imports accounted for 60% of India's edible oil requirements in 2022-23, with palm oil, soybean oil, and sunflower oil being the major contributors.
- **Increased Consumption:** Per capita consumption of **edible oils** has risen to around 19 kg annually (over the past decade).
- **Impact on Farmers:** Low import duties and high imports have negatively impacted the price realisation for domestic oilseeds farmers.
 - The government's reduced import duties aim to curb retail price spikes, but lower duties might result in India influx of cheaper oils, affecting local farmers and processors.

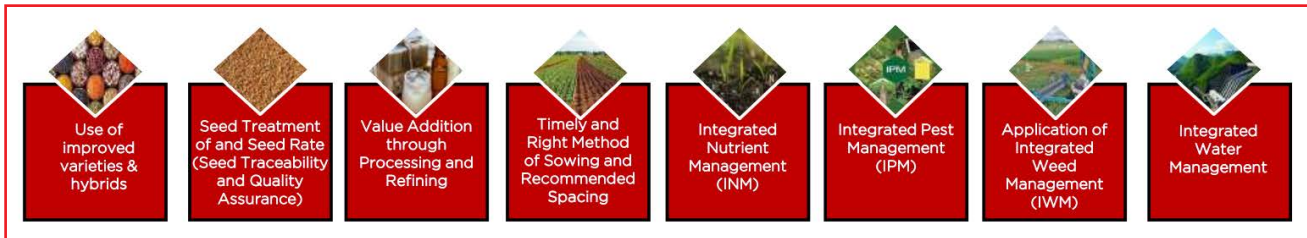
What are the Recommendations of the Niti Aayog Report?

- **Enhance Oilseed Development in Bundelkhand and Indo-Gangetic Plain:**
 - Revitalise **Bundelkhand** for oilseeds, particularly sesame, to boost incomes.

- Introduce soybean, rapeseed-mustard, and sunflower in the Indo-Gangetic Plain to increase profitability and address soil and water issues.
- **Prioritise Wasteland Utilisation for Oil Palm Expansion:**
 - Focus on expanding oil palm cultivation on suitable wastelands, with a potential increase in production by 24.7 MT.
 - Leverage partnerships with **FPOs (Farmers' Producer Organisations)**, FPCs (Farmer Producer Company), and **SHGs (Self help group)** for effective large-scale cultivation.
- **Cluster-Based Seed Village:**
 - Establish "**One Block-One Seed Village**" hubs at block levels for high-quality oilseed supply, enhancing SRR and VRR through FPOs.
- **Promotion of Biofortified Oilseed Varieties:**
 - Integrate biofortification in national missions to improve oilseed nutrition and reduce anti-nutritional factors.
 - Increase adoption of 14 released biofortified varieties by targeting a 10-12% annual adoption rate.
- **State-Level Seed Rolling Plans and Quality Standards:**
 - Develop five-year rolling plans for breeder seed production and replace outdated varieties.
 - Harmonise Indian seed standards with **OECD (Organisation of Economic Cooperation and Development)** and **ISTA (International Seed Testing Association)** to meet global quality requirements.
- **Enhancing Yield through Improved Varieties:**
 - Scale up production of high-potential Indian oilseed varieties and adopt advanced breeding techniques to boost yield and quality.
- **Harnessing Rice Bran Oil:**
 - Utilise rice bran oil for blending with cooking oils, aiming for large-scale production and standardization with international regulations.
- **Enhancing Solvent Extraction Efficiency:**
 - Address low capacity utilisation (around 30%) in solvent extraction plants by modernising facilities and improving mill management to achieve at least 60% utilisation.
- **Balancing Storage Profitability:**
 - Implement fair pricing structures to balance off-season storage costs with consumer affordability, ensuring market stability and incentivizing off-season sales.

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- **Enhancing Marketing Infrastructure:**
 - Ensure procurement at MSP through **NAFED (National Agricultural Cooperative Marketing Federation of India)** and state federations, and facilitate direct marketing to boost oilseed cultivation in non-traditional areas.
- **Setting Up Testing Laboratories:**
 - Establish testing laboratories in mandis to standardise quality parameters and avoid subjective pricing, using **PPP (Public Private Partnership)** models with agricultural universities and **ICAR (Indian Council of Agricultural Research)**.
- **Enhancing Oil Palm Sector Efficiency:**
 - Promote large-scale oil palm plantations and seed gardens, streamline regulations by declaring oil palm a plantation crop, and enforce zero-waste policies to utilise byproducts.



Cryptocurrency and Blockchain

Why in News?

Recently, former US President Donald Trump expressed support for **Bitcoin** at a crypto gathering.

- Amidst widespread discontent with government handling of **inflation and economic crises**, there emerges a measured scepticism towards conventional financial systems.
- This movement, fueled by a pursuit of financial autonomy and a conviction in the transformative **promise of blockchain technology**, continues to evolve, though its enduring financial viability and existential sustainability remain uncertain.

What is Cryptocurrency and How Does it Work?

- **Cryptocurrency** is a **decentralised digital or virtual currency** that uses **cryptography for security**. Examples include **Bitcoin, Ethereum, Ripple and Litecoin**.
- **Cryptocurrency transactions** are documented on a **public digital ledger known as the blockchain**. This ledger is maintained by a **decentralised network of computers distributed globally**, which verify and add each new transaction to the blockchain.
 - The decentralisation of the system, coupled with the application of cryptographic techniques, renders it **challenging for any entity to manipulate the currency or alter the transactions recorded on the blockchain**.

- To engage in **cryptocurrency transactions**, individuals or businesses must **first obtain a digital wallet**, a software application that securely stores the user's public and private keys.

- These keys are **essential for sending and receiving cryptocurrency**, as well as for **verifying transactions on the blockchain**.
- Cryptocurrency can be acquired through a process known as **"mining,"** which involves utilising **computational power to solve intricate mathematical problems**.
 - This **process validates and records transactions on the blockchain**, rewarding the miner with a certain amount of **cryptocurrency** in return.

What is Blockchain Technology?

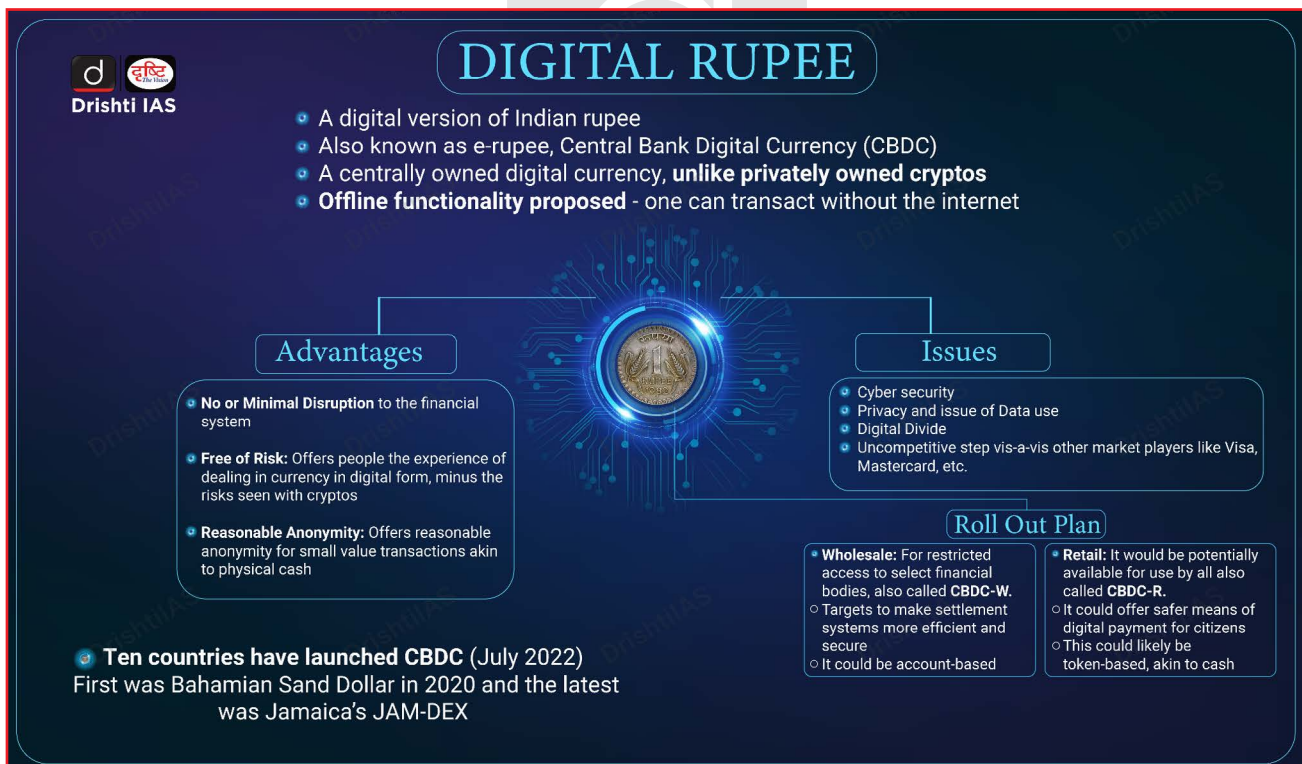
- It is a **decentralised, digital ledger that records transactions** across a network of computers.
- Each block in the chain contains a number of transactions, and every time a new transaction occurs on the blockchain, a record of that transaction is added to every participant's ledger.
 - The decentralised nature of technology ensures that **no single entity can alter or delete previous transactions**, providing a **high degree of security and transparency**.
- Blockchain is the **foundation of cryptocurrencies** such as Bitcoin, but it has **many potential uses beyond cryptocurrencies**:
 - Financial institutions have been using blockchain for secure and transparent transaction processing, reducing fraud and operational costs.

Note:

- A blockchain-based ecosystem could also be used to **design a scholarship system incentivising students to maintain consistency** and achieve academic excellence.
- Blockchain can provide an excellent framework to **manage student records ranging from day-to-day information such as assignments, attendance and extracurricular activities, to information** about degrees and colleges they have attended.

What is the Legal Status of Cryptocurrency in India?

- **Cryptocurrency in India is unregulated but not specifically banned.** The government does not recognize cryptocurrencies as legal tender, and it intends to limit their use in financing illegal activities or as a payment method.
 - In **2022, the Government of India** mentioned in the **Union budget 2022-23** that the transfer of any **virtual currency/cryptocurrency** asset will be subject to **30% tax deduction**.
- The **National Payments Corporation of India (NPCI)**, in association with the Department of Financial Services (DFS), National Health Authority (NHA), Ministry of Health and Family Welfare (MoHFW), and partner banks, has launched India's own **Central Bank Digital Currency (CBDC)** – Digital Rupee or 'e-RUPI'.
 - **CBDCs are a digital form of a paper currency and unlike cryptocurrencies** that operate in a regulatory vacuum, these are **legal tenders issued and backed by a central bank**.
 - The digital fiat currency or CBDC **can be transacted using wallets backed by blockchain**.
 - Though the concept of CBDCs was directly inspired by **Bitcoin**, it is different from decentralised virtual currencies and crypto assets, **which are not issued by the state and lack the 'legal tender' status**.



What are the Pros and Cons of Cryptocurrency?

- **Pros of Cryptocurrency:**
 - **Blockchain-Driven Security and Transparency:** Cryptocurrencies leverage blockchain technology, which offers **enhanced security, transparency, and efficiency in financial transactions**.

Note:



- This decentralised ledger system **reduces fraud and operational costs for financial institutions**, ensuring a **more secure and transparent transaction** processing environment.
- **Potential for Innovation and Tokenization:** The underlying blockchain technology enables **tokenization**, which can be applied across various sectors, allowing for the **conversion of assets into digital tokens**.
 - This innovation can be harnessed independently of cryptocurrencies, facilitating **new financial instruments and asset management models**.
- **Reshaping Global Finance:** Cryptocurrencies represent the latest evolution in the history of assets, testing the boundaries of trust, redefining ownership, and potentially **reshaping global financial systems**.
 - As digital assets gain acceptance, they could **transform how value is stored and transferred across borders**, offering a **new paradigm for financial inclusion and global trade**.
- **Potential for Financial Autonomy:** Cryptocurrencies provide a **means for financial autonomy**, especially in **regions with unstable economies** or limited access to **traditional banking systems**.
 - They offer individuals and businesses an **alternative to centralised financial institutions**, potentially reducing reliance on traditional banking infrastructure.
- **Cons of Cryptocurrency:**
 - **Speculative Nature and Volatility:** The highly speculative nature of cryptocurrencies often overshadows their functional potential. Their **value is largely driven by market sentiment and speculation**, leading to extreme price volatility.
 - This **volatility undermines their utility** as a stable medium of exchange and a reliable store of value.
 - **Regulatory Challenges and Uncertainty:** The regulatory environment surrounding cryptocurrencies is fraught with uncertainty, with governments oscillating between acceptance and outright bans.
 - Concerns over **money laundering, tax evasion, and the financing of illegal activities** necessitate stringent regulatory measures, which **may stifle innovation and hinder the integration of cryptocurrencies** into the mainstream financial system.

- **Limited Practical Utility and Acceptance:** The **limited acceptance of cryptocurrencies** by financial institutions and merchants restricts their practical utility.
 - The volatility of crypto assets makes it challenging for businesses to consistently price goods and services, discouraging their use in everyday transactions.
 - Additionally, the lack of integration with traditional financial systems complicates the conversion of crypto to fiat currency, making it cumbersome and costly for businesses.
- **High Transaction Costs and Inefficiency:** Cryptocurrencies often suffer from **high transaction fees and slower processing times** compared to conventional payment methods.

Shortage of Natural Rubber in India

Why in News?

India is experiencing a significant shortage of **natural rubber (NR)**, with domestic production lagging behind demand by approximately **5.5 lakh tonnes**.

What are the Causes of Shortage of Natural Rubber in India?

- **Demand-Supply Gap:** Despite an increase in NR production from **8.39 lakh tonne** in 2022-23 to **8.57 lakh tonne** in 2023-24, consumption has surged from **13.5 lakh tonne** to **14.16 lakh tonne**.
 - Currently, about **70%** of NR is consumed by the **tyre industry**. The remaining **30%** is utilised by **non-tyre companies**, predominantly **small and micro enterprises**, which are suffering the most.
- **Import Dependence:** India has historically depended on NR imports due to **insufficient domestic production**.
 - India imports natural rubber to meet local demand from neighbouring countries such as **Vietnam** and **Indonesia**.
- **High Import Duty:** NR imports face a **25% customs duty** or **Rs 30 per kg** whichever is higher. **Latex rubber** used for making gloves and balloons has a total **75% duty**.
 - There is a shortage of latex rubber but imported **mattresses, balloons or surgical gloves** attract a **much lower duty of just 10%** which encourages

Note:

the import of **these products rather than local manufacturing**. It represents a case of **Inverted Duty Structure**.

- Inverted duty structure is a situation where the **rate of tax on inputs** used is **higher** than the rate of tax on the **finished goods**.
- **Geopolitical Situation:** China is currently **stockpiling** NR, and **Bangladesh**, once a reliable source, is in **turmoil** due to political protests and change in government.
 - The turmoil in Bangladesh has **disrupted** the smooth supply of NR to India.
- **Monsoon:** The availability of NR is uncertain due to **heavy monsoons** reducing tapping activities. This situation particularly impacts industries that depend on NR.

What are Key Facts About Rubber?

- **About:** Rubber is an **elastic material** that **deforms** when an external force is applied to it, but then quickly **regains its original shape** when the force is removed.
 - It can be **natural or synthetic**, and is made up of **polymers** of the organic compound **isoprene**, along with other organic compounds.
 - **Natural Rubber:** Natural rubber is produced from **plants** and is classified as a **polymer**. It is one of the most important polymers for human society.
 - Natural rubber is obtained from **latex**, a whitish milky fluid containing **proteins, starch, alkaloids**, etc., that is produced by many plants.
 - **Synthetic Rubber:** Synthetic or man-made rubber can be produced through a **chemical process**.
- **Production in India:** India is the **third largest producer**, **fourth largest consumer** of natural rubber and **fifth largest consumer** of natural rubber and synthetic rubber together in the world.
 - **Kerala** is the largest producer of rubber in India. **Tripura** is the **second largest** producer.
- **Trade Scenario:**
 - **Exports:** In 2022-23, India **exported 3,700 tonnes** of NR.
 - **USA, Germany, UAE, UK and Bangladesh** are the countries which constituted the largest markets for India's rubber exports.
 - **Imports:** In 2022-23, India imported **5,28,677 tonnes** of NR.
 - India imports rubber primarily from **Indonesia, Thailand, China, South Korea and Japan**.

➤ Factors for Growth of Natural Rubber:

- **Climate:** Rubber (native of Amazon rainforest) is a **tropical tree**. It requires **high temperatures** throughout the year ranging between **20°-35°C** or average monthly mean of **27°C**.
- **Soil:** Rubber is grown in **loamy or Laterite soil**, typically on sloped or slightly **elevated flat land** with good drainage and no risk of water stagnation.
- **Rainfall:** More than **200 cm**.
- **Labour:** **Cheap and adequate supply of skilled labour** is needed for this plantation crop.

➤ Government Initiatives for Promoting Production of Rubber:

- **Sustainable & Inclusive Development of Natural Rubber Sector (SIDNRS)**
- Rubber Plantation Development Scheme
- Rubber Group Planting Scheme
- **100% Foreign Direct Investment (FDI) is allowed in plantations of rubber.**
- **National Rubber Policy 2019**

Rubber Board

- The Rubber Board is a **statutory body** constituted under the **Rubber Act, 1947**, for the overall development of the **rubber industry** in the country.
- It functions under the **Ministry of Commerce & Industry** of the Government of India.
- The Board's headquarters is situated in **Kottayam, Kerala**.
- **Rubber Research Institute** is under the Rubber Board.

What is National Rubber Policy 2019?

- **Ministry:** The **Ministry of Commerce & Industry** brought out the **National Rubber Policy** in 2019.
- **Basis of the Policy:** It is based on the **short term and long term** strategies identified by the **Task Force** constituted on the rubber sector for mitigating problems faced by rubber growers in the country.
- **Key Provisions:** The Policy covers **new planting and replanting of rubber**, support for growers, processing and marketing of natural rubber, labour shortage, grower forums, external trade, Centre-State integrated strategies, research, training, rubber product manufacturing and export, **climate change** concerns and **carbon market**.

Note:

- **Implementation and Support:** Rubber Board is implementing the scheme **Sustainable and Inclusive Development of Natural Rubber Sector in the Medium Term Framework (MTF) (2017-18 to 2019-20)**.
 - The developmental activities include **financial and technical assistance** for planting, supply of quality planting materials, support for grower forums, training and skill development programme.

What can be Done to Increase Rubber Production in India?

- **Expand Support Under the National Rubber Policy:** Increase support for rubber growers through **subsidies and financial assistance for supporting new plantings** and replanting of rubber.
- **Skill Development:** Enhance training programs for growers to improve cultivation techniques and productivity.
- **Invest in Research:** Increase funding for research on **high-yielding and disease-resistant rubber varieties** through government-supported research institutions and universities.
- **Collaborative Projects:** Foster collaborations between the **government and private sector to invest in rubber plantations** and processing infrastructure.

Discount on New Vehicles Against Scrapping Certificates

Why in News?

Auto manufacturers have agreed to offer discounts on **commercial and passenger vehicles** against a **scrappage certificate** of an old vehicle for a limited period of time.

- This **scrappage discount** will replace the discount customers were getting for exchanging their vehicles from car dealers.

What is the Voluntary Vehicle-Fleet Modernization Program (V-VMP)?

- **About:** The **Voluntary Vehicle-Fleet Modernization Program (V-VMP)** or **Vehicle Scrapping Policy 2021** is a government sponsored programme to scrap **old and unfit vehicles** on Indian roads.
 - The policy **stops re-registration** for cars over **20 years old** and commercial vehicles over **15 years old**.

Recent Developments:

- **Agreement on Discounts:** Automakers have agreed to offer discounts of **1.5% to 3%**, or up to **Rs 25,000**, to customers who purchase a new vehicle after scrapping the old vehicles.
- **Scrappage Terms: Commercial vehicle (CV)** manufacturers are willing to offer discounts for a limited period of **two years** and **passenger vehicle (PV)** manufacturers are willing to offer discounts for **one year** against a **Certificate of Deposit (Scrappage Certificate)**.
- **Discount by State Governments:** State governments have taken a big interest in scrappage policy.
 - Many States which are offering **25-30% discount on road tax** for recycled cars.
- **Categorisation of Vehicles for the Scrappage Policy:** The rules applied to scrap these vehicles shall vary depending on the **categorisation** of the vehicles.
 - **Private vehicles:** All private cars must undergo a fitness test after **15 years** of their registration. If the car clears the **fitness test**, renewal of registration can be done which is valid for **5 years**.
 - **Commercial vehicles:** Commercial vehicles, like **buses, trucks**, etc., are eligible for fitness tests **every two years** for the first **8 years** of registration and every **one year after 8 years** till the registration age of the vehicle reaches **15 years**.
 - **Government vehicles:** All State and Central government vehicles that are **above 15 years** of age will be **scrapped**.
 - **Vintage vehicles:** Old car scrap policy does **not** apply to **vintage vehicles** as they are mostly **well-maintained and driven less frequently**.
- **Benefits of V-VMP:**
 - **Reduction in Pollution:** It will reduce pollution by scrapping around **1 Crore vehicles** without valid fitness and registration.
 - Scrapping of current **End-of-life vehicles (ELVs)** burden of the country will lead to **15-20% reduction** in emissions due to **vehicular pollution**.
 - **Formalisation of Scrappage Industry:** The policy also aims at making the Indian scrappage industry **organised, transparent and environment friendly**.
 - **Demand for New Vehicles:** Scrapping old and unfit vehicles will create **demand** in the **automobile industry**, as the old ones will now be replaced with **new vehicles**.

Note:

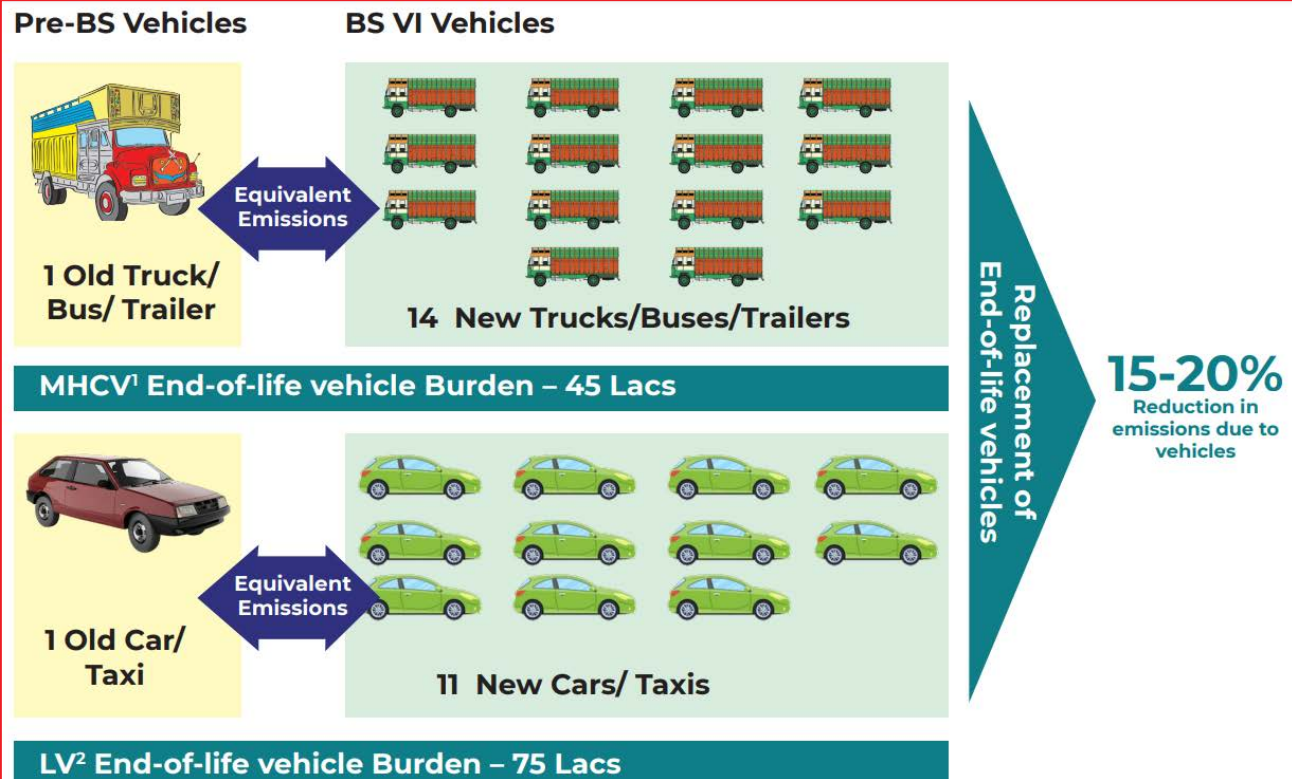
- **Vehicular Safety:** The nature of demand for vehicles will get augmented. There will be a demand for comparatively **safer and technologically upgraded** vehicles that come with better and superior features.
- **Circular Economy:** It will provide a major push to the **recycling industry**.
 - This will not only **make the recycling sector more active** but create jobs in this industry as well.
 - In addition, it will also create further improvement in the **R&D of waste and recycling management**.
- **Road Safety:** It will Improve road, passenger and vehicular safety.
- **Fuel Efficiency:** It will improve fuel efficiency. In the **BS VI era**, petrol engines were upgraded to **emit 25% less NOx (Nitrogen Oxides)** as compared to diesel engines.

What Incentives and Disincentives are Provided Under V-VMP?

- **Incentives under V-VMP:** Various incentive mechanisms have been included in the policy to induce End-of-life vehicle owners to scrap older vehicles.
 - **Discount on New Vehicles:** The scrap value for an old vehicle provided by the scrapping centre

is usually around **4-6% of the ex-showroom price** of a new vehicle.

- Government had issued an advisory to auto manufacturers to offer a **discount of 5%** on showing scrappage certificates while buying a new vehicle.
- **Concession in Motor Vehicle Tax:** Rules are notified for state governments to offer concession on motor vehicle tax of up to 25% for non-transport vehicles and up to 15% for transport vehicles.
- **Waiving Registration Fees:** Registration fees to be waived off for purchase of new vehicle.
- **Disincentives under V-VMP:**
 - **High Fees for the Fitness Test:** If a commercial vehicle is older than 15 years, then the fees for the **fitness test and the issuance of a fitness certificate will attract higher charges**.
 - **High Registration Renewal Fees:** If a private vehicle is older than 15 years, then the **registration renewal charges will be higher**.
 - **Green Cess:** In addition to the road tax, following the policy outlines of the vehicle scrap policy 2021, a **green cess of 10-15% will be levied on old vehicles**.



Note:

What is Circular Economy?

- **About:** The **circular economy** is a system where **products and materials** are kept in **circulation** through processes like **maintenance, reuse, refurbishment, remanufacture, recycling, and composting**.
 - A circular economy keeps materials and products in circulation for **as long as possible**.
- **Benefits:** The circular economy tackles **climate change** and other global challenges, like **biodiversity loss, waste, and pollution**, by decoupling economic activity from the consumption of finite resources.
- **Three Principles of Circular Economy:**
 - Eliminate waste and pollution
 - Circulate products and materials (at their highest value)
 - Regenerate nature
- **India's Initiatives to Promote Circular Economy:**
 - [Battery Waste Management Rules, 2022](#)
 - [Plastic Waste Management \(Amendment\) Rules 2022](#)
 - [E-waste Management Rules 2022](#)
 - [Extended Producer Responsibility \(EPR\) certificates](#)

RBI to Launch Unified Lending Interface

Why in News?

The **Reserve Bank of India (RBI)** plans to launch the **Unified Lending Interface (ULI)** at **national level** to transform **India's lending sector**. The ULI was launched as a **pilot project** by the RBI in **2023**.

What is Unified Lending Interface (ULI)?

- **About:** ULI is a **digital platform** that is expected to make the **lending process easy**.
 - It would enable **friction-less credit** while delivering banking services to **farmers** and **MSME borrowers**.
- **Key Features of ULI:**
 - **Consent-Based Digital Access:** ULI will provide lenders with **digital access** to both **financial and non-financial data** of customers, including **land records**, through a consent-based system.
 - **Common and Standardised APIs:** ULI will feature standardised **Application Programming Interface**

(APIs) that allow for a **'plug and play' approach**, simplifying data access and reducing technical integration complexity.

- The **'plug and play'** concept refers to **ready-made facilities** with essential infrastructure like power, network etc allowing industries to start operations immediately.

Potential Benefits:

- **Frictionless Credit:** ULI aims to facilitate a **smoother lending experience** by minimising paperwork, particularly for **smaller and rural borrowers**.
- **Reduced Appraisal Time:** By consolidating data from various sources, ULI will **minimise the time required** for credit evaluation.
- **Centralised Data Access:** The platform will **consolidate** financial and non-financial data from multiple sources, making it easily accessible to lenders.
- **Focus on Agriculture and MSMEs:** ULI is expected to address the large **unmet demand for credit** in sectors such as agriculture and **Micro, Small, and Medium Enterprises (MSMEs)**.
- **Relation to Other Digital Initiatives:**
 - **JAM-UPI-ULI:** ULI will be part of the **'new trinity'** of **JAM (Jan Dhan, Aadhaar, and Mobile)**, **UPI**, and **ULI**, representing a significant advancement in India's digital infrastructure.
 - **Digital Infrastructure:** The integration of these systems aims to cater to the large unmet demand for credit and enhance **financial inclusion**.

What are the Other Platforms that Facilitate Lending in India?

- **Public Credit Registry (PCR):** **PCR** is a central database that stores **comprehensive credit information** of borrowers to help lenders assess creditworthiness and reduce information asymmetry in the credit market.
- **Account Aggregator (AA) Framework:** **AA Framework** is a consent-based **RBI-regulated platform** that enables customers to share their **financial information** across institutions, streamlining access for lenders and facilitating quicker, informed lending decisions.
- **Credit Information Companies (CICs):** Companies like **CIBIL, Equifax, Experian** etc collect and maintain **credit information** of individuals and businesses.

Note:

- **Trade Receivables Discounting System (TReDS):** **TReDS** is an electronic platform that allows **MSMEs** to auction their **trade receivables** at competitive rates.
- **Peer-to-Peer (P2P) Lending Platforms:** Online platforms like **Faircent** and **Lendbox** allow individuals to lend and borrow money directly from each other.

High Attrition Rates in Regional Rural Banks

Why in News?

Recently the Union Finance Minister addressed the **high attrition rates in Regional Rural Banks (RRBs)**, urging these institutions to adopt more employee-friendly policies.

- This highlighted the need for reforms to **enhance employee satisfaction**, improve customer service, and ultimately boost the performance of RRBs.

Note:

- Attrition rate is a metric that quantifies the **rate at which employees depart an organisation**, whether voluntarily or involuntarily.

Why are RRBs Facing High Attrition Rates?

- **Lack of Employee Benefits:** RRB employees often leave due to better opportunities in **Scheduled Commercial Banks (SCBs)**, which offer superior facilities despite similar pay scales.
 - According to **National Bank for Agriculture and Rural Development (NABARD)** the total number of employees in **43 RRBs decreased from 95,833 in FY 2022 to 91,664 in FY23**, while the number of branches saw a minor increase from 21,892 in FY22 to 21,995 in FY23.
- **Challenging Work Environment:** Employees who relocate from other states to work in **RRBs struggle to adapt to rural life**, prompting them to seek other opportunities.
- **Slower Career Growth:** Compared to SCBs, RRBs offer slower promotions and fewer incentives, leading to dissatisfaction among employees.

How can RRBs Improve Employee Retention?

- **Prioritising Local Postings:** Assigning employees to **work in their home regions** can help them **balance their personal and professional lives** better, reducing the desire to leave for other opportunities.

- **Enhancing Employee Benefits:** RRBs should strive to offer benefits and facilities that are competitive with those provided by SCBs, such as **improved housing, healthcare, and retirement plans**.
- **Accelerating Career Growth:** Implementing faster promotion tracks and more frequent **career advancement opportunities** can motivate employees to stay and grow within the organisation.
- **Supportive Work Environment:** RRBs should foster a more employee-friendly culture by **offering flexible working conditions, regular training, and professional development programs** to enhance job satisfaction.
 - Providing additional support for employees posted in rural areas, such as better **housing options and community engagement activities**, can help them adapt and thrive in their roles.
- **Expanding Digital Capabilities:** Enhancing **digital banking services**, such as mobile banking, can help RRBs improve their performance and **attract tech-savvy employees** who value innovation and convenience.

What are the Regional Rural Banks?

- **About:** The **Narasimham committee on rural credit (1975)** recommended the establishment of RRBs.
 - RRBs were established in **1975 under the RRB Act, 1976**, to develop the **rural economy by providing credit and other facilities** to small and marginal farmers, agricultural laborers, **artisans, and small entrepreneurs**, thereby supporting agriculture, trade, commerce, and industry in rural and semi-urban areas.
 - RRBs operate in areas notified by the Government, covering one or more districts in a State.
 - They aimed to merge the local touch of cooperatives with the professionalism of commercial banks.
 - By March 2023, there were **43 RRBs sponsored by 12 scheduled commercial banks**, operating across 26 states and 3 Union Territories.
 - The **first RRB was Prathama Bank**, with its head office in Moradabad, Uttar Pradesh.
 - RRBs are owned by the **Central government, concerned State government and the sponsor bank in proportion of 50:15:35** (each RRB is sponsored by a particular bank).
 - In India, the **Reserve Bank of India (RBI)** oversees the entire banking system, while **NABARD** supervises rural financial institutions, including RRBs under the **Banking Regulation Act, 1949**.

Note:

- **Financial Performance:** RRBs have shown significant improvement over the last three years. The total business of RRBs crossed Rs 10 lakh crore during FY23, growing at a rate of 10.1% year-on-year.
 - As of March 2023, Gross **Non-Performing Assets (NPAs)** were at 7.28%, the lowest in seven years, while Net NPAs stood at approximately 3.2%.
 - RRBs recorded a highest-ever consolidated net profit of Rs 4,974 crore in FY22-23. In FY23-24, the net profit up to the third quarter was Rs 5,236 crore.
- **Challenges:**
 - **Asset Quality Maintenance:** Maintaining asset quality is a critical issue for RRBs, particularly as they **work to expand credit and grow their portfolios** in rural and semi-urban areas.
 - **Limited Digital Infrastructure:** RRBs often struggle with upgrading and maintaining **digital banking services**, especially in regions with poor connectivity, which can **hinder their ability to compete with larger banks**.
 - **Corporate Governance Issues:** Ensuring robust corporate governance is an ongoing challenge, with RRBs needing to improve their internal processes and compliance to maintain credibility and efficiency.
 - **Pressure to Increase Credit Penetration:** RRBs are under pressure to **increase their share in agriculture credit disbursement** and other priority sector lending, which requires careful balancing of resources and risks.
 - **Increased Competition:** The growing presence of private sector banks has intensified competition, as these banks offer superior technology, more comprehensive services, and a more streamlined customer experience.
 - RRBs struggle to compete with the advanced resources and infrastructure of private banks.
 - Small finance banks have also increased competition by offering specialised services and advanced technology, further challenging the RRBs' ability to attract and retain customers.
 - **Non-Performing Assets:** The significant burden of NPAs has affected RRBs' financial health, leading them to focus on reducing these problematic loans rather than expanding their services.
- **Opportunities to Boost RRBs Performance:**
 - **Review Operational Models:** Consider the potential benefits and challenges of merging RRBs with their sponsor banks to enhance efficiency.
 - Assess the impact of consolidation on service delivery and rural focus before making any decisions.
 - **Map RRBs with MSME Clusters:** Align RRB operations with **Micro, Small, and Medium Enterprises (MSMEs)** to enhance credit delivery and support local businesses.
 - Use MSME clusters to identify areas for expansion and tailored financial products.
 - Provide targeted financial products and services to MSMEs in rural areas, fostering entrepreneurship and economic growth.
 - **Expand Financial Inclusion Efforts:** Increase outreach and support for government schemes like **Pradhan Mantri MUDRA Yojana** and **PM Vishwakarma**, and improve the uptake of these programs in underdeveloped regions.
 - Actively promote and implement schemes like **PM Surya Ghar Muft Bijli Yojana** and **One District One Product (ODOP)** to support local development and increase credit penetration.
 - **Leverage CASA Ratio for Credit Growth:** Utilise the healthy **Current Account Savings Account (CASA) ratio** to extend more credit, particularly to underserved sectors like MSMEs and agriculture.
 - **Enhance Customer Engagement:** Improve customer relations through better **local connections and personalised services** to boost performance and customer satisfaction.
 - **Collaboration with Sponsor Banks:** Work closely with sponsor banks to gain **technical assistance, share best practices**, and access resources needed for growth and stability.
 - **Focus on Asset Quality:** Maintain and improve asset quality by implementing effective risk management practices and regular review of credit portfolios.

Note:

National Bank for Agriculture and Rural Development

- The RBI formed the **Committee to Review the Arrangements For Institutional Credit for Agriculture and Rural Development (CRAFICARD)** in 1979 to address the need for institutional credit in rural areas.
 - The committee's recommendations led to the creation of **NABARD**, which was established in 1982 under National Bank for Agriculture and Rural Development Act, 1981, by transferring **agricultural credit functions from RBI** and refinance functions from the **Agricultural Refinance and Development Corporation (ARDC)**.
- NABARD envisions itself as the "**Development Bank of the Nation for Fostering Rural Prosperity**," focusing on enhancing rural livelihoods and boosting the rural economy.
- **Milestone Achievements:**
 - **Self Help Group (SHG) Bank linkage (BL) Project:** Launched in 1992, this initiative has evolved into the **world's largest microfinance project**, significantly enhancing financial inclusion.
 - **Kisan Credit Card:** Designed by NABARD, it has become an essential financial tool for millions of farmers.
 - **Rural Infrastructure:** NABARD has financed approximately **one-fifth of India's total rural infrastructure**.

165th Anniversary of Income Tax Day

Why in News?

Recently, the Union Finance Minister presided over the **165th Anniversary of Income Tax Day** observed by the **Central Board of Direct Taxes (CBDT)** in New Delhi, highlighting the Income Tax Department's significant achievements.

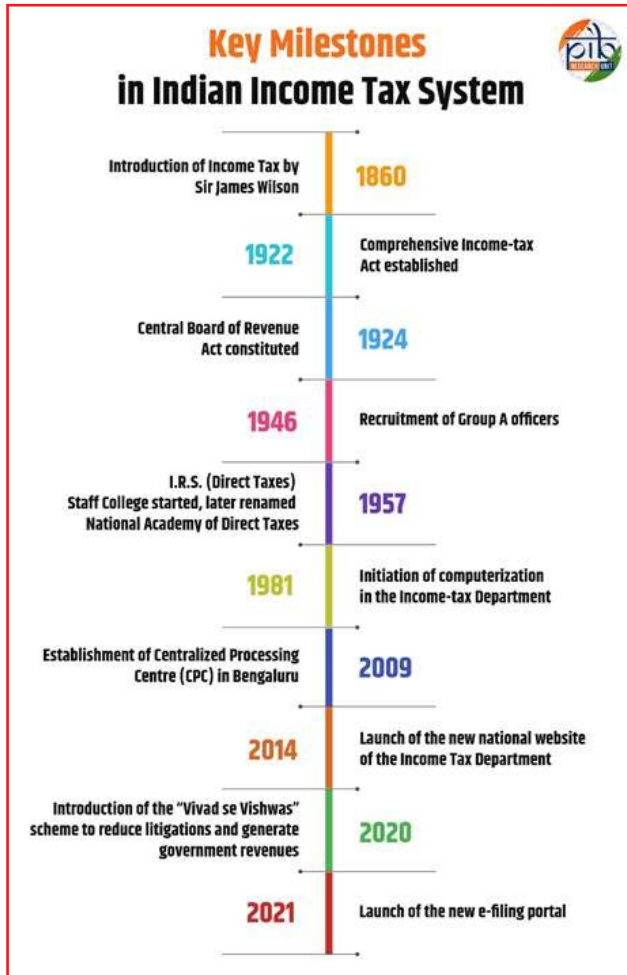
What is Income Tax Day?

- **About:** Income Tax Day (or **Aaykar Divas**), celebrated on **24th July**, marks a significant milestone in India's fiscal history. This day commemorates the **introduction of income tax in India by Sir James Wilson, a British economist in 1860** to meet the losses from the **1857 Military Mutiny**.

- Income Tax Day not only honours the historical development of tax administration in India but also **highlights the continuous advancements and modernization efforts** aimed at creating a more efficient and taxpayer-friendly system.
- **Evolution of Income Tax in India:**
 - **Income-tax Act of 1922:** It established a structured tax system in India by formalising various income tax authorities and laying the foundation for a systematic administration framework.
 - **Central Board of Revenue Act (1924):** Created the **Central Board of Revenue**, a statutory body responsible for administering income tax.
 - **Recruitment of Group A Officers (1946):** Enhanced professional development with training in Bombay and Calcutta.
 - **Establishment of the National Academy of Direct Taxes (1957):** Strengthened professional training and development.
 - **Income Tax Act of 1961:** Several amendments were made over the years, leading to the **Income Tax Act of 1961**, which has been in force since April 1962 and applies to the whole of India.
 - **Bifurcation of Central Board of Revenue in 1964:** Initially the Board was in **charge of both direct and indirect taxes**.
 - However, when the administration of taxes became too burdensome for a single board, it was divided into two separate entities: **the Central Board of Direct Taxes and the Central Board of Excise and Customs, under the Central Boards of Revenue Act, 1963**.
 - **Technological Advancements:** The introduction of **computerisation in 1981** focused on processing challans electronically. In **2009, the Centralized Processing Centre (CPC)** was set up in Bengaluru to handle the bulk processing of e-filed and paper returns, operating efficiently in a jurisdiction-free manner.
 - The **E-Verification Scheme** enables authorities to collect information to accurately determine a **taxpayer's income and reduce tax evasion**, while providing taxpayers with relevant financial data from various sources.
 - **Vivad se Vishwas scheme:** It is a settlement program in India that aims to **end pending direct tax disputes between taxpayers and the government**.

Note:

- The scheme helps litigants settle their disputes and allow the government to collect revenue that's tied up in litigation.



What is Income Tax?

- **Definition:** It is a government levy on the **income earned by individuals and businesses** during a financial year.
 - "Income" encompasses various sources, defined broadly under **Section 2(24) of the Income Tax Act, 196**.
 - **Income Sources:**
 - **Salary:** Includes all payments from an employer to an employee, such as basic pay, allowances, commissions, and retirement benefits.
 - **House Property:** Rental income from residential or commercial properties is taxable.
 - **Business/Profession:** Profits from business or professional activities are taxable after deducting expenses.

- **Capital Gains:** Profits from selling **capital assets** like property or jewellery are taxable. These gains can be long-term or short-term.
- **Other Sources:** Includes income not covered by the other categories, such as savings interest, family pension, gifts, lottery winnings, and investment returns.

- **Importance:** It is crucial for nation-building, providing **essential revenue for security, services, and economic development**.
 - It balances wealth redistribution and state power, shaping social structure and establishing a social contract.
 - Tax reforms enhance governance, expand state capacity, and boost legitimacy, making **income tax vital for a self-sustaining state and societal welfare**.
- **Current Landscape:** The landscape of **personal income tax (PIT)** in India has seen significant growth, reflecting the **country's expanding economy and improved tax compliance**.
 - Gross PIT, including the **Securities Transaction Tax (STT)**, increased from Rs 5.75 lakh crore in 2020-21 to Rs 9.67 lakh crore in 2022-23. By 2023-24, the personal income tax collections, including STT, had surged to an impressive Rs 12.01 lakh crore (provisional, as of April 2024).
 - For the assessment year (AY) 2024-25, there were **58.57 lakh first-time Income Tax Returns (ITRs) filers (Total ITRs filed for AY 2024-25 is 7.28 crore)**, showcasing India's economy becoming more formalised as more people voluntarily pay taxes.
 - ITR is a form that **individuals in India must submit to the Income Tax Department**, containing information about their income and taxes for the financial year from **1st April to 31st March of the following year**.
 - The Income Tax Department has made significant progress since its inception, with revenue growing from **Rs. 30 lakh to Rs. 20 lakh crore, doubling the tax base**, and increasing the **tax-to-GDP ratio**, through initiatives like the **rationalisation of corporate tax** and the **new tax regime**.

Note:

Unified Pension Scheme

Why in News?

The Union Cabinet approved the **Unified Pension Scheme (UPS)**, which will provide government employees with **assured pension** after retirement.

- The scheme will be effective from **1st April, 2025** with **central government employees** shifting to UPS from the current National Pension System (NPS).
- **State governments** will also have the option to adopt the **Unified Pension Scheme**.

What are the Provisions of the Unified Pension Scheme?

- **Assured Pension:** This would amount to **50%** of the **employee's average basic pay** drawn over the **last 12 months** before retirement for a minimum qualifying service of **25 years**.
 - The amount would **proportionately go down** for a smaller service period, up to a minimum of **10 years** of service.
- **Assured Minimum Pension:** In the case of retirement after a minimum 10 years of service, the UPS provides for an **assured** minimum pension of **Rs 10,000 per month**.
- **Assured Family Pension:** Upon a retiree's death, their **immediate family** would be eligible for **60%** of the pension last drawn by the retiree.
- **Inflation Indexation:** Dearness relief will be available on the above mentioned three kinds of pensions.
 - **Indexation** will be calculated based on the **All India Consumer Price Index for Industrial Workers**.
- **Lumpsum Payment at Retirement:** In addition to **gratuity**, employees will receive a **lump sum payment** at retirement equivalent to **1/10th of their monthly emoluments** (pay+DA) as of the retirement date for every completed six months of service.
 - This payment will not affect the amount of the assured pension.
 - Gratuity is an **amount paid** by an employer to its employees for **rendering their services**.
- **Choice for Employees:** The employees can still opt to **remain under the NPS**. However, an employee can only opt for once. once opted, the option can not be changed.

What are the Key Differences between UPS, Old Pension Scheme (OPS) and National Pension Scheme (NPS)?

- **Pension Calculation Method:** In **OPS**, pension was **fixed at 50%** of the **last base salary plus dearness allowance (DA)**.
 - In **UPS**, pension is calculated as **50%** of the **average of the basic salary plus DA drawn** in the last year before retirement. This adjustment means a slightly **lower pension** if an employee receives a **promotion** shortly before retiring.
- **Employee Contribution:** In **OPS**, **no employee contribution** was required.
 - In **UPS**, the employee contribution amount is **10%** of the **basic pay**, and the **DA** and the **government** will also contribute **18.5%**.
 - **NPS** required a **10%** contribution from the **central government employee's** basic salary and **14%** contribution from the **government**.
- **Tax Benefits:** Central government employees are eligible for **tax benefits** for the government's contribution to the **NPS scheme**. They can deduct **14%** under the **Income Tax Act, 1961** from both the old and new taxation regimes.
 - As there were no employee contributions to **OPS**, they **cannot reap tax benefits**.
 - The **government has yet to clarify if employee and government** contributions are available for any tax benefits under UPS.
- **Higher Minimum Pension in UPS:** Under the UPS scheme, the **minimum pension** offered per month is **Rs 10,000** at the time of **retirement** after a 10 year minimum service.
 - The **present minimum amount is Rs 9,000** after the ten-year minimum service period.
- **Lumpsum Payments:** **OPS** allowed **commutation** of up to **40%** of the pension into a **lumpsum payment**, reducing the monthly pension amount.
 - **UPS** provides a **lumpsum payment** at retirement calculated as **one-tenth** of the monthly salary plus DA for every six months of service, without affecting the pension amount.

What is NPS?

- **About:** NPS was a **market-linked** contribution scheme introduced by the Central Government to help the individuals have **income** in the form of **pension** to take care of their retirement needs.

Note:

- The NPS replaced the OPS on **1st January, 2004** as part of the Centre's effort to reform **India's pension policies**.
- The **Pension Fund Regulatory and Development Authority (PFRDA)** regulates and administers NPS under the **PFRDA Act, 2013**.
- **Need for NPS:** There was a fundamental problem with the OPS i.e. it was **unfunded**, there was **no corpus** specifically for pension.
 - Over time, this led to the government's **pension liability** to balloon to fiscally **unhealthy levels**.
 - The pension liabilities of the Centre jumped from **Rs 3,272 in 1990-91 to Rs 1,90,886 crore in 2020-21**.
- **Working of NPS:** The NPS was different from OPS in two fundamental ways.
 - First, it did away with an assured pension.
 - Second, **it would be funded by the employee himself/herself**, along with a matching contribution by the government.
 - The defined contribution comprised 10% of the basic pay and dearness allowance by the employee and the government's contribution of 14%.
 - Individuals under NPS can choose from a range of **schemes and pension fund managers** as well as private companies to **invest** their money contributed to NPS.
- **Opposition to NPS:** Under the NPS, government employees received **lower guaranteed returns** and had to **contribute to their pension**, unlike the OPS where there were no employee contributions and higher guaranteed returns.
 - Amid ongoing calls for a return to the OPS, the union government established a committee in 2023 led by **TV Somanathan**. The recommendations of the committee have led to the introduction of the new **Unified Pension Scheme (UPS)**.

What can be the Fiscal Implications of UPS?

- **Large Debt-to-GDP Ratio:** The **Unified Pension Scheme (UPS)** will have significant fiscal impacts on a government with high debt and a large **debt-to-GDP ratio**.
 - The scheme's cost could strain government finances further.

- **High Fiscal Burden:** A Reserve Bank of India study (September 2023) warned that if all states switched to OPS, the fiscal burden could be up to **4.5 times** that of the **National Pension System (NPS)**, potentially reaching **0.9% of GDP** annually by 2060.
 - There is concern about how the **UPS** will impact Union finances as it broadly **resembles OPS**.

Cross-Border Payments

Why in News?

Recently, the **Financial Stability Board (FSB)** has emphasised the urgent need to address inefficiencies in **cross-border payments (CBPs) systems**. With the global cross-border payments **market set to nearly double by 2032**, improving these systems has become a critical focus.

What are Cross-Border Payments?

- **About:** CBPs are transactions where the **payer and recipient are located in separate countries**. These transactions are vital for international trade, investment, and personal transfers.
- **Types:**
 - **Wholesale Cross-border Payments:** Typically between financial institutions, used for activities such as borrowing, lending, and trading in foreign exchange, equities, and commodities.
 - They are also used by **governments and large corporations** for significant transactions related to imports, exports, and financial markets.
 - **Retail Cross-border Payments:** Generally involve individuals and businesses, including **person-to-person (P2P), person-to-business (P2B), and business-to-business (B2B) transactions**.
 - A notable example is **remittances**, where migrants send money back to their home countries.
- **Significance:** The global CBP market, valued at **USD 181.9 trillion in 2022, is projected to reach USD 356.5 trillion by 2032**, reflecting a growth rate of 7.3% annually. This rise reflects the expanding global economic activities and financial interactions.
 - The **globalisation** of supply chains, international trade, and **e-commerce** necessitates efficient cross-border transactions to support economic activities.
- **Working Procedure:**
 - **Traditional Models of CBPs:**
 - **Direct Bank Transfers:** Banks maintain accounts with their counterparts in other countries to facilitate international transfers.

Note:

- Instead of physically transferring money, funds are credited and debited between accounts in different jurisdictions.
- **Correspondent Banking:** When two banks do not have a direct relationship, they use a **correspondent bank that holds accounts with both banks to facilitate the transaction**. This adds layers to the transaction chain. It is declining due to high costs and regulatory burdens.
- **Single System Model:** Relies on a single payment service provider but faces interoperability issues.
- **Interlinking Payment Infrastructures:** Connects national **systems for seamless transactions** but encounters technical and regulatory challenges.
- **Peer-to-Peer Systems:** Utilises technologies like **distributed ledgers for direct payments**, offering a potential solution to traditional inefficiencies.
- **New-Age Models:**
 - **Linking Fast Payment Systems (FPS):** Initiatives like the **PayNow-PromptPay** linkage between Singapore and Thailand and the **UPI-PayNow linkage between India and Singapore** facilitate real-time, cross-border fund transfers.
 - **Central Bank Digital Currencies (CBDCs):** **CBDCs** are being explored for their potential to streamline international transactions.
 - **Distributed Ledger Technology (DLT):** DLT projects, often combined with CBDCs, aim to enhance transaction speed, security, and cost-effectiveness.
 - DLT allows simultaneous access, validation, and record updating across a networked database, enabling users to view changes and who made them, reducing the need to audit data, ensuring data reliability, and providing access only to those who need it.
- The Financial Stability Board (FSB) 2023 report highlights issues with inconsistent wire transfer recordkeeping, affecting customer identification and sanctions screening.
- **High Costs:** Cross-border transactions often **incur multiple fees**, including charges from intermediary banks and currency conversion costs.
 - **Banks need to hold capital in multiple currencies** to facilitate transactions, which ties up resources and increases costs.
 - Hidden fees and **unclear cost breakdowns** can make it difficult for users to understand the true cost of cross-border transactions.
- **Low Speed:** Transactions can take several days to complete due to the involvement of multiple intermediaries and time zone differences.
 - Payment systems **often operate during local business hours**, causing delays in processing cross-border payments across different time zones.
- **Limited Access:** Not all countries or regions have access to efficient cross-border payment systems, particularly in underserved or less developed areas.
 - Limited access to **banking services or modern financial technologies** can hinder the ability of individuals and businesses to make or receive cross-border payments.
- **Fragmented Data Formats:** Variations in **data formats and standards between different countries** and systems can lead to delays and errors in processing payments.
 - Differences in data quality and requirements across jurisdictions can affect the accuracy and efficiency of transactions.
- **Technology Platforms:** Many cross-border payment systems **rely on legacy technology that is not optimized for real-time processing** or integration with modern systems.
 - Older platforms **may lack advanced features for automation** and real-time monitoring, resulting in inefficiencies.
- **Long Transaction Chains:** The involvement of **multiple correspondent banks in the payment chain can increase costs, delays, and risks of data corruption**.
 - Longer transaction chains complicate the payment process and require more resources to manage.

What are the Challenges Regarding the Cross-Border Payments Systems?

- **Legal and Regulatory Compliance:** Payments must adhere to varying domestic laws across multiple jurisdictions, covering **anti-money laundering (AML)**, customer due diligence, data sharing, and settlement processes.
 - **Fragmented implementation of AML and counter-terrorist financing (CFT)** frameworks leads to friction in system design and functionality.

Note:

- **Weak Competition:** High barriers to **entry for new providers can limit competition** and innovation in the cross-border payments market.
 - Difficulty in assessing and comparing costs can reduce competitive pressure and lead to higher prices for end users.

Cross-Border Payments in India

- India, a major hub for global remittances, handles substantial cross-border payment flows, including approximately USD 80 billion in inbound remittances and USD 19 billion outbound.
- Evolution in Cross-Border Remittances:
 - **Pre-Technology Era:** Before technological advancements, **Non-Resident Indians (NRIs)** used demand drafts drawn on Federal Bank, which were sent via courier for encashment.
 - **Online Remittances:** In the mid-2000s, **National Electronic Fund Transfer (NEFT)**, was launched and allowed for direct and secure transfers to accounts in India.
 - NEFT is a nation-wide centralised payment system owned and operated by the **Reserve Bank of India (RBI)**.
 - **IMPS Integration:** The launch of the **Immediate Payment Service (IMPS)** by NPCI allowed for credits to be completed in under 3 minutes, further enhancing efficiency.
 - **UPI for Foreign Inward Remittance:** The integration of the **Unified Payments Interface (UPI) for Foreign Inward Remittance (FIR)** further streamlined and innovated the remittance process.
- **Regulatory Changes:** The **RBI** introduced the **Payment Aggregators of Cross-Border Transactions (PA-CB Regulation)** to streamline and regulate cross-border payments, including import and export transactions.
 - This new framework replaces previous guidelines and subjects all entities involved in cross-border payments to direct RBI oversight.

What is being Done Internationally to Improve Cross-Border Payments?

- **G20:** The **G20** has prioritised improving cross-border payments to enhance speed, reduce costs, increase transparency, and foster inclusivity.

- The 2020 Roadmap for Enhancing Cross-Border Payments, supported by 11 quantitative targets set by the **Financial Stability Board (FSB)**, aims to address these challenges globally by the end of 2027.
- These targets cover transaction speed, cost, access, and transparency across wholesale payments, retail payments, and remittances.

- **SWIFT GPI:** The **Society for Worldwide Interbank Financial Telecommunication (SWIFT)** launched the **Global Payments Innovation (GPI)** to enhance the speed and transparency of cross-border payments.
 - It allows for real-time tracking of payments and ensures that funds are transferred within a day.
- **Project Nexus:** It is conceptualised by the **Innovation Hub of the Bank for International Settlements (BIS)**. **Project Nexus** is a global initiative designed to enhance cross-border payments by connecting **multiple domestic instant payment systems (IPS)**.
 - The project aims to create a standardized platform that **links domestic Fast Payment Systems (FPSs) globally**, allowing for near-instantaneous cross-border payments.
 - The founding members of Project Nexus include **India and four Association of Southeast Asian Nations (ASEAN) countries:** Malaysia, the Philippines, Singapore, and Thailand.
- **Global Payment Service Providers: Visa and Mastercard** are advancing cross-border payments with innovative technologies.
 - **Visa's B2B Connect** uses **Application programming interface (API)** and DLT for same-day or next-day settlement of large-value transactions between banks, integrating payment messaging with security features.

Financial Stability Board

- **The FSB** is an international body responsible for monitoring and making recommendations about the global financial system. It was established in 2009 at the G20 Pittsburgh Summit as a successor to the **Financial Stability Forum (FSF)**.
- The FSB's membership includes the G20 countries, Spain, and the European Commission, **in addition to the FSF members**.
- The FSB identifies and **assesses systemic vulnerabilities in the global financial system**.
 - This will contribute to ongoing efforts to strengthen the international financial system.

Note:

- **India is an active Member of the FSB** having three seats in its Plenary represented by Secretary (Economic Affairs), Deputy Governor-RBI and Chairman-**Securities and Exchange Board of India (SEBI)**.
- The **Financial Stability and Development Council Secretariat** in the Department of Economic Affairs coordinates with financial sector regulators and agencies to represent India's views to the FSB.

Revamping Crop Data Collection by E-technology

Why in News?

Recently, the Union government urged states to swiftly adopt and implement the **Digital General Crop Estimation Survey (DGCES)**, **Digital Crop Survey** and **Revamped FASAL Programme** to improve **farm production estimates** and enhance data accuracy.

- It aims to enhance the **accuracy, reliability and transparency** of agricultural statistics which will help in policy formulation, trade decisions and agricultural planning.

What are the New Initiatives Launched for Revamping Crop Data Collection?

- **Digital General Crop Estimation Survey (DGCES):** It is a nationwide initiative that uses a **mobile app and web portal** to assess crop yields and improve agricultural practices in India.
 - It aims to calculate yield based on scientifically designed **crop cutting experiments** for all major crops across the country.
 - It includes features such as **GPS-enabled photo capture, automated plot selection, and geo-referencing** to enhance transparency and accuracy.
- **Digital Crop Survey:** It is a technology-driven initiative designed to provide detailed and accurate crop data through **digital means**.
 - It aims to enhance the **precision of crop area estimation** and other related agricultural statistics.
 - **Key Features Include:**
 - **Geotagged Data:** Uses **geotagging** to record the exact locations of crop plots, ensuring accurate area measurement.

- **Digital Documentation:** Employs digital tools and platforms for data collection, reducing reliance on manual methods.
- **Real-Time Updates:** Provides near **real-time information** about crop areas, allowing for more timely and accurate assessments.
- **Revamped FASAL Programme: **Forecasting Agricultural output using Space, Agro-meteorology and Land based observations (FASAL)**** leverages **remote sensing** technology to generate accurate crop maps and area estimation for major crops.
 - **Mahalanobis National Crop Forecast Centre (MNCFC)** of the Department of Agriculture & Farmers' Welfare regularly generates **crop forecasts** at the District/State/National level for major crops.
- **Unified Portal for Agricultural Statistics (UPAg Portal):** The **UPAg Portal** serves as a **centralised hub** for near real-time information on crop production, market trends, pricing, and other vital agricultural data.
 - It allows for the **cross-verification** of data from multiple sources, ensuring robust agricultural statistics.
- **Yield Forecast Model:** The Ministry of Agriculture & Farmers Welfare is collaborating with various institutions, including the **Space Application Centre** and the **Indian Agricultural Research Institute**, to develop yield forecast models.
- **Supervision:** The Ministry of Agriculture & Farmers Welfare is working with the **Ministry of Statistics and Programme Implementation** to increase the supervision of crop-cutting experiments by the **National Sample Survey Office**.

What is the Need for a New Mechanism to Collect Crop Data?

- **Real-Time Monitoring:** Conventional methods may not provide **timely updates** on crop conditions and **production estimates**.
 - In the event of unexpected weather conditions or pest outbreaks, **real-time data** is **crucial** for timely intervention and **accurate assessment**.
- **Integration of Advanced Technologies:** Lack of integration with modern technologies limits the effectiveness of current data collection methods.
 - The **Digital Crop Survey and Digital General Crop Estimation Survey (DGCES)** leverages advanced technology to provide **geotagged**, plot-level data, which enhances precision.

Note:

- **Enhancing Data Reliability:** Initiatives and programs that use **remote sensing** can create accurate **crop maps**, reducing reliance on manual data collection and enhancing data consistency.
- **Facilitating Policy-Making:** Accurate and timely data from new initiatives like **Digital Crop Surveys** help policymakers make **informed decisions** about resource allocation and support measures like **Public Distribution System, food security** etc.
- **Addressing Climate Impacts:** **Climate change** affects crop production, and traditional methods may struggle to keep up with the changing conditions.
 - Advanced technologies like satellite imagery can quickly offer better data for adjusting farming practices e.g., **advance warning** in case of **locust attack**.
- **Handling Large-Scale Data:** In India, estimating crop production across vast and **diverse agricultural regions** can be easier using digital technologies..

Agriculture Census and Livestock Census

Agriculture Census: The Ministry of Agriculture & Farmers Welfare conducts **agriculture census** to gather crucial data on the agricultural sector.

- The census follows the decennial **World Census of Agriculture (WCA)** guidelines set by the **Food and Agriculture Organization (FAO)** of the **United Nations**.
- Data is classified by different size classes (**marginal, small, semi-medium, medium, and large**) and social groups, including **Scheduled Castes** and **Scheduled Tribes**.
- The Agriculture Census is carried out once in **five years**.
 - So far, **ten Agriculture Censuses** have been conducted in the country since **1970-71** and the current Agriculture Census with the reference year **2021-22** is the **eleventh** in the series.

Livestock Census: The Ministry of Fisheries, Animal Husbandry & Dairying conducts **livestock census** once every **5 years**.

- The Livestock Census covers **all domesticated animals**.
- It has been conducted periodically since **1919-20**. So far **20** such censuses have been conducted with the **20th** one conducted in **2019**.

What are the Challenges Involved in the Adoption of New Tech Initiatives for Farm Data Collection?

- **Lack of Digital Infrastructure:** **Inadequate** infrastructure like **the cloud for data storage and data processing skills** of public officials hampers the use of digital technology in agriculture.
- **Limited Access to Technology:** Smallholder farmers **often lack access to technology** and the necessary **digital skills** which hinders adoption of digital tools and limits data generation.
- **Data Accuracy and Reliability:** Concerns remain about the **accuracy and reliability** of data collected through new technologies.
 - **Inaccurate data collection tools may lead to poor decision-making** and decreased trust in digital systems.
- **Integration with Existing Systems:** New data collection tools may not seamlessly integrate with traditional systems, causing **data management issues**. It may complicate the adoption process and can lead to inefficiencies.
 - In traditional systems, crop data are in **regional language and local script**. Converting them into **multiple languages** for universal access and uploading them correctly on **cloud storage** is a tiring process.

CBDT to Overhaul Income Tax Act 1961

Why in News?

The **Income Tax Department** is undertaking a significant overhaul of the **Income Tax Act, 1961**, through a newly formed internal committee.

- This move, announced by the **Central Board of Direct Taxes (CBDT)** chairman, is part of a central government-mandated initiative aimed at simplifying and modernizing **India's direct tax laws**.

Why is the Income Tax Act Being Reviewed?

- **Historical Complexity:** The Income Tax Act, 1961, has been criticized for its complexity and outdated provisions.

Note:

- Previous efforts to simplify the Act, including the **1958 Law Commission's work on the Income Tax Act 1922**, highlighted that true simplification requires **overhauling the tax structure itself**.
- **Need for Modernization:** The Act's complexity has led to **disputes and confusion among taxpayers**. The review aims to update the law to reflect current economic realities and global best practices, making it **more transparent and easier to navigate**.
- **Improvement of Compliance:** Simplifying the tax law is expected to enhance taxpayer compliance by **reducing ambiguities and making the filing process more straightforward**.
 - The review is part of a broader effort to make the tax system **more efficient and in line with global standards**.
- **Dispute Resolution:** The **Vivad Se Vishwas scheme** has been implemented to settle long-standing disputes.
 - The review will also consider **shortening the reassessment period and setting higher monetary thresholds** to reduce confrontations between taxpayers and the tax department.

What are the Key Aspects of the Income Tax Act, 1961?

- **About:** The Income Tax Act of 1961 is a **foundational statute governing income taxation in India**. As a comprehensive framework, it dictates how income tax is levied, administered, and collected from individuals and corporations.
 - It contains 298 sections, 23 chapters and several important provisions which contain all the aspects of taxation in India.
 - Income tax is a **direct tax that individuals are required to bear**, without the option to transfer it.
- **Objectives:**
 - **Economic Stability:** The Act aims to maintain economic stability by regulating private spending and ensuring progressive taxation.
 - **Progressive Taxation:** It seeks to ensure that **individuals contribute to taxes according to their income levels**, promoting fairness and equity in the tax system.
 - **Revenue Collection:** By outlining clear rules for taxing income from various sources, the Act helps in efficient revenue collection and management.

➤ **Key Provisions:**

- **Tax Slabs:** Defines income brackets and the corresponding tax rates applicable to individuals and businesses.
- **Deductions:** Allows for deductions under sections such as **80C (investments), 80D (medical insurance premiums), and 80G (donations), subject to annual limits**.
- **Assessment:** Details the procedures for assessing taxable income, filing returns, and conducting audits.
- **Tax Deducted at Source (TDS):** Requires **tax to be deducted at the source** for certain payments, simplifying the tax collection process.
- **Capital Gains:** Regulates taxation on profits from the sale of assets, including provisions for short-term and long-term gains.
- **Penalties and Appeals:** Outlines penalties for non-compliance and the procedures for resolving disputes through appeals.

➤ **Key Recent Reforms:**

- **Corporate Tax Rates:** Recent reforms have included reducing corporate tax rates and phasing out certain incentives.
 - The effective tax rate for corporate taxpayers decreased from 29.49% in 2017-18 to 23.26% in 2021-22. The corporate tax rate for foreign companies has also been reduced to 35%, and the **angel tax has been abolished**.
- **Personal Income Tax Slabs:** Fewer income-tax slabs and reduced rates for lower-income groups are expected to benefit a large number of individual taxpayers.
 - Simplification of Tax Slabs has led to an increase in the number of taxpayers, from **89.8 million to 93.7 million between 2019-20 and 2022-23**.

What are the Expected Benefits of the Overhaul of Income Tax Act, 1961?

- **Conciseness and Clarity:** The revised Act will be more **concise**, making it easier to understand and navigate.
 - By **eliminating redundant and outdated clauses**, the Act will become less cumbersome, reducing the administrative burden on taxpayers and tax authorities.
- **Enhanced Taxpayer Experience:** A more straightforward tax law will reduce **ambiguity and make it easier for taxpayers** to navigate the system, fostering trust and compliance.

Note:



- **Capital Gains Tax Reform:** The government plans to reform the capital gains regime, aligning with **global trends**.
 - This includes **increasing taxes on equity capital gains** and **raising the securities transactions tax** on futures and options. The reform aims to balance the tax burden between different asset classes and income groups.
- **Broader Tax Base:** Simplified **compliance procedures and clearer regulations** may lead to higher tax compliance and broaden the tax base.
 - With better **enforcement and reduced loopholes**, the government expects to boost revenue collection despite potential reductions in tax rates or exemptions.
- **Improved Business Environment:** A more transparent and **predictable tax regime will make India a more attractive destination for foreign and domestic investors**.
 - Adjustments to **corporate and capital gains tax rates** can be designed to foster investment and economic growth.
- **Long-Term Economic Benefits:** A modernized **tax system will support economic growth and stability**, contributing to India's goal of achieving **developed country status by 2047**.
 - Streamlined processes and **clearer regulations will enhance** the overall efficiency of the **tax administration and reduce** the cost of compliance.

What are the Key Facts About the Central Board of Direct Taxes?

- **Historical Background:** The origins of the CBDT trace back to the **Central Board of Revenue Act, 1924**, which initially established the **Central Board of Revenue responsible** for both direct and indirect taxes.
 - The administrative burden of **managing both direct and indirect taxes led to the bifurcation** of the Board in 1964.
 - This split created two distinct bodies: the **Central Board of Direct Taxes (CBDT)** for direct taxes and the **Central Board of Excise and Customs for indirect taxes**.
 - This restructuring was formalised under the **Central Boards of Revenue Act, 1963**.
 - It is a part of the **Department of Revenue within the Ministry of Finance**, the CBDT plays a crucial role in managing direct taxes in India.

- **Structure:** The CBDT is headed by a **Chairman**, who coordinates the functions of the Board.
 - The Board comprises six members, each holding the rank of **ex-officio Special Secretary** to the Government of India.
- **Selection:** The Chairman and Members are selected from the Indian Revenue Service (IRS), ensuring that the leadership is well-versed in tax administration and policy.
- **Functions:** The CBDT is responsible for formulating policies related to direct taxes, including income tax and corporation tax.
 - The Board oversees the functioning of the entire Income Tax Department, ensuring efficient administration and enforcement of tax laws.
 - The CBDT proposes changes in direct tax laws and rates in alignment with government policies. It also suggests legislative amendments to enhance the tax system.

Bharatmala Pariyojana

Why in News?

- Nearly **50%** of the **Bharatmala Pariyojana Phase-I**, a flagship road network expansion program, has been completed as of 31st March 2024 and is expected to be completed by 2027-28.
- The Ministry of Road Transport and Highways' **Vision 2047** aims to provide high-speed corridors within 100-150 km of all citizens and enhance passenger convenience by developing world-class amenities.
 - This vision serves as the basis for the **Master Plan** for highways and related infrastructure in India.

What is Bharatmala Pariyojana?

- **About:**
 - **Bharatmala Pariyojana** is an umbrella programme launched under the Ministry of Road Transport and Highways.
 - The **first-phase** of Bharatmala was **announced in 2017** and **was to be completed by 2022**, but it could not be completed due to **slow implementation and financial constraints**.
 - **Bharatmala, Sagarmala, dry/land ports**, and other infrastructure projects have been incorporated under **PM Gati-Shakti Plan** to enhance connectivity and logistics efficiency.

Note:

- While **Bharatmala** project aims to **improve road connectivity**, enhancing freight and passenger movement, **Sagarmala project** focuses on **modernising ports and promoting coastal shipping** to boost trade and maritime activities.
- **Key Features:**
- **Economic Corridors and their Efficiency Improvement:** Bharatmala focuses on enhanced effectiveness of already built infrastructure, multi-modal integration, bridging infrastructure gaps for seamless movement and integrating National and Economic Corridors.
 - It aims to develop about 26,000 km of economic corridors, along with the **Golden Quadrilateral (GQ)** and **North-South and East-West (NS-EW) Corridors**, to carry the majority of the freight traffic on roads.
 - **Inter-State Corridor and Feeder Routes:** This would ensure first mile and last mile connectivity.
 - About **8,000 km of interstate corridors** and about **7,500 km of feeder routes** have been identified for improving the effectiveness of these corridors.
 - **Border and International Connectivity Roads:** Better border road infrastructure would ensure greater manoeuvrability, while also boosting trade with neighbouring countries.
 - **Coastal and Port Connectivity Roads:** Port-led economic development is further boosted through connectivity to coastal areas, encouraging both tourism and industrial development.
 - **Green-Field Expressways:** Expressways have higher traffic configuration and choke points would benefit from green-field expressways.
- **Funding Mechanism:**
- The Bharatmala project is being funded from various sources including **Central Road and Infrastructure Fund cess, remittances, additional budgetary support, monetisation of national highways, Internal and Extra Budgetary Resources**, and **private sector investment**.
- **Status:**
- As of March 2024, Bharatmala Pariyojana Phase-1 has successfully awarded contracts for the construction of 26,425 km of roads and **completed 17,411 km**, with a total expenditure of **Rs 4.59 lakh crore**.
 - The project covers **34,800 km across 31 states** and UTs and over 550 districts.



Note:

Other Similar Initiatives for Road Infrastructure Development

- **Pradhan Mantri Gram Sadak Yojana (PMGSY):** This project was initiated in **2001** to provide connectivity to unconnected Habitations.
- **National Infrastructure Pipeline (NIP):** The **National Infrastructure Pipeline (NIP)** is an initiative that will provide **world-class infrastructure across India** to improve the overall quality of life for all citizens and attract domestic and foreign direct investments.
 - Infrastructure projects include both social and economic infrastructure projects in sectors such as **Energy, Roads, Urban, and Railways** amounting to around 70% of the projected capital expenditure in infrastructure in India.
 - It includes **greenfield and brownfield projects** costing above Rs 100 crore each.
- **Golden Quadrilateral Project:**
 - It is a network of 4-6 lane highways connecting India's 4 top metropolitan cities, namely **Delhi, Mumbai, Chennai and Kolkata**, thereby forming a quadrilateral.
 - This project was launched in **2001** as part of the **National Highways Development Project (NHDP)**. It is the largest highway project in India.
 - **4 arms of the Golden Quadrilateral:**
 - **Delhi–Kolkata:** 1,453 km
 - **Chennai–Mumbai:** 1,290 km
 - **Kolkata–Chennai:** 1,684 km
 - **Mumbai–Delhi:** 1,419 km
- **New Contracting Models and Asset Monetisation:** In addition to the traditional tendering methods like **Engineering, Procurement, and Construction (EPC)** and **Build, Operate, Transfer (BOT)**, several new contracting models have emerged.
 - These include the **Hybrid Annuity Model (HAM)**, **Toll, Operate, and Transfer (TOT)**, and **Infrastructure Investment Trusts (InVITs)**.

What is the Significance of Road Infrastructure in India's Development?

- **Economic Growth and Productivity:** Road networks are crucial for India's economic growth, contributing over **3.6% of GDP** and transporting **more than 85% of passenger traffic and 65% of freight**.

- They **reduce transportation costs, enhance market access**, and stimulate trade.
- They also create significant **employment opportunities supporting local economies** and helping reduce poverty.
- **Rural Development and Social Equity:** Rural roads, under schemes like **PMGSY**, bridge gaps between remote areas and essential services.
 - They empower marginalised communities, reduce isolation, and enhance the quality of life in rural areas.
 - Improved road connectivity boosts access to **essential services like education and healthcare**.
- **Tourism and Cultural Exchange:** Efficient road networks facilitate tourism, contributing significantly to the economy. Scenic routes and access to heritage sites foster cultural exchange and support local economies.
- **National Security and Defense:** Roads are vital for **defence logistics and emergency responses**. Border and strategic roads are essential for national security and troop movement.

What are the Major Concerns Related to Road Infrastructure Development?

- **Environmental Concerns:** Road construction raises environmental concerns such as deforestation, biodiversity loss, and increased pollution. It contributes significantly to habitat fragmentation, air and noise pollution, and climate change, highlighting the need for sustainable infrastructure practices.
 - The **International Energy Agency (IEA)** reports that road transport accounts for 12% of India's CO₂ emissions, with heavy vehicles being the primary contributors to **Particulate Matter (PM) 2.5** emissions.
- **Social Concerns:** Road projects may lead to displacement of communities, particularly in rural areas, and safety issues. Inadequate resettlement can worsen poverty, while poorly designed roads contribute to high accident rates, with over 150,000 fatalities reported in India in 2021, underscoring the need for safer infrastructure.
- **Economic Concerns:** Many road projects include significant cost overruns and delays, with the **Comptroller and Auditor General (CAG)** reporting instances where costs exceeded budgets by over 40%.
 - Additionally, the **lack of a robust maintenance framework** leads to rapid road deterioration, potentially doubling long-term costs.

Note:

- **Governance and Policy Issues:** It includes **corruption in bidding and execution**, leading to substandard infrastructure.
 - Additionally, the **lack of comprehensive planning** results in poorly executed projects, highlighting the need for **integrated transport planning**.

Jan Poshan Kendras

Why in News?

Recently, the Indian government has launched a pilot project to rename and transform 60 **Fair Price Shops (FPS)** across Gujarat, Rajasthan, Telangana, and Uttar Pradesh into “Jan Poshan Kendras.”

- This move aims to enhance the nutritional offerings available to beneficiaries under the **Pradhan Mantri Garib Kalyan Anna Yojana (PMGKAY)**.
- The project also includes the introduction of **several new digital tools** and support systems designed to enhance transparency and operational efficiency.

What is the Jan Poshan Kendra Initiative?

- **Purpose:** Under this initiative, FPSs will begin selling **additional items beyond subsidised grains** to address the **income challenges faced by ration dealers while improving the nutritional offerings** available to beneficiaries under the PMGKAY.
 - Currently, 0.54 million FPSs distribute, on average, **60-70 million tonnes of food grain annually under PMGKAY**, free of cost, to over 800 million beneficiaries.
 - The government sees scope for **generating additional income from FPS** as a large number of people visit these outlets to get their monthly entitlement of grains.
 - Further, the government aims to **convert around 100,000 fair price shops into “nutri-hubs”** in the next three years.
- **Key Features:** These Kendras will provide a diverse array of nutrition-rich food items, including pulses and dairy products, in addition to subsidised grains.
 - 50% of the space in these Kendras will be allocated for storing nutritional products, while the remaining space will be used for other household items.
 - FPSs will receive loans and invoice financing from the **Small Industries Development Bank of India (SIDBI)** to support their transformation and operations.

- The initiative includes collaborations with organisations like **AMUL for dairy products** and **Business-to-Business eCommerce (or eB2B)** platforms such as Udaan and Jumbotail for sourcing materials.
- **Digital Tools:** The initiative includes the launch of several new digital tools:
 - **FPS Sahay:** An application providing paperless, presence-less, and collateral-free financing for ration dealers.
 - **Mera Ration App 2.0:** An app designed to give consumers information about the **public distribution system**.
 - **Quality Management System (QMS):** It is a digital application for integration of Quality Control labs in the **Department of Food and Public Distribution (DFPD) and Food Corporation of India (FCI)**.
 - QMS captures all key transactions in real time during the stages of procurement, storage and distribution.
 - The introduction of digital tools and new systems is expected to enhance operational efficiency, transparency, and quality control in the public distribution system.
- **Additional Tools:** DFPD has formulated a comprehensive **Handbook of Quality Control** to ensure strict quality standards of central pool foodgrains.
 - Additionally, accreditation of **National Accreditation Board for Testing and Calibration Laboratories (NABL)** is crucial for the Department laboratories to comply with international standards, ensure quality to enhance customer confidence and satisfaction.

What is Pradhan Mantri Garib Kalyan Anna Yojana?

- The PMGKAY a significant initiative by the **Central Government** under the **Atmanirbhar Bharat** program introduced in 2020 to alleviate the economic impact of the **Covid-19 pandemic on low-income households** by providing free food grains, in addition to regular allocations under the **National Food Security Act (NFSA), 2013**.
- PMGKAY initially provided additional free food grains to around 80 crore NFSA beneficiaries (including **Antyodaya Anna Yojana (AAY) households and Priority Households (PHH)**).
 - Each AAY household receives 35 kg of food grains per month, while PHH beneficiaries receive 5 kg per person per month.

Note:

- The scheme was executed in seven phases from April 2020 to December 2022, distributing a total of 1,015 LMT (Lakh Metric Tonnes) of food grains.
- Initially set to expire in December 2022, the scheme was extended until December 2023. On 1st January 2024, the Central Government decided to continue providing free food grains to **approximately 81.35 crore beneficiaries under the PMGKAY for the next five years.**

Key Reforms Needed for India's Economic Growth

Why in News?

India's path to becoming a developed economy was highlighted by the Deputy Managing Director of the **International Monetary Fund (IMF)**, who emphasised the need for reforms in domestic resource mobilisation, infrastructure investment, and increasing **women's workforce participation.**

What Key Reforms are Needed for India's Economic Growth?

- **Simplification of GST:** India can increase revenues-to-**Gross Domestic Product (GDP)** through **Goods and Services Tax (GST)** by simplifying the **tax structure**, having **fewer tax rates**, and **broadening the tax base** by reducing exceptions, which could potentially raise an additional 1% point of GDP in revenue.
 - The revenues-to-GDP ratio is a way to measure a **country's tax revenue relative to the size of its economy**, as measured by GDP.
 - It can provide insight into a country's tax policy, potential taxation, and international comparisons between tax revenues.
 - Countries would need to **rely on domestic resource mobilisation**, as money from international institutions or multilateral development banks will be a fraction of the spending needed.
 - In India's case, increasing **fiscal space should occur through raising revenues-to-GDP** rather than reducing overall spending.
- **Broaden Personal Income Tax Base:** Expanding the **personal income tax base**, reducing **loopholes in tax exemptions**, and improving property tax collection through better technology are crucial for ensuring sufficient progressivity and enhancing revenue generation in India's taxation system.

- Additionally, **effective collection of capital gains and property taxes** is essential for bolstering fiscal resources.
- **Targeted Subsidy Reforms:** India can also **save money by targeting benefits and subsidies more effectively**, such as through **tailored fertiliser subsidies based on farm size**, as being done as a pilot project in Karnataka.
 - Ensuring subsidies reach the right beneficiaries can significantly impact revenue savings.
- **Skilled Workforce and Education:** Enhancing the **quality of education** and developing a more **skilled workforce** are essential for India's economic advancement. This includes improving formal education and skill acquisition to ensure a competitive workforce, especially in comparison to G20 peers.
- **Women's Labour Force Participation:** Women's participation needs to increase from the **current 35% to achieve high-income status.**
 - This requires not only creating more opportunities for women but also ensuring their **safety in the workplace.**
- **Job Creation and Employment Policies:** India needs to **create between 10 to 24 million jobs annually** over the next decade. This requires substantial efforts in job creation across diverse sectors.
 - Focus on inclusive growth that spans multiple sectors, not just a few industries, to ensure broad-based employment opportunities.
- **Land and Labour Reforms:** Land and labour reforms are also **essential for transitioning to a high-income country.**
 - Greater flexibility in labour markets is needed. The **2019 labour codes** offer a balance between flexibility and worker protection, but their effective implementation is vital.
- **Ease of Doing Business:** Improving the regulatory environment, enhancing the **efficiency of the judicial system**, and **simplifying business procedures** are essential to fostering a conducive environment for economic activity.
- **Openness to Trade and Lower Tariffs:** India must reduce its **average tariff rates** and become **more open to international trade.**
 - Lowering trade barriers will enable India to integrate better into global supply chains and enhance its position on the world stage.

Note:

- **Investment in Infrastructure:** While India has made significant progress in public and **digital infrastructure**, there remains a considerable gap. Continued investment in this area is necessary for sustaining economic growth.

Current Economic Status of India

- India aims to become a “**developed nation**” by **2047** under the banner of “**Viksit Bharat 2047.**”
- **India has surpassed the UK to become the fifth-largest economy globally.** Analysts from Morgan Stanley project that **India could overtake Japan and Germany to reach the third spot by 2027.**
 - India has grown well, being the **fastest-growing major economy at 7%**, but the challenge is to **maintain and further increase the momentum to raise per capita incomes and become an advanced economy.**
- India’s **digital governance reforms** have **enhanced financial inclusion**, streamlined public service delivery, and reduced corruption to a significant extent. The digital payments ecosystem has expanded significantly, allowing millions to transact with ease.
- Current Economic Indicators:
 - **Nominal GDP:** USD 3.54 trillion for FY24, reflecting strong growth.
 - **Real GDP Growth:** Estimated at 8.2% for FY24.
- **World Bank Classifications by Income Level:** Until 2006, the World Bank categorised India as a low-income nation. In 2007, **India transitioned to the lower-middle income group** and has remained in that classification since then.

Read more: [World Development Report 2024](#)

Fundamental Principles and Rights at Work (FPRW) Project

Why in News?

The **Confederation of Indian Textile Industry (CITI)** and the **International Labour Organisation (ILO)** have jointly launched the project titled **Fundamental Principles and Rights at Work (FPRW).**

- It will help create **awareness** and share **technical know-how** and knowledge about the best labour standards.

What is ILO’s Fundamental Principles and Rights at Work (FPRW) Project?

- **About FPRW Project:**
 - It is a **commitment** by governments, employers’ and workers’ organisations to uphold **basic human values** that are vital to our social and economic lives.
 - The **ILO Declaration** on Fundamental Principles and Rights at Work (FPRW) was adopted in **1998** and amended in **2022.**
 - Increasing concerns about the **social impact of globalisation** led the members of the ILO to recognize **four categories** of labour standards, expressed in **eight conventions.**
 - In **2022**, four categories were **amended** to become **five categories** with the addition of the **occupation of safety and health conventions**, expressed in **ten conventions.**
- **Five Categories of FPRW Project and Related Conventions:**
 - **Freedom of Association and the Effective Recognition of the Right to Collective Bargaining:** It is the prerogative of workers and employers alike to form and manage their own organisations, free from **external interference.**
 - Through **collective bargaining**, employers and workers discuss and negotiate their relations, in particular terms and conditions of work.
 - It is enforced by conventions like:
 - Freedom of Association and Protection of the Right to Organise **Convention (No. 87)**, 1948
 - Right to Organise and Collective Bargaining **Convention (No. 98)**, 1949.
 - **Elimination of All Forms of Forced or Compulsory Labour:**
 - Labour should **freely join**, and employees should be **free to leave**, subject to previous notice of reasonable length.
 - It is enforced by conventions like:
 - Forced Labour **Convention (No. 29)**, 1930
 - Abolition of Forced Labour **Convention (No. 105)**, 1957.
 - **Effective Abolition of Child Labour:**
 - **ILO Convention No. 138** (minimum age for entry into work or employment) and **Convention No. 182** (Elimination of the Worst Forms of Child Labour) set **minimum age** requirements for work, ensuring it is not below the age for compulsory schooling, and in any case not less than **15 years.**

Note:

- It is enforced by conventions like:
 - Minimum Age **Convention (No. 138)**, 1973
 - Worst Forms of **Child Labour Convention (No. 182)**, 1999.
 - **Elimination of Discrimination in Respect of Employment and Occupation:**
 - Exclusion or preference should not be made on the basis of **race, colour, sex, religion, political opinion, national extraction or social origin.**
 - It provides for **equal remuneration** for men and women workers for work of equal value.
 - It is enforced by conventions like:
 - Equal Remuneration **Convention (No. 100)**, 1951
 - Discrimination (Employment and Occupation) **Convention (No. 111)**, 1958.
 - **Safe and Healthy Working Environment:**
 - ILO Convention No. 155 aims to prevent **workplace accidents** and health issues, while No. 187 mandates continuous improvement in **occupational safety** and health to prevent injuries, diseases, and deaths.
 - It is enforced by conventions like:
 - Occupational Safety and Health **Convention (No. 155)**, 1981
 - Promotional Framework for Occupational Safety and Health **Convention (No. 187)**, 2006.
 - **Need of FPRW for India:**
 - **Non-Tariff Barrier to Trade:** Cotton and hybrid cotton seeds from India continue to remain in the US Labour Department's "**List of Goods Produced by Child Labour or Forced Labour**". The FPRW project will help India ease this barrier to trade.
 - **Global Obligation:** The FPRW Project of the ILO applies to all ILO member states whether they have **ratified it or not**. It is part and parcel of the ILO's Constitution.
 - Since India is a member of ILO, it was **needed to comply** with the FPRW Project.
 - **Sustainable Workforce:** Cotton-growing communities can foster a more **equitable, sustainable, and prosperous** environment for all workers, leading to long-term benefits for individuals and families.
 - **Socio-economic Upliftment:** The collaboration will **equip farmers with knowledge** about various government schemes and initiatives aimed at their **socio-economic upliftment**.

- Outreach services, information dissemination and linkages with vocational training facilities for target communities can help in their betterment.
- It is necessary to attain **Sustainable Development Goals (SDGs)** like **SDG 10 (Reduced Inequalities)**, **SDG 8 (Decent Work and Economic Growth)**.

Facts and Figures Related to Labour Conditions

- Over **40%** of the global population lives in countries that have **not ratified ILO Convention No. 87** on freedom of association or **Convention No. 98** on collective bargaining.
- On average, **women are paid 23% less** than their male counterparts and in many countries are effectively excluded from certain occupations.
- **152 million** children aged 5-17 are in **child labour**, 72 million of them are in hazardous work and other worst forms of child labour, while 80 million more are below the minimum age for work and simply too young to be working.
- **25 million** people are victims of **forced labor**, **25%** of whom are **children**.
- At least **15 million people**, mainly women and girls, live in **forced marriage**, which can amount to forced labour.

International Labour Organization (ILO)

- The **International Labour Organization (ILO)** was established in 1919 under the Treaty of Versailles.
- It unites **governments, employers, and workers** from 187 member states to establish labour standards, formulate policies, and create programs that promote decent work for all men and women.
- It became the first affiliated specialised agency of the United Nations in 1946.
 - It is headquartered in **Geneva, Switzerland**.
- Its founding mission is **social justice** is essential to **universal and lasting peace**.
- It received the **Nobel Peace Prize** in 1969 for improving peace among classes, pursuing decent work and justice for workers and providing technical assistance to other developing nations.

What is Status of Child Labour in India?

- According to the last available **Census 2011**, there were **10.1 million child labourers** in India.

Note:

- As per the **National Crime Records Bureau Report 2022**, in 2021, around 982 cases were registered under the **Child Labour (Prohibition and Regulation) Act, 1986**, with the highest number of cases registered in Telangana, followed by Assam.
- Initiatives Taken by Government to Curb Child Labour:
 - **Child Labour (Prohibition and Regulation) Act, 1986**: Bans the **employment of children below 14 years** and **adolescents below 18 years** in **hazardous occupations** and processes.
 - **The Factories Act, 1948**: Prohibits the employment of **children below 14 years of age in any hazardous environment** and restricts the **working hours and conditions of adolescents (14 to 18 years)** who are allowed to work only in non-hazardous processes.
 - **National Policy on Child Labour, 1987**: Aims to eradicate child labour by prohibiting and regulating it, providing **welfare and development programmes** for children and their families, and ensuring the education and rehabilitation of working children.
 - **Pencil Portal**: The platform aims at engaging the Central Government, State Government, District, civil society and the public in **eradicating child labour** to achieve the target of a **child labour free society**. It was launched by the **Ministry of Labour and Employment**.
 - **Ratifying conventions of the International Labour Organization**: India has also ratified **two core conventions** of the International Labour Organization on child labour in 2017 i.e., **Minimum Age Convention (1973) No. 138** and **Worst Forms of Child Labour Convention (1999) No. 182**.

Note:

- **India has ratified several ILO conventions like:**
 - Forced Labour **Convention (No. 29)**, 1930 in 1954
 - Equal Remuneration **Convention (No. 100)**, 1951 in 1958
 - Discrimination (Employment and Occupation) **Convention (No. 111)**, 1958 in 1960
 - Abolition of Forced Labour **Convention (No. 105)**, 1957 in 2000
 - Minimum Age **Convention (No. 138)**, 1973 and Worst Forms of Child Labour **Convention (No. 182)**, 1999 in 2017.

What is the Status of Cotton Farming in India?➤ **About:**

- Cotton is one of the most important **commercial crops** cultivated in India and accounted for around **23%** of the total **global cotton production** in **2022-23**.
 - It plays a major role in sustaining the livelihood of an estimated **6 million cotton farmers** and **40-50 million people** engaged in related activities such as **cotton processing and trade**.
- Due to its economic importance in India, it is also termed as **"White-Gold"**.

➤ **National Scenario:**

- **Acreage under Cotton**: In **2022-23**, India ranked first globally in cotton acreage with **130.61 lakh hectares** area under cotton cultivation i.e., around 40% of world area of 324.16 lakh hectares.
 - Approximately **67%** of India's cotton is produced on rain-fed areas and 33% on irrigated lands.
- **Cotton Yield**: In terms of productivity, India is on **39th rank** with a yield of **447 kg/ha**.
- **Cotton Types**: India is the only country which grows **all four species of cotton** i.e., G. Arboreum and G. Herbaceum (Asian cotton), G. Barbadense (Egyptian cotton) and G. Hirsutum (American Upland cotton).
 - **G. Hirsutum** represents **90%** of the hybrid cotton production in India and all the **current Bt cotton hybrids are G. Hirsutum**.
- **Production**: India is having **2nd place** in the world with estimated production of **343.47 lakh bales** during cotton season 2022-23 i.e., **23.83%** of world cotton production.
- **Production Pattern**: Majority of cotton production comes from **9 major cotton growing states**, which are grouped into three diverse agro-ecological zones, as under:
 - **Northern Zone**: Punjab, Haryana and Rajasthan
 - **Central Zone**: Gujarat, Maharashtra and Madhya Pradesh
 - **Southern Zone**: Telangana, Andhra Pradesh and Karnataka.
- **Consumption**: India is also the **2nd largest consumer** of cotton in the world with estimated consumption of 311 lakh bales (5.29 Million Metric Tonnes).

Note:

- It accounts for 22.24% of world cotton consumption of 1399 lakh bales (23.79 Million Metric Tonnes).
- **Import and Export of cotton:** India is one of the **largest exporters** of cotton i.e., **6% of world export** of 528 lakh bales (8.98 Million Metric Tonnes) in 2022-23.
- Less than 10% of the total consumption of cotton in India is imported by the textile industry to meet their specific requirement.

Steps are Taken for Development of the Cotton Sector

- [Procurement of cotton on Minimum Support Price \(MSP\)](#)
- [Mobile App "Cott-Ally"](#)
- [Kasturi Cotton India](#)
- [PM MITRA Scheme](#)

What are the Key Challenges in India's Cotton Sector and the Way Forward?

- **Challenges Impacting the Cotton Sector:**
 - **Pest and Disease Infestations:** Farmers regularly face **pest attack** by **pink bollworm**.
 - This pest became a new challenge in cotton farming as it grew **resistant to Bt proteins**, showing the need for diverse and adaptive pest management strategies.
 - **Health Problems:** Farmers are exposed to **pesticides** at work which can experience acute toxicity, **respiratory problems, skin and eye irritation, seizures and even death**.
 - In the long-term, low dose pesticide exposure has been linked to **Parkinson's disease**, asthma, mental illness and certain cancers.
- **Unorganised Sector:** Over 90% of India's weaving industry is **unorganised**, with inadequate infrastructure compared to other Asian countries, hindering progress.
- **Manual Labour:** The textile industry remains **labour-intensive** with slow adoption of automation, causing inefficiencies, machine underutilisation, and **productivity loss**.
 - Slow technology adoption and **infrastructure gaps** affect the industry's overall efficiency and growth.
- **Industry Fragmentation:** Only **5%** of the apparel industry is **organised**, affecting profitability and efficiency.

- 70% of workers have basic or **no formal education**, limiting skill development and industry growth.
- **Water Wastage:** The Indian textile industry faces significant **water wastage**, requiring strategic minimisation to avoid long-term consequences.

What are the Reasons and Solutions for Child Labour in the Cotton Industry in India?

- **Reasons:**
 - **Cheap and Compliant Labour:** Children are **often paid less than adults** (or unpaid) and have **weaker negotiating power** as well as being often perceived as more submissive workers.
 - **"Nimble Fingers" Myth:** Employers claim that the tasks of cross-pollination, emasculation and hand-pollination are best undertaken by **pre-pubescent, female children**.
 - There is a perception that **children's small hands and bodies** are better for tasks such as **weeding**.
 - **Unskilled Work:** Cotton farming is largely a unskilled work where certain physical attributes such as **small stature and agility** increase the demand for child labour.
 - **Social Norms:** Children are often expected to follow in their **parents' footsteps** and are frequently summoned to **"help"** other members of the family, often at a young age.
- **Way Forward:**
 - **National Legislation:** Governments should translate the content of **international treaties and conventions** that they have ratified into national legislation.
 - In addition, governments should ensure that labour laws are implemented and enforced.
 - **Sustainable Business Practices:** Companies should act with due **diligence** across all its business operations, including at the level of **suppliers and subcontractors**.
 - Eliminating and preventing child labour need to be included in this effort.
 - **Transparency and Traceability:** Brands and retailers should focus on gaining full understanding of their **supply chains**.
 - It includes **informal sector and homeworkers** where the bulk of child labour occurs.

Note:

- Governments on the buying end of the supply chain should **curb** the **import** of products made with child labour.
- **Substitution of Workforce:** Labour can be **substituted with machines** for efficient functioning. Substituted labourforce should be **reskilled** to make them **employable** in other economic sectors.

Centre's Assistance to States for Land Reforms

Why in News?

Recently the central government has earmarked financial incentives under the **Scheme for Special Assistance to States for Capital Investment 2024-25** to promote **land-related reforms** across states.

- The Centre will provide states with **Rs 10,000 crore** in incentives for implementing land-related reforms in **rural and urban areas**, and **Rs 5,000 crore** for creating a **Farmers' Registry** during the financial year 2024-25 (FY25).

What are the Recent Announcements for Land Reforms Under the Scheme?

- In rural areas, **Unique Land Parcel Identification Numbers (ULPIN)**, also referred to as **Bhu-Aadhaar**, will be assigned to land parcels.
 - **ULPIN is a number that would uniquely identify every surveyed parcel of land** and prevent land fraud, especially in the hinterlands of rural India, where land records are outdated and often disputed.
- **Cadastral maps will be digitised**, and land subdivisions will be surveyed to reflect current ownership. Additionally, a comprehensive land registry will be established.
- In urban areas, States will receive financial incentives to **digitise land records** using **Geographic Information System (GIS)** mapping.
 - They are also required to develop IT-based systems for property record administration, updating, and tax management.

Financial Support for Various Other Initiatives Under the Scheme

- **Support for Working Women's Hostels:** The government has allocated Rs 5,000 crore for constructing hostels to boost **female workforce participation**, with state governments providing land at no cost or covering acquisition costs, and the hostels will be managed under a **Public-Private Partnership (PPP)** model while retaining state ownership.
- **Vehicle Scrappage:** Rs 3,000 crore will be provided in incentives for the **scrappping of old vehicles**.
- **Industrial Growth:** Rs 15,000 crore is earmarked to stimulate industrial development.
- **Infrastructure Development:** Rs 1,000 crore will be allocated for infrastructure development, with equal distribution among Haryana, Uttar Pradesh, and Rajasthan.
- **Centrally Sponsored Schemes:** Rs 15,000 crore will support states' shares of **Centrally Sponsored Schemes**, including Urban and Rural Infrastructure Projects.
- **SNA Sparsh Model:** Rs 4,000 crore will be allocated for the implementation of a just-in-time fund release model.
- **Capital Expenditure Targets:** Rs 25,000 crore will be provided in incentives for meeting capital expenditure targets for FY 2024-25.

What are Major Initiatives Undertaken for Land Reforms?

- **Pre Independence:** Under British rule, farmers lacked land ownership, with land titles held by **zamindars, jagirdars**, and other intermediaries.
 - Several key challenges, such as the **concentration of land in a few hands, exploitative leasing practices, poorly maintained land records, and fragmented land holdings**, hindered the effectiveness of land reforms in India .
- **Post-Independence Reforms:** To address the above mentioned issues, the government appointed a committee in 1949 chaired by **J. C. Kumarappa**, which recommended comprehensive agrarian reforms like **abolition of intermediaries, tenancy reforms, ceiling on landholdings, consolidation of landholdings**.

Note:

- **Abolition of Intermediaries:** The removal of the **zamindari system** eliminated intermediaries between cultivators and the state.
- **Tenancy Reforms:** It aimed to control rent, ensure security of tenure, and grant ownership to tenants.
- **Ceilings on Landholdings: Land Ceiling Acts** were introduced to cap the maximum land one could own, preventing land concentration among a few.
 - Based on the **Kumarappa Committee's recommendation**, the ceiling was set to three times the economic holding size needed for a family's livelihood.
 - By 1961-62, states had enacted varying ceiling limits, which were standardised in 1971. National guidelines set limits between 10-54 acres, depending on land type and productivity.
- **Consolidation of Landholdings:** Land consolidation aimed to address fragmentation by reorganising small, scattered plots into larger, manageable units.
 - Most states, except Tamil Nadu, Kerala, Manipur, Nagaland, Tripura, and parts of Andhra Pradesh, enacted consolidation laws, with compulsory consolidation in Punjab and Haryana and voluntary consolidation in other states.
- **Recent Initiatives:**
 - **The Digital India Land Record Modernisation Programme (DILRMP):** **DILRMP**, previously known as the **National Land Record Modernisation Programme (NLRMP)**, was launched in 2008 by the Government of India with the purpose to digitise and modernise land records and develop a centralised land record management system.
 - DILRMP, a **Central Sector scheme**, aims to build upon the commonalities that exist in the arena of land records in various States to develop an appropriate **Integrated Land Information Management System (ILIMS)** across the country, on which different States can also add State-specific needs as they may deem relevant and appropriate.
 - **SVAMITVA: Survey of Villages and Mapping with Improved Technology in Village Areas (SVAMITVA)** scheme is a collaborative effort of the Ministry of Panchayati Raj, State Panchayati Raj Departments, State Revenue Departments and Survey of India.
 - It is a scheme for mapping the land parcels in rural inhabited areas using **drone technology and Continuously Operating Reference Station (CORS)**.

What are the Related Challenges and Steps That Can Be Taken for Land Reforms?

➤ **Challenges:**

- **Entrenched Power Structures:** Large landowners resist changes, **hindering enforcement of land ceiling acts** and redistribution policies.
- **Complex Land Records:** Outdated record-keeping systems lead to disputes and complicate **land identification for redistribution**.
- **Land Fragmentation:** Division of land among heirs results in economically unviable **small landholding**.
 - As per the **Agriculture Census**, the **average size of operational holdings has decreased** from 2.28 hectares in 1970-71 to 1.84 hectares in 1980-81, to 1.41 hectares in 1995-96 and to **1.08 hectares in 2015-16**.
- **Legal and Implementation Issues:** Weak enforcement of existing laws and loopholes like **lack of clear ceiling on family basis**, undermine reform efforts.
- **Urbanisation Pressures:** Rapid development leads to contentious farmland acquisition and farmer displacement.
- **Productivity vs. Equity:** Balancing the redistribution of land with the need to ensure that **new owners can do farming effectively** remains a significant challenge.

➤ **Way Forward:**

- **Technology Integration:** Digitise and secure land records using advanced technologies like **satellite imaging** and **Artificial Intelligence (AI)** for efficient land management, mapping, and **blockchain technology** for ensuring transparency and reducing disputes.
- **Legal Framework Enhancement:** Strengthen and rigorously **enforce land reform laws, closing loopholes** and improving implementation mechanisms.
 - There is a need to learn from the **land reform practices of West Bengal and Kerala**, where reforms were successful to a larger extent due to strong political will.
- **Land Consolidation Initiatives:** Incentivise **land consolidation** through voluntary **pooling and cooperative farming** models to improve agricultural efficiency.

Note:

- **Equitable Land Acquisition:** Implement transparent, fair land acquisition policies with adequate **compensation and rehabilitation** measures for affected farmers.
- **New Landowner Empowerment:** Provide comprehensive support to new landowners, including **agricultural training, access to credit, and market linkages**.

State of Poultry Industry in India

Why in News?

The **broiler chicken industry** in India has transformed from a **traditional, small-scale farming practice** into a **highly organised and vertically integrated agri-business**.

This evolution has enabled even smallholders to participate in commercial poultry farming, significantly increasing productivity and profitability.

What are Broiler Chickens?

- **Broiler Chickens:** Broiler chickens are a type of chicken specifically bred and raised for meat production. **Rearing of chickens comes under poultry farming.**
 - **Advantages:**
 - **Rapid Growth Rate:** Broilers are genetically engineered to grow exceptionally fast, reaching slaughter weight in a relatively short period, typically 4 to 6 weeks.
 - **High Meat-to-Bone Ratio:** They have been selectively bred to develop large breast muscles, which are the most desirable part of the chicken for consumers.
 - **Efficient Feed Conversion:** Broilers efficiently convert feed into meat, making them economically viable for commercial production.
- **Poultry Farming:** Poultry farming is the practice of **domesticating and raising birds, primarily chickens, ducks, turkeys, and geese**, for the purpose of producing meat and eggs. It is a significant component of the agricultural sector worldwide.

What is the State of the Poultry Industry in India?

- **Global Ranking and Production:** According to Food and Agriculture Organization Corporate Statistical

Database (FAOSTAT) production data (2020), India ranks **3rd in Egg Production** and **8th in meat production in the world**.

- Egg production in the country has increased from 78.48 billion in 2014-15 to 129.60 billion Nos. in 2021-22. Meat production in the country has increased from 6.69 million tonnes in 2014-15 to 9.29 million tonnes in 2021-22.
- **Broiler meat production** in the country is estimated at around **5 million tonnes (MT)** annually.
- **Poultry Feed Production:** In 2022, India's **total poultry feed production** reached **27 million metric tons** per year.
- **Growth Trends:** The poultry sector in India has shown impressive growth, with **poultry meat production** increasing at an **average annual rate of 8%**, and **egg production** rising by **7.45%** between 2014-15 and 2021-22.
- **Market Size and Exports:** The Indian poultry market reached **Rs. 2,099.2 billion** in 2023, and it is projected to grow at a compound annual growth rate (**CAGR**) of **8.9%** from 2024 to 2032.
 - During the 2022-23, India exported poultry and poultry products to 64 countries, generating revenue of USD 134 million.
- **Top Egg-Producing States:** Andhra Pradesh (20.13%), Tamil Nadu (15.58%), Telangana (12.77%), West Bengal (9.93%), and Karnataka (6.51%).

What are the Key Factors Responsible for Rapid Growth of the Poultry Industry in India?

- **Vertical Integration:** Companies utilise **contract farming models**, providing farmers with **day-old chicks (DOCs)**, feed, and technical support.
 - This approach allows for **streamlined operations, reduced risks**, and enhanced control over the entire supply chain, from breeding to marketing, ensuring consistent quality and efficiency.
- **Technological Advancements:** The use of **Environmentally Controlled (EC) sheds with automated feeding**, and climate control systems has improved growth efficiency and reduced mortality rates.
 - Additionally, **advanced breeding techniques have enhanced growth rates** and disease resistance in broiler chickens.
- **Increased Demand for Poultry Products:** Growing urban populations and shifting dietary preferences,

Note:

including a **trend towards more processed and ready-to-eat poultry products**, have driven the rising demand for chicken as a protein source.

- **Government Support and Policies:** Government initiatives, subsidies, and improved infrastructure for **transportation and cold storage have bolstered investment** and growth in the poultry sector, enhancing supply chain management.
- **Financial Incentives for Farmers:** The contract farming model offers **guaranteed payments and performance-based incentives**, boosting farmers' profit margins and encouraging larger operations.
 - Additionally, **loans and credit facilities from financial institutions** support poultry farming investments.
- **Export Opportunities:** The potential for exporting **poultry products to international markets** presents a dynamic opportunity for the Indian poultry industry.
 - However, this is also influenced by global market conditions, trade policies, and competition from other exporting countries.

What are the Challenges Related to the Poultry Industry in India?

- **Contaminated Environments:** High-density **confinement of chickens in battery cages** results in poor air quality, waste management problems, and **greenhouse gas emissions**.
 - Poultry units with over 5,000 birds are classified as polluting industries by the **Central Pollution Control Board (CPCB)**, necessitating strict regulatory compliance.
- **Feed Price Volatility:** Fluctuations in the prices of feed ingredients such as **corn and soybean can impact the profitability of poultry farming**. Ensuring a stable supply and exploring alternative feed sources are essential to address this challenge.
- **Cruel Treatment of Animals:** Industrial poultry operations often involve inhumane practices such as mutilation, starvation, and overcrowding, violating the **Prevention of Cruelty to Animals (PCA) Act, 1960**.
- **Financial and Operational Challenges:** The industry faces **issues such as large debts, reliance on informal facilities**, and complex contract farming arrangements. Farmers often incur **significant losses due to market volatility** and the pressures from industry giants.
- **Competition from Other Protein Sources:** The poultry market faces competition from other protein sources **like plant-based proteins**, which are gaining popularity due to health and environmental concerns.

- **Supply Chain Inefficiencies:** Inadequacies in the supply chain, including transportation, **cold storage, and distribution networks, can lead to wastage** and affect the quality of poultry products, hindering market growth.
- **Waste Management Issues:** The poultry industry produces significant waste, including methane, **CO₂, water effluents, and solid waste, causing soil and water pollution**.
 - Excessive **manure accumulation exceeds land capacity**, leading to pollution and breeding grounds for disease vectors like flies and mosquitoes.

What are the Initiatives for the Poultry Industry in India?

- **Poultry Venture Capital Fund (PVCF):** The Department of Animal Husbandry and Dairying is implementing it under "Entrepreneurship Development and Employment Generation" (EDEG) of the **National Livestock Mission**.
- **National Livestock Mission (NLM):** Different programmes under the NLM in which financial assistance is provided to States/Union Territories to implement Rural Backyard Poultry Development (RBPD) and Innovative Poultry Productivity Project (IPPP).
- **Assistance to States for Control of Animal Diseases (ASCAD) Scheme:** ASCAD under "Livestock Health and Disease Control" (LH&DC) which covers the vaccination of economically important poultry diseases viz., Ranikhet Disease, Infectious Bursal Disease, Fowl Pox, etc., including control and containment of emergent and exotic diseases like Avian Influenza.

Possible Decline in Coffee Production

Why in News?

Recently, **Coffee Board of India** hinted that India's coffee production for 2024-25 may see a significant drop due to plant and berry losses caused by high temperatures, heavy rainfall, and **landslides** in key growing regions.

What's the Status of Coffee Production in India?

- India is the **6th largest coffee producer** and **5th largest exporter** globally, accounting for 3.14% of global coffee output.

Note:

- **70% of India's coffee** produced is exported, while **30% is consumed domestically**. India is renowned for its high-quality **coffee varieties**.
 - India produced around 3.6 lakh metric tonnes of green coffee in 2023–24 **crop** year.
- **Coffee Varieties in India:** Arabica and Robusta.
 - **Characteristics of Arabica:** Grown at higher altitudes and it has higher market value due to its aroma.
 - **Characteristics of Robusta:** Known for its strength and used in various blends.
- **Causes of Declining Coffee Output:**
 - **Prolonged drought** and soaring temperatures during the April-May period led to scorching of blossom clusters and fruit burn at the pinhead stage.
 - **Heavy Rainfall** in July, caused severe issues like berry dropping, stalk rot, and wet foot conditions due to flooding.
 - **Landslides** in key coffee-growing areas like Sakleshpur and **Wayanad** resulted in significant plant and plantation losses. These combined factors have led to an estimated yield **loss of 15% to 20%** in the coffee belt, with the actual damage potentially being higher.

What are the Key Facts about Coffee Production?

- **History:**
 - Coffee was introduced to India during the late 17th century; the Dutch (who occupied much of India throughout the 17th century) helped spread the cultivation of coffee across the country, but it was with the **arrival of the British in the mid-19th century that commercial coffee farming fully flourished**.
- **About:**
 - Coffee in India is grown under a canopy of thick natural shade in ecologically sensitive regions of the **Western and Eastern Ghats**.
 - This is one of the 25 **biodiversity hotspots** of the world.

- Coffee contributes significantly to sustain the unique bio- diversity of the region and is also responsible for the socio-economic development in the remote, hilly areas.
- Coffee offers protection against oxidative damage, reduces the risk of **type 2 diabetes, and lowers the risk of age-related diseases**.
- **Climatic Conditions Required:**
 - **Climate** - Hot and humid; **temperature** - ranging between **15°C and 28°C**; **rainfall** - 150 to 250 cm.
 - **Frost, snowfall, high temperature >30°C and strong sun shine** is not good for coffee crops and is generally grown under shady trees.
 - **Dry weather is necessary** at the time of ripening of the berries.
 - Stagnant water is harmful and the crop is grown on hill slopes at elevations from 600 to 1,600 metres above sea level.
 - **Well drained loam containing a good deal of humus** and minerals like **iron** and **calcium** is ideal for coffee cultivation.
- **Soil Type:**
 - Coffee can be grown on lots of **soils** but the ideal types are fertile **volcanic red earth or deep sandy loam**.
 - For coffee trees to grow, it is important that the soil is well drained which makes heavy clay or heavy sandy soils inadequate.
- **Major Areas:**
 - In India, coffee is traditionally grown in the Western Ghats spread over **Karnataka, Kerala and Tamil Nadu**.
 - **Karnataka is the largest producer** accounting for about 70% of the total coffee production, followed by Kerala at 23%
 - Coffee cultivation is also expanding rapidly in the nontraditional areas of Andhra Pradesh, Telangana and Odisha as well as in the North East states.

Note:

Coffee's Impact on Climate Change:

- **Coffee production contributes 40-80% of total GHG emissions of Coffee cycle**, mainly due to mechanisation and intensive irrigation from transitioning to sun-exposed fields. **Fertilisers emit nitrous oxide** and are produced using large quantities of natural gas.

Note:

- Heating and keeping water warm for coffee preparation impacts the carbon footprint, with greater emissions in regions using high-carbon electricity.
- Coffee capsules can reduce waste and emissions by optimising coffee and water use, but their manufacturing and disposal add to the carbon footprint if not recycled.

Coffee Board of India

- It is a **statutory organisation** that was constituted under Section (4) of the **Coffee Act, 1942**.
- It functions under the administrative control of the **Ministry of Commerce and Industry**.
- The Board comprises 33 Members including the Chairperson, who is the Chief Executive and it **functions from Bangalore**.
- The Board mainly focuses its activities in the areas of research, extension, development, market intelligence, external & internal promotion for coffee.

Read More: [India's Coffee](#), [Araku Coffee](#), [World Coffee Conference 2023](#)



Note:

International Relations

Highlights

- India-US Defence Pact to Deepen Cooperation
- India's PM Visit to Ukraine
- India Targets Doubling Trade with Africa by 2030
- India-Poland Relations
- India Japan 2+2 Foreign and Defence Ministerial Meeting
- 3rd Voice of Global South Summit 2024 (VOGSS)
- Comprehensive Strategic Partnership between India and Malaysia
- St Martin's Island

India-US Defence Pact to Deepen Cooperation

Why in News?

Recently, India and the US have signed two key pacts—a non-binding **Security of Supply Arrangement (SOSA)** and a **Memorandum of Agreement regarding Assignment of Liaison Officers**.

- Both countries also agreed to enhance priority co-production projects as part of the **2023 US-India Roadmap for Defence Industrial Cooperation**.

What are the Key Defence Agreements Signed Between India and the US?

- **Security of Supplies Arrangement (SOSA):**
 - The **Security of Supplies Arrangement (SOSA)** is an agreement between the US and India.
 - India is the **18th SOSA partner of the US** after Australia, Canada, Denmark, Estonia, Finland, Israel, Italy, Japan, Latvia, Lithuania, the Netherlands, Norway, Republic of Korea, Singapore, Spain, Sweden, and the UK.
 - It allows both nations to **prioritise each other's goods and services for national defense**, ensuring **supply chain resilience** during emergencies.
 - Under SOSA, **US defense contractors can request expedited deliveries** from India and vice versa.
 - Although **not legally binding**, SOSA operates on **mutual goodwill**, with Indian companies **prioritising US orders** and the US offering assurances through its **Defense Priorities and Allocations System (DPAS)**, managed by the Department of Defence (DoD) and the Department of Commerce (DOC).

➤ MoU on Liaison Officers:

- The Memorandum of Understanding (MoU) aims to **enhance information-sharing** between India and the US by **establishing a system of Liaison Officers**.
- It will start with India's deployment of an officer to the **US Special Operations Command** in Florida.
- This initiative builds on previous agreements, including the **September 2013 Joint Declaration on Defence Cooperation** and the **2015 Framework for US-India Defence Relations**, reflecting a commitment to strengthen bilateral defense ties.

➤ Reciprocal Defence Procurement (RDP) Agreement:

- India and the US are discussing a Reciprocal Defence Procurement (RDP) Agreement which is **yet to be finalised**.
- These are designed to enhance the **rationalisation, standardisation, interchangeability, and interoperability** of defense equipment between the US and its allies.
- The US has signed RDP Agreements with **28 countries so far**.
- This agreement would **enable US companies to bypass certain procurement restrictions**, such as India's **"Make in India"** initiative, facilitating the **establishment of manufacturing bases in India** and **closer collaboration with local firms**.

➤ SOSA Vs. RDP:

- SOSA and RDP both aim to **enhance defense relations** between two nations, but they have **distinct objectives**.
- **SOSA focuses on maintaining the defense supply chain during crises**, while **RDP establishes a legally binding framework** that requires **prioritisation of defense orders**, facilitating greater joint production and technological collaboration.

Note:

What are the Developments in India-US

Defence Cooperation?

- **GSOMIA:** The foundation of India-US defense cooperation was laid with the **2002 General Security of Military Information Agreement (GSOMIA)**, facilitating the **sharing of sensitive military information**.
- **LEMOA:** This was followed by the **Logistics Exchange Memorandum of Agreement (LEMOA)** in 2016, which established the framework for **reciprocal logistical support between the two militaries**.
- **COMCASA and BECA:** The **Communications Compatibility and Security Agreement (COMCASA)** in 2018 enhanced secure **military communications and access to advanced defense technologies**, while the **Basic Exchange and Cooperation Agreement (BECA)** in 2020 enabled the **sharing of geospatial data critical for military operations**.
- **2+2 Dialogue:** These foundational agreements supported by joint exercises and the **2+2 Ministerial Dialogue** collectively facilitated interoperability and trust, setting the stage for deeper collaboration.
- **Strategic Trade Authorization Tier-1 Status:** India-US defense ties have grown significantly since the early 2000s. India was designated a **Major Defense Partner in 2016** and granted **Strategic Trade Authorization tier 1 status** in 2018, allowing access to advanced technologies.
- **DTTI:** The **Defence Trade and Technology Initiative (DTTI)**, established in 2012, aimed to **streamline defense trade and promote co-production** and co-development of defense technologies, reflecting a shift from a buyer-seller relationship to a partnership model.
- **Military Procurement:** India's military procured from the US **MH-60R Seahawk helicopters, Sig Sauer rifles, and M777 howitzers**.
 - **Ongoing negotiations** to manufacture **GE F-414 jet engines** in India and **procure MQ-9B High-Altitude Long-Endurance (HALE) UAVs** signify a growing emphasis on **indigenous production and technology transfer**, in line with India's '**Make in India**' initiative.
- **INDUS-X:** The launch of the **India-US Defense Acceleration Ecosystem (INDUS-X)** in June 2023, fostered **defense innovation and industrial cooperation**.

- In 2023, the defense cooperation roadmap highlighted priority areas such as **Intelligence, Surveillance, and Reconnaissance (ISR)**, **Undersea Domain Awareness**, and **Air Combat Systems**.

- **I2U2 Grouping:** **I2U2** comprises **India, Israel, the US, and the United Arab Emirates**, dedicated to **joint investments and new initiatives** in various sectors, including **water, energy, transportation, space, health, and food security**.

How India and US Relations Have Evolved Over the Time?

➤ Cold War Period:

- During the Cold War, **India and the US were on opposite sides**, with India pursuing **non-alignment** and Pakistan aligning with the US.
- Relations improved in the 1990s after **India's economic liberalisation** and the end of the **Cold War**.

- President Clinton's visit to India in 2000 marked a turning point, leading to strategic dialogues and increased economic cooperation, further strengthened by the **Next Steps in Strategic Partnership (NSSP)** in 2004.

➤ Nuclear Agreement:

- The **2008 Civil Nuclear Agreement** ended India's nuclear isolation and recognized it as a **responsible nuclear power**, enhancing cooperation in defense and high-tech sectors and solidifying the **US commitment to elevating India's global status**.

- **Economic Synergy:** Bilateral trade reached **USD 118.28 billion** in 2023-24, making the US **India's largest trading partner**.

- Cooperation has expanded to **clean energy, the digital economy, and healthcare**, with initiatives like the **US-India Strategic Clean Energy Partnership** and collaboration on **Covid-19 vaccines**.

- **Technology Cooperation:** It has become a cornerstone of bilateral ties, with collaboration in **Artificial Intelligence (AI), Quantum Computing, and 5G**.

- The **US-India Science and Technology Endowment Fund** and recent initiatives like the **US-India AI Initiative** and **iCET** highlight the strategic importance of tech cooperation.

- The **Artemis Accords** signed by India and the United States establish a common vision for the **future of space exploration** with the two countries cooperating through the **bilateral Civil Space Joint Working Group**.

Note:

- **Geopolitical Alignment:** The rise of China has brought India and the US closer strategically.
 - The revival of the **Quad** and India's inclusion in the **US Indo-Pacific strategy** reflect this alignment, emphasising a "free and open Indo-Pacific" and deepening geopolitical cooperation.

INDIA-US PARTNERSHIP

Economic Relations

- US became India's biggest trading partner in 2022-23 followed by China and UAE
- The bilateral trade has increased by 7.65% in 2022-23 (compared to 2021-22)

Defence Cooperation

- **India-US Defence Acceleration Ecosystem (INDUS-X), 2023:** Start-ups and tech companies to collaborate on the co-development and co-production of advanced technologies
- **Fighter Jet Deal, 2023:** GE's F414 engine technology and manufacturing will be transferred for India's Tejas Mk2 jet, enhancing its indigenous capabilities
- **Defence Technology and Trade Initiative (DTTI), 2012:** To facilitate collaboration in defence manufacturing, research and development, and technology transfer
- **New Framework for India-US Defence Relations, 2005:** Updated for 10 years in 2015

India intends to procure armed MQ-9B SeaGuardian UAVs

Science & Technology

- **Initiative on Critical and Emerging Technologies (ICET), 2022:** Cooperation on CETs in areas including AI, quantum computing, semiconductors and wireless telecommunications
- **Critical Minerals Partnership:** Recently, India joined the US-led Minerals Security Partnership (MSP) to boost global critical energy and minerals supply chains
- **Collaboration in Space:** NASA to train ISRO astronauts, aiming for a joint International Space Station (ISS) mission in 2024
 - **Artemis Accord:** A US-led alliance seeking to facilitate international collaboration in planetary exploration and research; signed by India
 - **NASA-ISRO Synthetic Aperture Radar (NISAR):** For understanding changes in Earth's ecosystems and other environmental changes

Civil Nuclear Deal

- **Civil Nuclear Cooperation:** Bilateral civil nuclear cooperation agreement signed in October 2008

Energy & Climate Change

- **Joint Clean Energy Research and Development Centre (JCERDC), 2010:** To promote clean energy innovations by teams of scientists from India and the United States
- **Clean Energy Agenda 2030 Partnership:** Launched at the Leaders climate summit 2021
- **Global Biofuel Alliance (India, Brazil and US), 2023:** Aimed at facilitating cooperation and intensifying the use of sustainable biofuels, including in the transportation sector

Security

- **Counter-Terrorism Cooperation Initiative, 2010:** To expand collaboration on counter-terrorism, information sharing and capacity building

Four Foundational Agreements:

- **General Security of Military Information Agreement (GSOMIA), 2002:** Allows militaries to share intelligence gathered by them
 - ◆ **Industrial Security Annex, 2019** is a part of GSOMIA
- **Logistics Exchange Memorandum of Agreement (LEMOA), 2016:** Both countries gain access to designated military facilities for refuelling and replenishment.
- **Communication Compatibility and Security Agreement (COMCASA), 2018:** A legal framework for the transfer of highly sensitive communication security equipment from the US to India
- **Basic Exchange and Cooperation Agreement for Geospatial Intelligence (BECA), 2020:** Allow both countries to share geospatial and satellite data with each other

In 2015, both countries issued Delhi Declaration of Friendship and adopted a Joint Strategic Vision for Asia-Pacific and the Indian Ocean Region

Popular Visa Among Indians include H-1B, L. Indian citizens set to become largest foreign student community in the US (20% growth in 2022)



Drishti IAS

What are the Challenges to India-US Relations?

- **Human Rights and Democratic Values:** Relations between the US and India have been affected by concerns over the treatment of minorities, especially Muslims. The **Citizenship Amendment Act (CAA)** and the revocation of **Jammu and Kashmir's special status** have prompted discussions about India's commitment to secularism and tolerance.

Note:

- **Strategic Competition with China:** While both nations see China as a strategic challenge, their approaches sometimes diverge. India's economic ties with China occasionally conflict with US interests, creating friction.
- **Trade and Economic Disputes:** Trade disputes, protectionist measures, and concerns over market access and intellectual property rights complicate efforts to reach a comprehensive trade deal.
- **Geopolitical Alignment:** The legacy of India's non-alignment during the Cold War, which saw it lean towards the Soviet Union, still influences perceptions and expectations in the bilateral relationship.
 - India seeks to balance its relations with both the US and Russia. This balancing act can create tensions, especially when the US expects stronger condemnation of Russia from India over **Russia-Ukraine War**.

India's PM Visit to Ukraine

Why in News?

India's Prime Minister paid a visit to Ukraine at the invitation of Ukraine's President. It was the first Indian head of state to visit Ukraine since its independence in 1991.

- The visit focused on cooperation in defence as India operates a large inventory of military equipment of Ukrainian origin.

What are the Key Takeaways from India's PM Visit to Ukraine?

- **Clarification of India's Stance on the Russia-Ukraine War:** India's PM emphasised that India has never been neutral in the Russia-Ukraine conflict and has always stood for peace.
 - India seeks sincere engagement among all stakeholders to find practical solutions for an early resolution of the conflict.
- **Formation of an Intergovernmental Commission:** An Intergovernmental Commission between India and Ukraine has been established to restore and deepen bilateral trade and economic relations to pre-conflict levels.
 - Bilateral trade has reached USD 3.386 billion in 2021-22.

- **Signing of Four Key Agreements:** Both signed four agreements covering areas such as agriculture, the food industry, medical product regulation, and cultural cooperation.
 - The agreements aim to promote cooperation in agriculture and food industry, regulate medical products, provide humanitarian grant assistance, and strengthen cultural ties between the two nations.
- **Bhishm Cubes Gifted to Ukraine:** India gifted four Bharat Health Initiative for Sahyog Hita & Maitri (BHISHMA) cubes to Ukraine, designed to provide emergency medical care through mobile hospitals.
 - These cubes are part of Project Aarogya Maitri, a program to offer crucial medical supplies and ensure rapid deployment of medical facilities in crisis situations.
- **Solidarity with Lives Lost:** PM visited the multimedia Martyrologist exposition on children at the National Museum of History of Ukraine in Kyiv and expressed his sorrow at the tragic loss of young lives.
 - He also placed a toy in their memory mark of respect.
- **Invitation to President Zelenskyy:** India's PM extended an invitation to the Ukrainian President to visit India, marking a significant gesture during his first visit to Ukraine since 1991.

What are the Dynamics of India-Ukraine Relations?

- **Historic Visit:** Shri Narendra Modi is the first Indian Prime Minister to visit Ukraine since diplomatic relations were established in 1992. India was one of the first countries to recognise Ukraine after it gained independence following the collapse of the Soviet Union in 1991.
- **Departure from Traditional Foreign Policy:** Historically, India maintained closer ties with the Soviet Union (predecessor to Russia) and had less engagement with Ukraine.
 - The visit is part of India's broader strategy to enhance relations with Europe, moving beyond the narrow focus on relations with Europe's big four i.e., Russia, Germany, France, and Britain
 - The visit marks a significant shift in India's foreign policy, reflecting a broader engagement with central and eastern Europe.

Note:



- **New Avenues in Bilateral Relations:** High-level interactions have increased with External Affairs Minister, and **National Security Advisor** engaging with Ukrainian counterparts.
- **Strategic Interests:** Ukraine's expertise in defence technology, such as **gas turbines** and aircraft, offers opportunities for collaboration and **joint manufacturing** in India.
- **Economic Opportunities:** Ukraine's strength as one of the world's agrarian powers will add to its **strategic salience** in the years ahead.
 - Pre-war Ukraine was among the biggest sources of **sunflower oil** for India.
- **Independent Foreign Policy:** India's interactions with Ukraine do not undermine its relations with Russia, reflecting India's **de-hyphenated policy**.

Why is Ukraine Important for India's Defence Sector?

- **Soviet Era Equipment:** India has a significant inventory of Soviet-era defence equipment still operational, including **gas turbine engines** for Indian Navy Warships and **An-32 aircraft** operated by the IAF (Indian Air Force).
- **Indian Air Force:** In June 2009, India signed a USD 400 million agreement with **Ukraine's SpetsTechnoExport (STE)** to upgrade its fleet of **105 AN-32 aircraft**, extend their life by 40 years, and improve their avionics.
 - The IAF is heavily dependent on the AN-32 for air maintenance of **army troops deployed** along our northern frontier, **air cargo drop-off** and **para drop-off**.
- **Indian Navy:** Ukraine is supplying critical components for the construction of two **Admiral Grigorovich-class frigates** at the **Goa Shipyard Limited (GSL)**.
 - For the Indian Navy, the impact is most acute as over 30 **Indian frontline warships** are powered by engines from **Zorya Nashproekt** of Ukraine.
 - Ukraine's state-owned **Zorya-Mashproekt** is in talks with Indian private sector companies to jointly manufacture gas turbines used by warships like **Talwar-class frigates**.
- **Defence Trade:** After the **Balakot air strike** in 2019, IAF made emergency procurement of **R-27 air to air missiles** from Ukraine for its **SU-30MKI fighters**.
 - At Aero India in February 2021, Ukraine signed four agreements worth USD 70 million which includes sale of new weapons as well as maintenance and upgrades of existing ones in service with the Indian military.

- **Boosting Indian Defence Industry:** Ukraine has been looking to procure some military hardware from India in addition to efforts to deepen its presence in the Indian defence market.
 - Ukraine also held discussions with the **Defence Research and Development Organisation (DRDO)** for possible collaborations in research and development.

What are Irritants in India-Ukraine Relations?

- **Russia-Ukraine War:** The ongoing **Russia-Ukraine war** has been a persistent irritant in India's relationships with Ukraine and its Western partners.
 - India has **maintained a neutral stance on Russia's invasion of Ukraine**, avoiding direct condemnation of Moscow while advocating for diplomacy and dialogue.
 - India has refused to join the **West's sanctions** on Russia and has stepped up buying **Russian fuel** at a discounted price.
 - India has largely **abstained** from voting in a **UN General Assembly** resolution that condemned Russia's invasion of Ukraine.
- **Supply Chain Interruptions:** The war disrupted supply chains for critical defence equipment. For instance, the upgrade of the Indian **Air Force's An-32 aircraft** has been delayed due to the conflict's impact on Ukrainian factories.
 - Russia has delayed the delivery of the remaining two squadrons of the **S-400 Triumph air defense system** to India until **August 2026**.
- **Ukraine's Stance on Kashmir:** Ukraine's occasional comments and positions on the **Kashmir issue** have been a source of friction between the two nations.
 - In 2019, following the revocation of **Article 370** by India, Ukraine expressed **concerns over the situation in Jammu and Kashmir**, which was seen by India as interference in its internal matters.
- **Diplomatic Misalignments:** Differences in foreign policy priorities and global alignments have sometimes created friction in **India-Ukraine relations**.
 - India's strategic partnership with Russia contrasts with Ukraine's opposition to Russian actions, leading to a **diplomatic balancing act** that complicates bilateral relations.

Note:

India Targets Doubling Trade with Africa by 2030

Why in News?

Recently at the 19th India-Africa Business Conclave, organised by the [Confederation of Indian Industry \(CII\)](#) in New Delhi India has unveiled an ambitious plan to **double its exports to African countries to USD 200 billion by 2030.**

- This strategic push is aimed at bolstering economic ties and addressing mutual challenges and opportunities.

How will India Double its Exports to African Countries?

➤ Targeting High-Growth Sectors:

- **Agriculture and Agro-Products:** Indian companies are poised to help Africa enhance its **food production capacity** by sharing advanced [seed technologies](#), agro-processing methods, and setting up incubation centers.
 - India can **significantly enhance Africa's food security** by technology transfer, and expanding **bilateral trade which reached USD 100 billion in 2022.**
- **Pharmaceuticals:** With pharmaceutical exports to Africa already at **USD 3.8 billion in 2023**, there is significant potential for growth as India can provide affordable medicines and healthcare solutions.
- **Automobiles:** India aims to expand its automobile exports by tapping into Africa's growing demand for vehicles, particularly two-wheelers and affordable cars.
- **Renewable Energy:** India and Africa are uniquely positioned to lead in [renewable energy](#), particularly [solar power](#). The vision of **"One World, One Grid"** aims to connect energy grids overland and underwater.
 - **India's expertise in solar energy, wind power, and energy-efficient solutions** found resonance in Africa's pursuit of sustainable energy sources.
 - More than 20 African countries are participating in the [International Solar Alliance \(ISA\)](#), reflecting a strong commitment to renewable energy collaboration.

- **Logistics and Transportation:** Improvements in logistics and transportation infrastructure are seen as crucial for **facilitating smoother trade flows** between India and African nations.
 - India plans to share its [PM Gati Shakti master plan](#) and [Unified Logistics Interface Portal \(ULIP\)](#) with Africa to support the development of efficient logistics infrastructure and multimodal connectivity.
 - The [African Continental Free Trade Area \(AfCFTA\)](#) has identified automobiles and logistics as areas with substantial potential for collaboration between India and Africa.
 - The AfCFTA is a **free trade agreement designed to facilitate duty-free trade within Africa.** It aims to eliminate tariffs and non-tariff barriers among member states while promoting the free movement of goods, services, and people.
 - This initiative is part of **Africa's Development Framework Agenda 2063**, which envisions a unified economic market across the continent.
 - India's current trade with Africa includes a wide range of products, from crude oil to chemicals and textiles. The **AfCFTA's push towards trade diversification and value addition** can align well with India's export interests and investment strategies.
- **Unified Approach to WTO Reforms:** India has called for a **unified African stance on [World Trade Organisation \(WTO\) reforms](#)**, particularly in areas such as food security, agriculture, and technology transfer.
 - A coordinated approach is essential to push through necessary changes in the global trade environment, which has become increasingly protectionist.
- **Duty-Free Tariff Preference and FTAs:** India extends **Duty-Free Tariff Preference (DFTP) to 27 Least Developed Countries (LDCs)** in Africa on a non-reciprocal basis.
 - The DFTP Scheme by India **grants tariff preferences on imports to India from the LDCs**, which are developing countries with the lowest socioeconomic indicators.
 - Additionally, India is keen to explore new [Free Trade Agreements \(FTAs\)](#) with **African nations, including South Africa**, to boost trade volumes and diversify the range of goods exchanged.

Note:

➤ **Strategic Cooperation:**

- **Support for African Union:** India has been instrumental in advocating for the **African Union's full membership in the G20**, further solidifying its commitment to elevating African voices on the global stage.
- **Special Economic Zones (SEZs):** India encourages its investors to establish strong footprints in Africa's manufacturing zones and considers expanding SEZs as a means of deepening economic ties.
- **Global South Representation:** India aims to be a leading voice for the **Global South**, advocating for **equitable and inclusive growth at multilateral forums**, aligning with the broader goal of strengthening the geopolitical and **economic position of developing nations, including those in Africa.**

What are the Current Trends in India-Africa Trade?

- **Trade Figures: Bilateral trade between India and Africa grew by 9.26% in FY 2022-23, reaching nearly USD 100 billion.** Exports were valued at USD 51.2 billion, and imports at USD 46.65 billion.
 - **In FY24, India exported goods worth USD 38.17 billion** to African countries, with key destinations including Nigeria, South Africa, and Tanzania.
 - Major exports included petroleum products, engineering goods, pharmaceuticals, rice, and textiles.

- The **African Union** is India's fourth-largest trading partner, following the United States, China, and the United Arab Emirates.

- Within the African Union, **Nigeria is India's top trading partner**, accounting for 20.91% of trade.

- **Import Composition:** India's imports from Africa are primarily dominated by primary products and natural resources. **The top imports include:**

- **Fuels:** Making up 61% of imports, primarily crude oil from Nigeria, Angola, and Algeria.
- **Precious Stones and Glass:** Accounting for 20%, sourced from Ghana, South Africa, and Botswana.
- **Vegetables, Metals, and Minerals:** Sourced from various African countries including Benin, Sudan, Zambia, South Africa, Morocco, and Côte d'Ivoire.

- **Export Composition:**

- **Fuels:** 20%, including non-crude petroleum oil to countries such as Mozambique, Togo, Tanzania, Kenya, and South Africa.
- **Chemicals:** 18.5%, including pharmaceuticals to Nigeria, Egypt, and Kenya.
- **Machines and Electricals:** 12.59%, exported to Nigeria, South Africa, and Egypt.

- **Economic Investments:** India has **invested over USD 12.37 billion in 206 infrastructure** projects across 43 African countries, which has positively impacted millions of lives.

Key Facts About Africa

- **Geography:** Africa is bordered by the **Mediterranean Sea (north), Red Sea (north-east), Indian Ocean (east)** and **Atlantic Ocean (west)**, and is divided almost equally by the Equator.
 - It has **eight major physical regions** like the Sahara, Sahel, Ethiopian Highlands, savannas, Swahili Coast, rainforests, the African Great Lakes, and Southern Africa.
- **Population:** Africa is the **second-most populous continent after Asia.**
- **Economy:** Agriculture employs 65-70% of Africa's labour force and accounts for 30-40% of its **Gross Domestic Product (GDP)**. The continent has a diverse economic base with significant contributions from sectors like mining and tourism.
- **Demographics:** By 2034, **Africa is expected to have the world's largest working-age population of 1.1 billion.** The continent's population is projected to double in the next 35 years, reaching nearly 2.4 billion people, with a significant increase in the under-18 population.

Note:



- **Climate:** Africa is the world's **hottest continent**. It has diverse climates, from the Sahara's arid conditions to lush rainforests.
- **Highest Point:** Kilimanjaro, Tanzania.
- **Trade:** China is Africa's **top trade partner**, with Sino-African trade volumes nearing USD 200 billion per year. Angola alone has a large population of Chinese residents.
- **Gold and Minerals:** Africa's two most profitable mineral resources are **gold and diamonds**. In 2021, Africa produced 680.3 metric tons of gold (with Witwatersrand, South Africa, being a major gold-producing region), and dominated the global diamond market, **producing around 65% of the world's diamonds by value each year**.
 - Petroleum and coal are among the most abundant minerals for 22 out of Africa's 54 countries.



What are the Challenges for India-Africa Trade?

- **Addressing Non-Tariff Barriers:** India's agricultural exports face significant hurdles due to the **European Union's** stringent food safety standards, which limit exports of products like chilies, tea, basmati rice, and others.
 - These regulations not only affect India's trade with the EU but also indirectly **impact its trade with African nations, especially those that align with EU standards**.
 - By advocating for relaxed standards, India can facilitate smoother trade flows, **reduce compliance costs, and enhance the competitiveness** of its agricultural exports in both the European and African markets.
- **WTO Reforms for Developing Nations:** The **13th WTO Ministerial Conference** highlighted the **inability to achieve consensus** on key issues such as agriculture, technology transfer, and food security.
 - This lack of agreement affects global trade policies and negotiations, directly impacting developing nations, including those in Africa.
 - The failure to reform agricultural subsidies and tariffs at the WTO hampers **African countries' ability to compete globally and limits fair trade**, affecting India as a major trade partner by imposing barriers on agricultural exports to Africa.
 - Additionally, unresolved WTO issues on quality standards and trade practices can **damage the reputation of Indian products** in African markets, impacting their **perception and competitiveness compared to China**.

Note:

- **Debt Concerns:** The rising debt ratios in **sub-Saharan Africa have nearly doubled in the past decade.**
 - The **International Monetary Fund (IMF)** has highlighted these concerns, noting that the **escalating debt burden is creating economic instability** in the region.
 - Due to their debt-ridden economy, many low-income countries in sub-Saharan Africa are at high risk of or already experiencing debt distress as of 2022, presenting a significant challenge for India-Africa trade.
- **Chinese Influence:** China's role as the **largest single-country trading partner for sub-Saharan Africa** introduces additional challenges.
 - China's dominance in **purchasing a substantial portion of the region's exports** and providing manufactured goods and machinery has established a significant economic footprint.
 - However, this relationship is marred by **criticism regarding the use of debt trap diplomacy and the lack of standardisation** in public debt documentation.
 - These factors create an uneven playing field for other trade partners like India, impacting the dynamics of India-Africa trade.
- **Five-year Action Plan:** Building on the momentum from the Strategic Partnership, the two sides agreed to develop and implement a **five-year Action Plan for 2024-2028**, focusing on the following priority areas for bilateral collaboration:
 - **Political Dialogue and Security:** Regular high-level contacts, annual political dialogues, and security consultations.
 - The two sides decided that the next round of the **Joint Working Group for defence cooperation** will take place in 2024.
 - **Trade and Investment:** Focus on balancing trade, exploring high-tech and green technology opportunities, and enhancing economic security.
 - They committed to exploring new areas of cooperation and agreed to utilise the **Joint Commission for Economic Cooperation (JCEC)** to address trade imbalances and expand the trade basket.
 - JCEC is an institutional mechanism led by the Commerce Ministers of both countries. It includes Joint Working Groups focusing on Infrastructure, Tourism, Railways, Food Processing, Renewable Energy, Information Technology, and Agriculture.
 - **Climate and Technology:** Cooperation on sustainable technology, clean energy, and space exploration.
 - Both sides agreed to work on concluding a cooperation agreement to **promote the safe, sustainable, and secure use of space and commercial space ecosystems**, and to promote human and robotic exploration.
 - Poland recognizes **India's ambition to join the International Energy Agency.**
 - India encouraged Poland to join the **International Solar Alliance (ISA)** and the **Coalition for Disaster Resilient Infrastructure (CDRI)** to address global environmental and disaster related challenges.
 - Recognizing the critical importance of **cyber security for economic and social development**, both sides will enhance close interaction and increase exchanges in **Information and communications technology (ICT) related fields.**
 - **Transport and Connectivity:** Enhancing transport infrastructure and increasing flight connections.

India-Poland Relations

Why in News?

Recently, the Prime Minister of India's visit to Poland marked a significant milestone as **India and Poland** celebrated the **70th anniversary of their diplomatic relations.**

- During this historic visit, both nations elevated their bilateral relationship to a **"Strategic Partnership,"** committing to deepen cooperation across various sectors.

What are the Key Highlights of Prime Minister of India's Visit to Poland?

- **Elevation to Strategic Partnership:** The two nations have agreed to elevate their bilateral relationship to a **"Strategic Partnership,"** highlighting the deep-rooted ties and mutual commitment to enhancing cooperation.

Note:

- **Counter-Terrorism Efforts:** Both leaders reiterated their commitment to **combating terrorism in all its forms** and stressed the importance of implementing UN Security Council resolutions.
 - They also agreed to push for the early adoption of the **Comprehensive Convention on International Terrorism (CCIT)**.
- **India-EU:** India and the EU will support the early conclusion of the ongoing **India-EU trade and investment negotiations**, the operationalization of the **India-EU Trade and Technology Council (TTC)**, and the implementation of the **India-EU Connectivity Partnership** to advance the India-EU Strategic Partnership in trade, new technologies, and security.
- **Cultural and People-to-People Ties:** Strengthening cultural exchanges, educational partnerships, and tourism.
- **Memorial Visits and Historical Tributes:**
 - **Dobry Maharaja Memorial:** PM of India paid tribute at the **Dobry Maharaja Memorial in Warsaw**.
 - The memorial commemorates the deep respect and gratitude of the Polish people and government for the **Jamsaheb of Nawanagar (Jamnagar in Gujarat)**, Shri Digvijaysinhji Ranjitsinhji Jadeja, who provided shelter to over a thousand **Polish children during World War II**, earning him the title **“Dobry (Good) Maharaja”** in Poland.
 - **Kolhapur Memorial:** The PM of India also visited the Kolhapur Memorial.
 - The memorial is dedicated to the generosity of the **princely state of Kolhapur** in providing shelter to around 5,000 Polish refugees, including women and children, during World War II.
 - **Kolhapur State (1710–1949) was a Maratha princely State of India.** In 1949, the princely state of Kolhapur was merged into the Bombay presidency.
 - **Monument to the Battle of Monte Cassino:** The PM of India laid a wreath at this monument, recognizing the shared **sacrifices of soldiers from Poland, India, and other nations during World War II**.
 - The monument commemorates the **Second Polish Corps’ soldiers who fought in the Battle of Monte Cassino**, one of the bloodiest battles of World War II.

- **Tomb of the Unknown Soldier:** Paying respects at this revered site, PM of India honoured **Polish soldiers who died in service**, reflecting the **solidarity between India and Poland**.
 - The monument is dedicated to all the **soldiers who died anonymously in the fight for their homeland**. It was founded in 1925 in honour of those who had **defended Poland in World War I and in the Polish-Soviet War**.

What is the Significance of the Prime Minister’s Visit to Poland?

- **Recalibration of Foreign Policy:** By visiting Poland, India underscores the importance of strengthening ties with **European nations** beyond the traditional countries (Germany, France, and Britain).
 - Poland, being a **growing economy in central Europe**, presents numerous opportunities for India in areas such as trade, investment, and technology.
 - This is expected to **open new avenues for economic cooperation** and balance trade relations, which had previously been skewed.
- **Healthcare Collaboration:** Poland’s need for **healthcare professionals** presents a significant opportunity for India.
 - The potential collaboration in this sector, including the **possibility of Indian doctors working in Poland**, could address Poland’s shortage of healthcare professionals and enhance bilateral cooperation.
- **Geopolitical Context:** The visit is strategically important given Poland’s role in the ongoing **conflict in Ukraine**.
 - Poland’s support for Ukraine and its strategic location in Central Europe make it a key partner for India in the region.

What are the Key Highlights of India-Poland Relations?

- **Political Relations:** Diplomatic relations were established in 1954, with **India’s embassy opening in Warsaw in 1957**. Both countries initially aligned against colonialism, imperialism, and racism.
 - During the **Communist era (1944 to 1989)**, relations were close, with several high-level visits and trade interactions facilitated through state trading organizations.
 - Following **Poland’s shift to democracy in 1989**, trade transitioned to hard currency arrangements, **reflecting both nations’ rising levels of trade** as both economies grew in size.

Note:

- Poland's accession to the **European Union (EU)** in 2004 further solidified the bilateral relationship, making it a key economic partner for India in Central Europe.
- **Agreements:** India and Poland have established several key agreements over the years to strengthen their bilateral relations. Notable early agreements include **cultural cooperation (1957), avoidance of double taxation (1989), cooperation in science and technology (1993), Combating Organized Crime and International Terrorism (2003), and extradition (2003).**
- Recent agreements focus on Mutual Legal Assistance Treaty in Criminal Matters and agreement on Gainful Occupation for Diplomatic Families (2022).
- **Economic and Commercial Relations:**
 - Poland remains India's largest trading and investment partner in Central and Eastern Europe. **Bilateral trade has increased by 192% from USD 1.95 billion in 2013 to USD 5.72 billion in 2023,** with the balance of trade largely in India's favour.
 - **Indian exports to Poland:** Textiles, Base metals, Chemicals, Machinery and mechanical appliances, Electrical and electro-technical equipment, Articles of stone, ceramic products and more.
 - **Polish imports to India:** Machinery, Mineral products, Chemicals, optical (measuring, checking instruments) and more.
 - **Investment: Indian investment in Poland exceeds USD 3 billion,** with Indian firms involved in various sectors including IT, pharmaceuticals, and manufacturing.
 - **Polish investment in India is around USD 685 million,** involved in various sectors including clean technologies and electric buses.
- **Cultural and Educational Relations:** There is a strong tradition of Indology studies in Poland, with Polish scholars **translating Sanskrit into Polish** since the 19th century. **Indology is studied at several Polish universities.**
- **Yoga** has a long history in Poland, with over 300,000 practitioners and numerous yoga centres and teachers. The **International Day of Yoga** is celebrated with enthusiasm.

- Commemorations in Poland honour **Jam Saheb Digvijaysinhji Ranjitsinhji Jadeja of Nawanagar** for saving Polish refugees during WWII.
- Several locations in Poland are named after Indian leaders, and a bust of **Mahatma Gandhi** is installed at the University of Warsaw.
- **Indian Community:** The Indian community in Poland is approximately 25,000, comprising traders, professionals, and students, with a notable presence of Indian restaurants.

Key Facts About Poland

- **Location:** Central Europe. Poland borders **Germany, the Czech Republic, Slovakia, Ukraine, Belarus, Lithuania and Russia** (the Kaliningrad exclave). Its northern border (440 km long) runs along the **Baltic Sea coast.**
- **Capital city:** Warsaw (In Polish: Warszawa)
- **Geography:** Features sandy beaches of the **Baltic Sea coast**, rolling central lowlands, and snow-capped peaks of the **Carpathian and Sudeten Mountains.** Home to over 1,300 lakes.
- **International Organisations:** Poland is a member of the **North Atlantic Treaty Organisation (NATO), United Nations (UN), International Monetary Fund (IMF), United Nations Educational, Scientific and Cultural Organisation (UNESCO), World Trade Organisation (WTO), Organisation for Cooperation and Development (OECD)** and many others.
- **Government and Economy:** Parliamentary republic with a prime minister as head of government and a president as head of state.
 - Major Industries include Mining, steelworks, and machinery production; transitioned from communism to a free market economy since the 1980s.
 - Rapid growth since joining the EU in 2004, despite challenges of low wages and high unemployment.
- **Natural Environment:**
 - **Major Rivers:** Vistula and Oder
 - **Biodiversity:** Bialowieza Forest houses the world's largest population of **European bison;** forests are habitats for brown bears, wild horses, chamois goats, Eurasian lynxes, and gray wolves.

Note:



India Japan 2+2 Foreign and Defence Ministerial Meeting

Why in News?

India and Japan recently held their **third 2+2 Foreign and Defence Ministerial Meeting** in New Delhi.

- The discussions, which took place against the backdrop of growing geopolitical tensions and **China's assertiveness in the Indo-Pacific region**, focused on deepening bilateral cooperation across various sectors.

What are the Key Highlights of the India and Japan 2+2 Meet?

- **Free and Open Indo-Pacific:** Both countries emphasised their commitment to a **free, open, and rules-based Indo-Pacific**.
 - The strategic alignment is driven by **China's growing military presence** in the region.
 - The ministers supported **Association of Southeast Asian Nations (ASEAN)'s unity and centrality**, endorsing the **ASEAN Outlook on the Indo-Pacific (AOIP)**.
 - The AOIP emphasises **ASEAN's central role in fostering cooperation, stability, and peace across the Asia-Pacific and Indian Ocean regions**.
 - It also reflects ASEAN's commitment to promoting a **rules-based regional order** founded on the principles of the **United Nations Charter**.
 - They reaffirmed their commitment to **advancing cooperation within the Quadrilateral Security Dialogue (QUAD)**, following the discussions at the **Quad Foreign Ministers' Meeting** in July 2024.

- Japan and India expressed intentions to collaborate in security assistance to third countries for regional peace and stability.
- **Defence and Security Cooperation:** The ministers recognized defence cooperation as a pillar of their **Special Strategic and Global Partnership**.
 - **Japan's National Security Strategy**, issued in 2022, further bolstered the bilateral defence relationship.
 - Progress made in multilateral exercises such as **Veer Guardian (2023)**, **Dharma Guardian (Military)**, **JIMEX (naval)**, **SHINYUU Maitri (air force)** and **Malabar (along with Australia and the US)** were emphasised.
 - They appreciated advancements in **unmanned ground vehicles (UGVs)** and **robotics cooperation**.
 - Both countries agreed to revise and update the **2008 Joint Declaration** to address contemporary security challenges. This update will reflect current priorities and align with the evolving global security landscape.
- **Terrorism and Extremism:** Both sides condemned terrorism and violent **extremism**, with particular emphasis on **cross-border terrorism**.
 - They called for bringing perpetrators of the **26/11 Mumbai attacks and other incidents to justice**.
 - Efforts to eliminate terrorist **safe havens**, cut off financing channels, and halt the movement of terrorists were supported, with specific mention of groups such as **Al Qaeda, ISIS/Daesh, Lashkar-e-Tayyiba (LeT), and Jaish-e-Mohammad (JeM)**.
- **Technology:** Discussions highlighted the transfer of **Japan's Unified Complex Radio Antenna (UNICORN) and related technologies**.
 - The Unicorn system is a **unified complex radio antenna** that integrates multiple antennas into a single horn-shaped structure. It aims to **minimise radar signatures, making warships less detectable** by enemy forces.
 - The system can also **detect missiles and drones**, enhancing situational awareness through its ability to sense radio waves over a wide area.
 - Both sides agreed to explore **Japanese naval ship maintenance in India** and discussed future defence technology cooperation.
- **Women, Peace, and Security (WPS):** Japan and India emphasised the role of **women in peacekeeping operations** and supported the **Women, Peace, and Security (WPS) agenda**.

Note:

- The WPS Agenda is a global framework aimed at addressing the gendered impacts of conflict and **enhancing women's participation in peace processes**. This agenda was formalised with the **adoption of UN Security Council Resolution (UNSCR) 1325 in 2000**, which highlights the critical roles **women play in preventing and resolving conflicts, peacebuilding, and post-conflict recovery**.

What are 2+2 Meetings?

- **About: 2+2 meetings** are high-level diplomatic dialogues involving the **foreign and defence ministers** of two countries.
 - This format facilitates in-depth discussions on **strategic, security, and defence issues, aiming to enhance bilateral relations** and address mutual concerns, which can help in resolving conflicts and building stronger partnerships.
- **India's 2+2 Partners:**
 - **United States:** The **US is India's oldest and most prominent 2+2 partner**. The first 2+2 dialogue between India and the US occurred in 2018.
 - This dialogue replaced the previous **Strategic and Commercial Dialogue** and was intended to deepen strategic cooperation and address shared concerns.
 - **Russia:** The inaugural 2+2 meeting with Russia took place in 2021. Both countries share similar views on a **multipolar world order** and use this platform to discuss a broad range of regional and international issues.
 - In addition to the US and Russia, India has engaged in 2+2 meetings with **Australia, Japan, Brazil** and the **United Kingdom** to bolster defence and security cooperation, enhance strategic depth, and align on a multipolar world order.

What is the Significance of ASEAN for India and Japan?

- **ASEAN** is crucial for both India and Japan due to its strategic, economic, and geopolitical significance.
- For India, **ASEAN represents a vital component of its Act East policy, enhancing trade, regional connectivity, and diplomatic influence** in the Indo-Pacific.
 - India engages in infrastructure projects and economic agreements to strengthen ties and ensure maritime security in crucial sea lanes.

- For Japan, ASEAN is a **major trade partner and investment destination**, with Japan leveraging its economic presence through development aid and infrastructure projects.
 - As a signatory to **Regional Comprehensive Economic Partnership**, Japan strengthens its economic ties with ASEAN through a larger framework of trade and economic cooperation.
- Both countries collaborate with ASEAN to uphold **regional stability, counterbalance regional threats, and promote a rules-based order** and a stable, open Indo-Pacific region.

How has the India-Japan Relationship Evolved?

- **Early Exchanges:** The historical connection between Japan and India began in the **6th century with the introduction of Buddhism to Japan**, which carried significant Indian cultural and philosophical influences.
- **Post- World War II Relations:** In 1949, Indian **Prime Minister Jawaharlal Nehru's** donation of an **elephant** to Ueno Zoo (Tokyo) symbolised the beginning of a renewed relationship after **World War II**.
 - The signing of the **peace treaty and the establishment of diplomatic relations in 1952**, marked one of Japan's first post-war treaties.
 - Post-World War II, Japan's recovery was supported by **Indian iron ore**, and Japan began providing **yen loans to India starting in 1958**.
- **Strategic Partnerships:** The relationship was further solidified in the 2000s with establishment of a "Global Partnership." Subsequent meetings between leaders, including the elevation to a **"Special Strategic and Global Partnership"** in 2014, highlighted the growing importance of their bilateral ties.
 - In 2015, the **"Japan and India Vision 2025"** was announced, outlining a framework for cooperation.
- **Key Areas of Cooperation:**
 - **Defence and Security Cooperation:** The **"Joint Declaration on Security Cooperation"** issued in 2008 set the foundation for ongoing security dialogues, including the "2+2" meetings and the **Acquisition and Cross-Servicing Agreement (ACSA) signed in 2020**.
 - **ACSA** was signed to facilitate reciprocal provision of supplies and services between the defence forces of both nations.

Note:

- **Economic Relations:** Japan and India's economic ties have strengthened, with Japan being a significant investor in India. As of 2021, **Japan was India's 13th largest trading partner and 5th largest investor.**
 - Key initiatives include the "**India-Japan Industrial Competitiveness Partnership**" and the "**Clean Energy Partnership**" aimed at promoting mutual investment and energy cooperation.
 - During the **2019 G20 Osaka summit**, Japan and India signed a Memorandum of Understanding (MoU) to formalize a **sister-city relationship between Ahmedabad and Kobe.**
 - This agreement builds on the 2016 MoU, which established a **sister-state relationship between Gujarat and Hyogo Prefecture.**
 - The **sister-city concept** developed **post-World War II**, is designed to promote **peaceful relations, trade, tourism, and cultural exchange** between cities across different countries.
 - Japan has significantly increased its investments in India, **pledging 5 trillion yen (approximately USD 42 billion) in 2023** to be invested over the next five years.
 - India has been the **largest recipient of Japanese Official Development Assistance (ODA)**, with notable projects including the Delhi Metro and the **High-Speed Railway initiative** using Japan's Shinkansen system.
 - In FY 2022, Japanese assistance included 567.5 billion yen in loans, alongside grants and technical cooperation.
- **Cultural Exchanges:** The year 2017, was designated as the **Year of Japan-India Friendly Exchanges.**
 - The "**Japan-Southwest Asia Exchange Year**" in **2022** further underscores Japan's commitment to strengthening ties with India and other Southwest Asian countries.

Note:

In 1942, **Captain Mohan Singh** formed the first **Indian National Army (INA)** with Indian **prisoners of war (POWs)** seeking independence from British rule with Japanese aid.

- Disputes with the Japanese Army led to its dissolution by December 1942.
- In **July 1943**, **Subhas Chandra Bose** reorganized the INA into the **Azad Hind Fauj**, uniting former INA soldiers with Indian volunteers.

Key Facts About Japan

- Japan is an island nation in East Asia. Located in the Pacific Ocean. It is an **archipelago of five main islands (Hokkaido, Honshu, Shikoku, Kyushu, and Okinawa)** and nearly 4,000 smaller ones.
- Japan lies to the **east of the Sea of Japan, China, North Korea, South Korea, and Russia.** It stretches from the **Sea of Okhotsk in the north** to the **East China Sea and Taiwan in the south.**
 - The characters which make up Japan's name mean "**sun-origin**", which is why Japan is sometimes referred to as the "**Land of the Rising Sun**".
- It is mountainous, with the **Japanese Alps** running down Honshu and **Mount Fuji** being the highest peak.
 - The country experiences **frequent earthquakes** and has about 200 volcanoes. It lies along the **western edge of the Ring of Fire.**
- Japan has a **parliamentary government with a constitutional monarchy.** The Emperor head of the Imperial Family and the ceremonial head of state.



3rd Voice of Global South Summit 2024 (VOGSS)

Why in News?

India hosted the **3rd Voice of Global South Summit** on 17th August 2024, in virtual format, with the overarching theme, "**An Empowered Global South for a Sustainable Future**".

- **123 countries participated** in the 3rd VOGSS. However, **China and Pakistan were not invited.**

Note:

- India had hosted the **1st VOGSS** on 12-13th January 2023, and the **2nd VOGSS** on 17th November 2023, both in virtual format

What is the Voice of the Global South Summit?

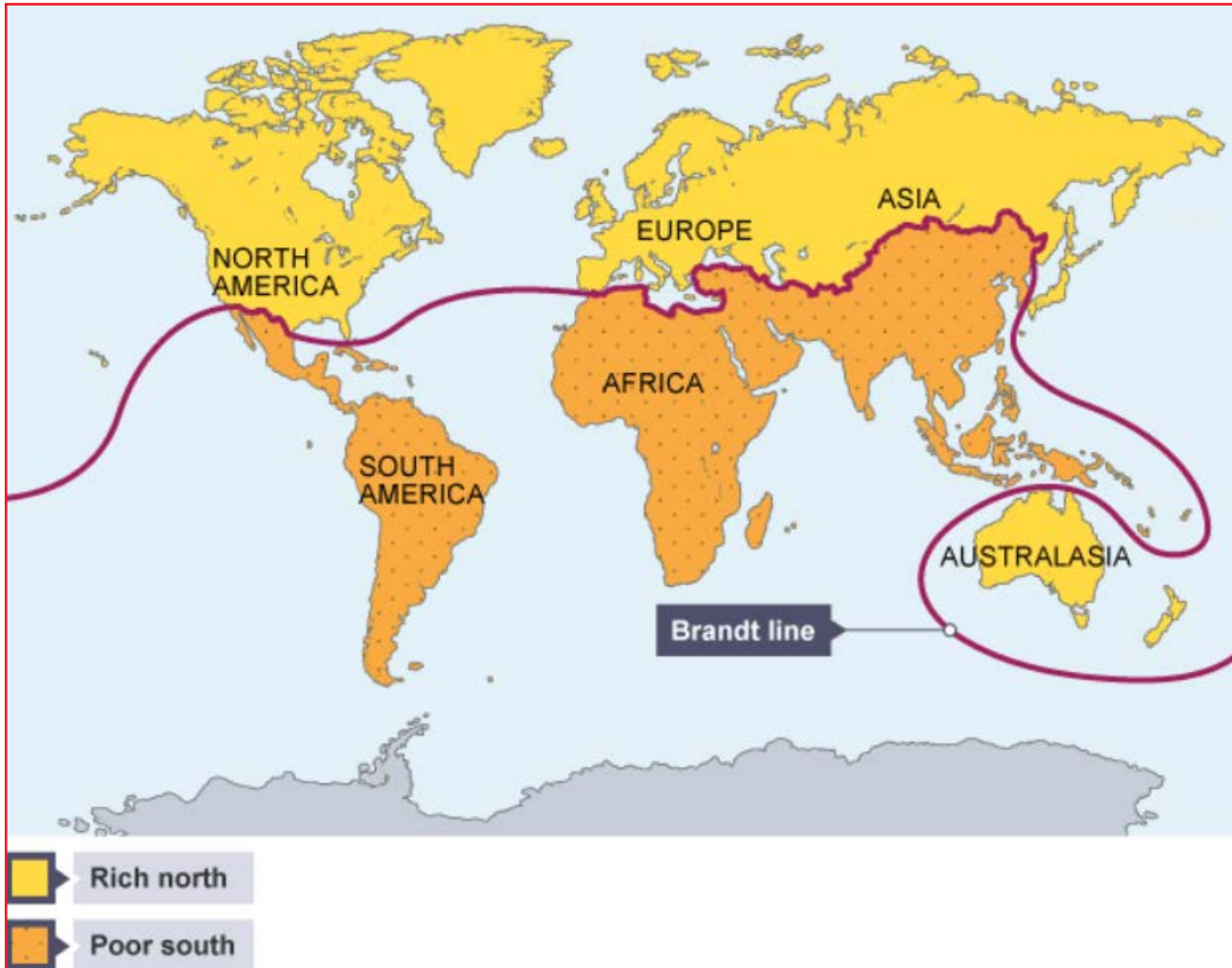
- **About:** It is a new and unique **India led initiative** that envisages bringing together countries of the Global South and share their perspectives and priorities on a **common platform** across a whole range of issues.
 - It is a reflection of India's philosophy of **Vasudhaiva Kutumbakam**, or "One Earth, One Family, One Future", and Prime Minister's vision of **Sabka Saath, Sabka Vikas, Sabka Vishwas and Sabka Prayas**.
- **Need of the VOGSS:** Recent global developments, such as **Covid pandemic**, ongoing **Ukraine conflict**, mounting debt, challenges of food and energy security etc. have severely impacted the developing world.
 - **Widespread Ignorance:** Often, the concerns of the developing world do **not** receive **due attention** and space on the global stage.
 - **Inadequate Resources:** The relevant **existing platforms have proven to be inadequate** in addressing these challenges and concerns of the developing countries.
 - **Renewed Cooperation:** It is India's endeavor to provide a **common platform to deliberate on the concerns**, interests and priorities that affect the developing countries and also to exchange ideas and solutions.
- **Key Outcomes of 3rd VOGSS 2024:**
 - **Global Development Compact (GDC):** Prime Minister of India put forward a proposal for a comprehensive four-fold **Global Development Compact (GDC)** comprising **four elements**:
 - Trade for development
 - Capacity building for sustainable growth
 - Technology sharing
 - Project specific concessional finance and grants.
 - **Funding and Support:** The Prime Minister of India announced a number of significant initiatives by **India in advancing its development partnership** with countries of the **Global South**, including
 - A **USD 2.5 million fund** to boost **trade promotion** activities and
 - A **USD 1 million fund** for **capacity building** in trade policy and trade negotiation.

- **Healthcare Promotion:** India will work to make **affordable and effective generic medicines** available to the Global South countries, **support training of drug regulators**, and share experiences and technology in '**natural farming**' in the agriculture sector.
- **Reforming Global Institutions:** Prime Minister emphasised that solutions to tensions and conflicts depend on just and inclusive **global governance**.
 - **Reformation of global institutions** is needed whose priorities give preference to addressing the concerns of the **Global South**, with developed countries also fulfilling their responsibilities and commitments.
- **Collaboration for SDGs:** 3rd VOGSS was driven by a **shared vision** of a Global South that fully achieves the **Sustainable Development Goals (SDGs)** and embarks on a **rapid developmental trajectory beyond 2030**.
 - It emphasized strengthening collective efforts to address the challenges faced by the Global South, including development finance, health, **climate change**, technology, governance, energy, trade, youth empowerment, and **digital transformation**.

What is Global South?

- American academic **Carl Oglesby** coined the term "**Global South**" in 1969 to denote a set of countries beset by the "**dominance**" of the **Global North** through political and economic exploitation.
- The phrase "Global South" refers broadly to the regions of **Latin America, Asia, Africa, and Oceania** separated by the **Brandt line**.
 - It denotes regions **outside Europe and North America**, mostly low-income and often politically or culturally marginalised.
- **China and India** are the leading proponents of the Global South.
- The **Brandt line** is a visual representation of the **world's economic divide** between the rich north and the poor south, based on **GDP per capita**.
 - It was proposed by **Willy Brandt** in the 1970s and encircles the globe at a latitude of roughly **30° North**.

Note:



What are Challenges for India as the “Voice of Global South”?

- **Geopolitical Competition:** India is increasingly seen as a **competitor** to China in leading the Global South.
 - China is increasingly making inroads in the Global South through the **Belt and Road Initiative (BRI)** for developing infrastructure.
- **Food Security Dilemma:** One of the major challenges India faces as a leader of the Global South is addressing **food security**.
 - India’s **decision to restrict rice exports in July 2023** has been criticised as inconsistent with its leadership role, especially given its commitment to addressing **global food challenges**.
 - Critics argue that such moves could undermine India’s claim to lead the Global South.
- **Pharmaceutical Challenge:** India’s reputation as the **“pharmacy of the world”** has also come under **scrutiny due to recent controversies over contaminated medicines** linked to Indian manufacturers.
 - The **World Health Organization (WHO)** has issued several warnings about **substandard drugs**, highlighting the need for India to maintain high standards in its **pharmaceutical exports**.
- **Internal Development Issues:** Critics argue India should prioritise its domestic development issues like **unequal wealth distribution, unemployment, and inadequate infrastructure**, before leading others.
 - India’s vast rural population lacks access to **quality healthcare and education**, raising questions about its capacity to address similar issues in other developing nations.

Note:

Comprehensive Strategic Partnership between India and Malaysia

Why in News?

India and Malaysia have recently taken a significant step to elevate their relationship by upgrading it to a **Comprehensive Strategic Partnership**.

- This development came during the Malaysian Prime Minister's visit to India. The discussions between the Prime Minister of India and Malaysia have set the stage for deeper cooperation and a renewed focus on mutual interests.

What are the Key Outcomes of the Malaysian Prime Minister Visit to India?

- **Comprehensive Strategic Partnership:** The existing **Enhanced Strategic Partnership, which was established in 2015**, was upgraded to a Comprehensive Strategic Partnership.
- **Economic and Trade Enhancements:** Bilateral trade between India and Malaysia reached a **record high of USD 19.5 billion**. This achievement underscores the robust economic ties and mutual interest in expanding trade relations.
 - Both leaders encouraged further investment in various sectors, including **fintech, energy, digital technologies, and start-ups**, to strengthen economic cooperation.
- **ASEAN-India Trade in Goods Agreement (AITIGA):** The leaders agreed to support and expedite the **review process of AITIGA** to make it more effective and business-friendly. The aim is to conclude the review by 2025 and enhance supply chain connections between India and ASEAN countries.
- **MoUs and Agreements:** Several Memorandums of Understanding (MoUs) were signed to bolster cooperation in multiple areas:
 - **Recruitment, Employment, and Repatriation of Workers:** MoU was signed to streamline the processes related to the movement and management of workers between the two countries.
 - **Ayurveda and Traditional Systems of Medicines:** MoU was signed for Co-operation in the field of **Ayurveda** and other **traditional systems of medicine**.
- **India will establish an Ayurveda Chair at Universiti Tunku Abdul Rahman in Malaysia**, promoting traditional medicine education and research.
- **Digital Technologies:** The MoU signed focused on fostering collaboration in various digital fields, including **cybersecurity, artificial intelligence (AI), quantum computing, and digital public infrastructure** (agreed to work on connecting **India's Unified Payments Interface (UPI)** with Malaysia's PayNet for digital transactions).
- **Culture, Arts, and Heritage:** Encouraging cultural exchange and preservation of heritage.
- **Tourism:** Promoting tourism and facilitating easier travel between the countries.
 - India noted Malaysia's designation of 2026 as Visit Malaysia Year.
- **Public Administration and Governance Reforms:** Sharing best practices in governance and administrative reforms.
- **Youth and Sports:** Fostering youth engagement and sports cooperation.
- **Defense and Security Collaboration:** The leaders agreed to intensify defense cooperation through regular exchanges, joint exercises, and capacity-building initiatives.
 - There was also a commitment to expanding the defense industry and **research and development (R&D) collaboration**.
 - Both nations condemned terrorism and pledged to work together to counter terrorism and its linkages with **transnational organized crime**.
- **Educational Cooperation:** Malaysia welcomed a special allocation of 100 seats under **India's Technical and Economic Cooperation (ITEC)** Programme for Malaysian students in fields such as cybersecurity, AI, and machine learning.
- **Multilateral Cooperation:** Malaysia appreciated India's support for ASEAN centrality and the **upcoming ASEAN Chairmanship in 2025**. They agreed to strengthen engagements through ASEAN-led mechanisms. **India will work with Malaysia on its request to join BRICS**.
 - The leaders committed to enhancing cooperation at the UN, including support for **India's bid for permanent membership in a reformed UN Security Council (UNSC)**.

Note:

- **Sustainable Development and Climate Action:** They agreed to collaborate on sustainable energy initiatives and climate change mitigation, with **Malaysia joining the International Big Cat Alliance (IBCA)**.
 - India's initiatives like the **International Solar Alliance (ISA)** and the **Coalition for Disaster Resilient Infrastructure (CDRI)** were acknowledged, reflecting a shared commitment to global climate action.

What is the Significance of Visit for India's Strategic Interests?

- **India's Act East Policy:** The visit aligns with **India's Act East Policy**, which aims to **strengthen ties with Southeast Asian nations**. By engaging with Malaysia, India continues its strategic pivot towards the **ASEAN region**, enhancing its influence and connectivity in Asia.
- **Past Frictions:** Earlier India Malaysia relations faced challenges due to Malaysia's criticism of India's policies on **Jammu and Kashmir (Article 370)** and the **Citizenship Amendment Act (CAA)**.
 - At the **UN General Assembly in 2019**, Malaysia accused India of "invading and occupying" Kashmir.
 - In retaliation, **India reduced imports of Malaysian palm oil**, a key sector for Malaysia. This had a significant impact, with Malaysia's palm oil sector experiencing a drop in exports to India.
 - **India has resumed purchases of Malaysian palm oil** after a gap of four-months following a diplomatic row between the two countries.
 - **Malaysia, being the second-largest producer of palm oil globally**, felt the effects of India's reduced imports, with **Pakistani imports filling the void left by India's withdrawal**.
 - The **Covid-19 pandemic** exacerbated tensions with **lockdown-related detentions of Malaysians in India**.
 - The **recent visit provides an opportunity to revitalize and strengthen diplomatic relations**, particularly following periods of strained ties during previous leadership.
- **Indo-Pacific Oceans Initiative (IPOI):** Despite progress, the **Indo-Pacific Oceans Initiative (IPOI) launched by India in 2019** to foster cooperation across **seven pillars** (Maritime Security, Maritime Ecology, Maritime Resources, Capacity Building, Resource Sharing, Disaster Risk Reduction and Management, Trade Connectivity, Science and Technology) **remains a missed opportunity**.

- While **Vietnam and the Philippines have endorsed IPOI**, Malaysia's potential involvement **could enhance its role in the Indo-Pacific and contribute to its strategic objectives**.
- **Addressing South China Sea Concerns:** Discussions on the **South China Sea** will provide insights into Malaysia's stance on China's expanding influence.
 - Understanding Malaysia's perspective helps India navigate the complex regional security dynamics and formulate its own strategies in the Indo-Pacific region.
- **Boosting Trade Relations:** Malaysia ranks as the **31st largest investor in India** with an **Foreign Direct Investment (FDI)** inflow of USD 1.18 billion from April 2000-September 2023.
 - Approximately **70 Malaysian companies operate in India**, covering diverse sectors from construction to human resources.
 - Malaysia is **India's third-largest trading partner within ASEAN**, while India is Malaysia's largest trading partner in Southeast Asia.
 - The visit aims to further secure and expand these investments, enhancing bilateral trade and economic collaboration.

What are the Key Highlights of the India Malaysia Relations?

- **Historical Ties:** The historical ties between India and Malaysia trace back over a millennium, significantly influenced by the **Chola Empire (9th-13th centuries)**.
 - The Cholas established extensive **maritime trade routes that connected South India with the Malay Peninsula**, fostering cultural and economic exchanges.
 - Under the reign of emperors like **Rajaraja Chola I and Rajendra Chola I**, the Cholas established control over parts of Southeast Asia, including present-day Malaysia.
- **Economic and Commercial Relations:** Malaysia is India's **13th largest trading partner**, and India ranks among Malaysia's top ten trading partners, also being the **3rd largest trading partner in ASEAN**.
 - **Exports from India:** Includes mineral fuels, aluminium, meat, iron and steel, copper, organic chemicals, and machinery.
 - **Imports to India:** Includes palm oil, mineral fuels, electrical machinery, animal or vegetable fats, and wood.

Note:

- **Comprehensive Economic Cooperation Agreement (CECA)** effective from 2011, covering goods, services, and investment.
- **Trade Settlement in Indian Rupees:** Since July 2022, **trade between India and Malaysia can be settled in Indian Rupees** in addition to the current modes of settlement in other currencies, facilitated by the India International Bank of Malaysia.
- **ASEAN-India Business Summit 2023:** Celebrated 30 years of ASEAN-India Engagement, with significant participation from Indian and Malaysian stakeholders.
- **Defence Cooperation:** The 1993 MoU on Defense Cooperation has been a cornerstone, allowing for joint ventures, development projects, and procurement.
 - Defense Minister Rajnath Singh's visit in July 2023 led to the amendment of the 1993 MoU and the inauguration of **Hindustan Aeronautics Limited's** regional office in Kuala Lumpur.
 - **Joint Exercises: Harimau Shakti (Army), Samudra Lakshmana (Navy), and Udara Shakti (Air Force).** These exercises enhance inter-service cooperation and strategic bonds.
 - **Regional Collaboration:** The Indian Navy regularly interacts with the Royal Malaysian Navy, fostering a collaborative maritime relationship.
- **Indian Community:** Malaysia hosts approximately **2.9million Indians**, making it home to the **second largest Persons of Indian Origin (PIO)** (approximately 2.75 million PIOs) community globally.
 - This community is largely **Tamil-speaking**, with significant numbers also speaking Telugu, Malayalam, Punjabi, and other languages.
 - **Community Issues:** Concerns include **illegal immigration**, exploitation of **workers**, and **human trafficking**.
 - The Indian community enjoys religious freedom with numerous Hindu temples and Gurudwaras.
- **Cultural Cooperation:** The Indian Cultural Centre Kuala Lumpur, established in 2010 and renamed **Netaji Subhash Chandra Bose Indian Cultural Center (NSCBICC)** offers classes in **Carnatic vocal music, Kathak dance, Yoga, and Hindi**, with teachers from both India and Malaysia.
 - The **Ramayana** has transcended its origins in India, **influencing cultures across Southeast Asia**, including Malaysia, with versions like **Hikayat Seri Rama** (Malay literary adaptation of the Hindu Ramayana epic) reflecting local adaptations.

- The epic's themes are reflected in local stories, arts, and performances, showcasing the shared cultural heritage.
- The **Sri Veera Hanuman Temple** in Malaysia is a prime example of shared cultural heritage, with its architecture and tales deeply rooted in Indian traditions.



Key Facts About Malaysia

- **Location:** Southeast Asia; divided into **Peninsular Malaysia and East Malaysia**, separated by the **South China Sea**.
- **Capital:** Kuala Lumpur.
- **Highest Point:** Mount Kinabalu, 13,455 feet (4,101 meters).
- **Major Mountain Ranges:** Main Range, Crocker, Bintang, Hose.
- **Major Rivers:** Rajang, Sugut, Pahang, Klang.
- **Nature:** Tropical rainforests, it is a part of the **world's 17 megadiverse countries**, home to species like Malayan tigers, pygmy elephants, and Bornean orangutans.
- Malaysia is a constitutional monarchy which gained its independence from the United Kingdom in 1957.
- Peninsular Malaysia shares a land and maritime border with **Thailand** and maritime borders with Singapore, Vietnam, and Indonesia.
 - East Malaysia shares land and maritime borders with Brunei and Indonesia and a maritime border with the Philippines and Vietnam.
- **The Strait of Malacca** runs between the **Malay Peninsula (Peninsular Malaysia)** and the Indonesian island of Sumatra. It is the main channel of shipping between the Indian ocean and the Pacific ocean.

Note:

St Martin's Island

Why in News?

Recently, after former Bangladesh Prime Minister Sheikh Hasina resignation, **St Martin's Island** came into controversy over its lease to another nation.

What are the Key Facts about St Martin's Island?

➤ About:

- St Martin's Island is located in the **northeastern region of the Bay of Bengal**, close to the **border between Bangladesh and Myanmar**.
- It is nine kilometres away from the southern tip of Bangladesh's **Cox's Bazar-Teknaf peninsula**.
 - The 7.3 km long island is at an **elevation of 3.6 metres above the mean sea level**.
- It is **Bangladesh's only coral island** and is also a **breeding ground for sea turtles**.

➤ History:

- The island was **once part of the Teknaf peninsula** around 5,000 years ago, but gradually got submerged into the sea.
 - Around 450 years ago, the southern suburbs of present-day **St Martin's Island resurfaced**, and the northern and rest of the parts of the island rose above sea level in the following 100 years.
- The **Arab merchants were among the first to settle on the island**, arriving in the 18th Century.
 - They initially named it "Jazira" (meaning "the island" or "the peninsula") and later changed it to "**Narikel Jinjira**" or "**Coconut Island**".
- **In 1900, British India annexed the island** during a land survey. During which the island came to be known as St Martin's Island, **named after then Deputy Commissioner of Chittagong Martin**.
 - After the **partition of British India in 1947**, it became part of Pakistan and subsequently, a part of independent Bangladesh after the **1971 Liberation War**.



Note:



1971 Bangladesh Liberation War

➤ Background:

- After its independence, Pakistan was divided into **East and West Pakistan**.
 - **Geographical disconnect** between the two regions, **economic exploitation of east by west pakistan**, **Cultural conflicts and negligence of East Pak's administration** were major challenges.
- In the mid-1960s, leaders such as **Sheikh Mujibur Rahman** (the founding father of Bangladesh), actively began protesting against the policies of West Pak which was followed by a brutal crackdown by the Pakistani military.

➤ India's Role:

- On 15th May 1971, **India launched Operation Jackpot** to recruit, train, arm, equip, supply and advise **Mukti Bahini fighters** engaged in guerrilla warfare against the Pakistan military.
- On 3rd December 1971, **India decided to go on a war with Pakistan** to save Bengali Muslims and Hindus in East Pakistan. The war lasted for 13 days.
- After that, a **written agreement** between India, Pakistan and the provisional government of Bangladesh came into effect bringing an end to the **Bangladesh Liberation War**.



Note:

Social Issues

Highlights

- *Persistent Issue of Violence Against Women in India*
- *Impact of Increased Mobility Among Rural Girls on Education*
- *State of Healthcare in Rural India 2024*
- *Caste Movement in India*
- *Mental Health in India*
- *Multidimensional Vulnerability Index (MVI)*
- *Dalit Business Owners Face Income Disparity*

Persistent Issue of Violence Against Women in India

Why in News?

The recent rape and murder of a trainee doctor in Kolkata have reignited nationwide concerns about **women's safety** and intensified protests by healthcare workers, who are now calling for a **Central law to protect them**.

- Despite stricter laws, **crimes against women persist and continue to rise**, underscoring the urgent need for comprehensive reforms.

What are the Demands of Healthcare Workers?

- **Demands:**
 - **Central Protection Act:** The **Indian Medical Association (IMA)** is advocating for the implementation of a nationwide law to ensure the safety of healthcare professionals, similar to global examples like the **United Kingdom's National Health Service (NHS) zero-tolerance policy** and the **United States's felony (*crime that is serious enough to be punishable*) classifications for assaults**.
 - In the **US, felonies are categorised into classes** based on their maximum prison sentences.
 - Ranging from Class A felonies, the most serious, carry a maximum sentence of life imprisonment or death to Class E felonies range from more than 1 year to less than 5 years.
 - **Enhanced Safety Measures:** Better lighting, security guards, and monitored security cameras in hospitals and medical facilities.

- Ensuring **safer working and living conditions for doctors**, including well-lit corridors and secure wards.
- Installation of security systems and emergency response mechanisms in healthcare settings.

➤ Current Provisions:

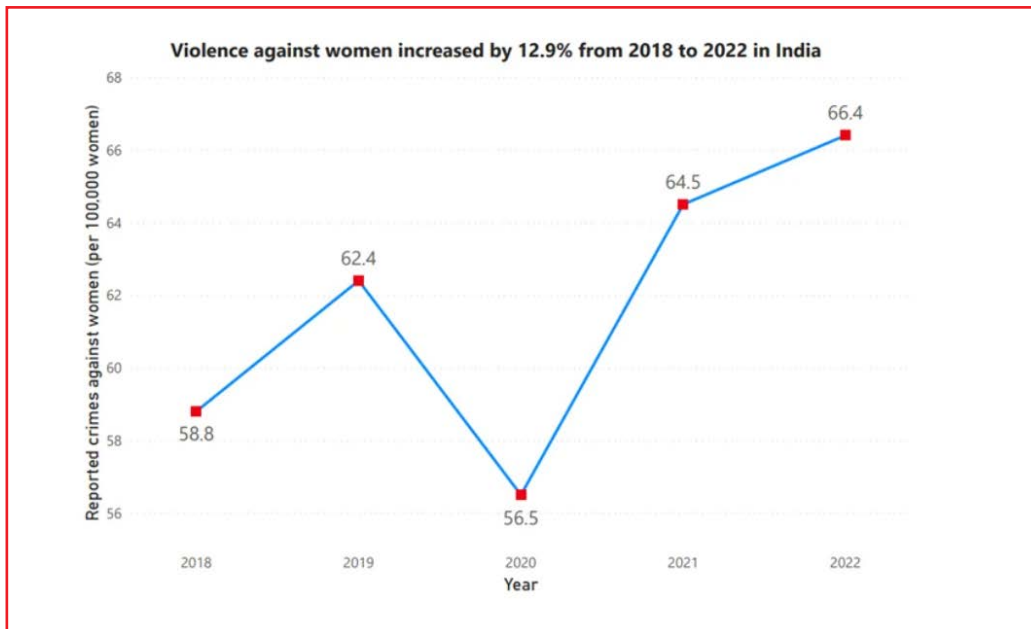
- **State Responsibilities:** **Health and law and order are primarily State subjects**, with the Union government lacking centralised data on attacks on medical professionals.
- **N.K. Singh, Chairman of the Fifteenth Finance Commission**, suggested that health **should be shifted to the Concurrent list under the Constitution**, as it is currently under the State List.
- **Ministry of Health and Family Welfare Order:** Mandates filing of a **First Information Report (FIR)** within six hours of any violence against healthcare workers.
- **National Medical Commission (NMC) Directives:** Requires medical colleges to develop policies for safe work environments and timely reporting of incidents.
- **Central Government Response for Demands:** The **Health Ministry** has stated that the Kolkata incident is covered under existing legal provisions and that a **Central Protection Act is unnecessary**, as 26 States and Union Territories already have laws protecting healthcare workers.
 - These State laws define violence against healthcare personnel as **cognisable and non-bailable**, encompassing doctors, nurses, and paramedical staff.

What do the Crime Statistics Reveal About Women's Safety in India?

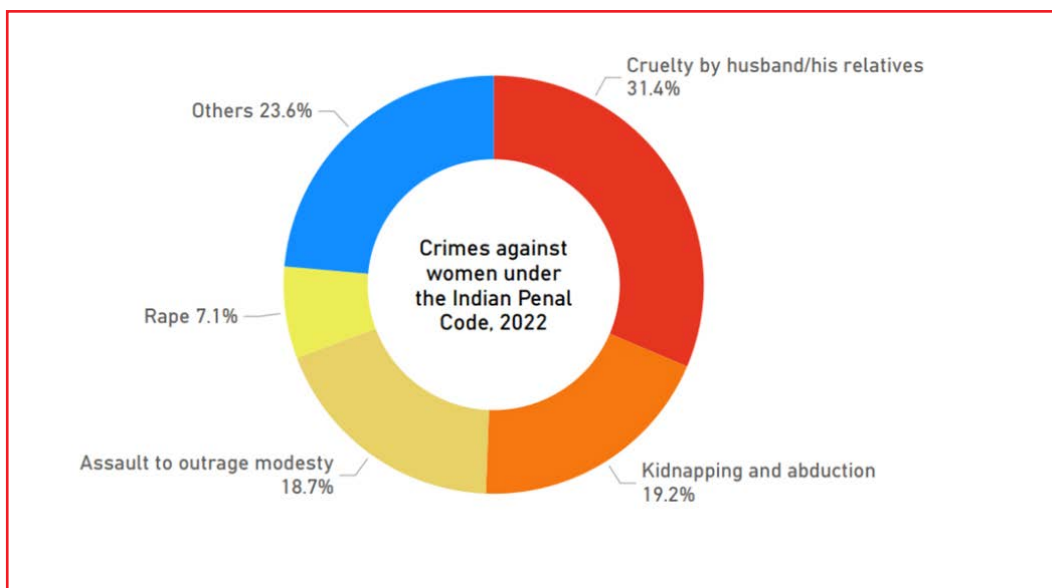
- **Rising Crime Rates:** The **National Crime Records Bureau (NCRB)** reported 445,256 cases of crime against women in 2022.

Note:

- From 2018 to 2022, reported crimes against women rose by 12.9%, reflecting both increased incidents and improved reporting.
- The **Women and Men in India 2023 report** shows a rise from 359,849 cases in 2017 to **over 445,000 in 2022, averaging 1,220 cases daily, averaging 51 First Information Report (FIRs) per hour.**
- The **National Family Health Survey-5** found that **nearly one-third of women aged 15-49 in India** have experienced some form of violence.



- **Types of Crimes:** The most common crimes include **cruelty by husbands or in-laws** (31.4%), **kidnapping and abduction** (19.2%), **assault to outrage modesty** (18.7%), and **rape** (7.1%).
- These figures underscore the persistent threats women face, even within their homes.



- **Persistently High Rape Cases:** The number of reported rapes remains alarmingly high, with annual reports consistently exceeding 30,000 cases since 2012, except for a decline during the **Covid-19 pandemic** in 2020.

Note:

- Attacks peaked at nearly 39,000 in 2016. **By 2018, one woman was reporting a rape every 15 minutes across the country**, highlighting the alarming frequency of these crimes.
 - In 2022, over 31,000 rape cases were reported, reflecting the ongoing severity of the issue.
 - Despite tougher laws, **conviction rates for rape have remained low**, fluctuating between **27%-28% from 2018 to 2022**.
 - **Impact of the Pandemic:** The **Covid-19 pandemic** exacerbated violence against women, with the crime rate jumping from 56.5 per 100,000 women in 2020 to 64.5 in 2021. Factors such as **economic strain, social isolation, and reverse migration contributed to this surge**.
 - **Workplace Harassment:** Despite the enactment of the **Protection of Women from Sexual Harassment Act, 2013 (POSH Act)**, sexual harassment in the workplace remains a concern, with cases increasing slightly from 402 in 2018 to 422 in 2022.
 - However, these numbers are **likely underreported due to societal biases and fear of repercussions**.
 - **Index on Women's Safety:** According to the Georgetown Institute **2023 Women Peace and Security Index**, India scored 0.595 out of 1 point, placing it in rank **128 among 177 countries** in terms of women's inclusion, justice, and security.
 - The index also states that **India is among the top 10 worst countries for political violence targeting women in 2022**.
- What are India's Initiatives Related Women Safety?**
- **Legislations:**
 - **International Conventions:** India ratified key international conventions, including the **Convention on the Elimination of All Forms of Discrimination Against Women (CEDAW)** in 1993.
 - India also endorsed the **Mexico Plan of Action (1975)** aimed at full gender equality and ending gender discrimination and the **UN General Assembly Session on Gender Equality and Development and Peace for the 21st century**.
 - **The Immoral Traffic (Prevention) Act, 1956:** Prohibits commercial sex work and trafficking of persons for prostitution.
 - **Indecent Representation of Women Act, 1986:** Prohibits indecent representation of women in advertisements and publications.
 - **National Policy for the Empowerment of Women, 2001:** Aims for women's advancement and empowerment, addressing violence against women and providing mechanisms for prevention, assistance, and action.
 - **Eleventh Five-Year Plan (2007-2012):** Acknowledges violence against women (VAW) as a major issue, focusing on domestic violence and rape.
 - **Protection of Women from Domestic Violence Act, 2005:** Provides support for women victims of **domestic violence**, including shelter and medical facilities, with mandatory Protection Officers.
 - **Sexual Harassment of Women at Workplace (Prevention, Prohibition and Redressal) (PoSH) Act, 2013:** The **POSH Act** addresses sexual harassment faced by women in the workplace, aiming to **ensure a safe work environment**.
 - It defines sexual harassment to include unwelcome physical contact, sexual advances, demands for sexual favours, sexually coloured remarks, and showing pornography.
 - The Act is based on the **Vishakha guidelines** established by the **Supreme Court** in the case of **Vishakha & Others v. State of Rajasthan, 1997** which addressed workplace harassment.
 - It draws from the **Indian Constitution's Article 15** and international norms like **CEDAW**.
 - **Criminal Law (Amendment) Act, 2013:** Enacted for effective legal deterrence against sexual offences.
 - **Further, the Criminal Law (Amendment) Act, 2018** was enacted to prescribe even more stringent penal provisions including the death penalty for the rape of a girl below the age of 12 years.
 - **Jawaharlal Nehru National Urban Renewal Mission (JNNURM):** Recommends incorporating **gender considerations in urban development** to enhance safety for women.
 - **Protection of Children from Sexual Offences (POCSO) Act, 2012:** Protects children from sexual offences, providing a legal framework for their protection and ensuring strict penalties for offenders.

Note:

➤ Strategies and Measures:

- **Beti Bachao Beti Padhao Scheme:** Focuses on preventing gender-biased sex selection and ensuring the survival, protection, and education of the girl child.
- **Ujjawala Scheme:** Aims at preventing trafficking, rescuing and rehabilitating victims of trafficking and commercial sexual exploitation.
- **NIRBHAYA Fund:** Aims at supporting initiatives for the safety and security of women, including setting up emergency response systems and improving public infrastructure.
- **Ministry of Women and Child Development Initiatives:** Administers schemes like **Swadhar Greh Scheme**, provides short stay homes for women in difficult circumstances, and conducts awareness programs.
- **Women Safety in Trains:** Introduction of the **182 Security helpline**, CCTV cameras in ladies' compartments, and the '**R-Mitra**' mobile app for emergencies.
- **Safety and Security for Women Tourists:** Measures include the '**Incredible India Help Line**,' **Code of Conduct for Safe Tourism**, and directives for state governments to ensure a secure environment for tourists.
- **Safety of Women in Metro:** Delhi Metro Rail Corporation (DMRC) has dedicated **women-only coaches**, reserved seats, and dedicated Central Industrial Security Force staff for safety.
- **Scheme for Universalisation of Women Helpline:** Provides 24-hour emergency and non-emergency response through a publicized helpline.
- **Mobile Apps:**
 - **Suraksha:** Designed to provide women with a quick and easy way to send distress signals and their location to the police in case of an emergency.
 - **Amrita Personal Safety System (APSS):** Wearable device for communication with family and police.
 - **VithU:** Emergency app that sends alerts to contacts.

Why are Laws and Regulations Falling Short for Women Safety?

- **Implementation Gaps:** Strict laws enacted after the 2012 Nirbhaya case, like the **Criminal Law (Amendment) Act, 2013**, enforcement remains inconsistent across different regions and police jurisdictions.

- Implementation of regulations, like establishing **Internal Complaints Committees (ICC) in organizations**, remains inadequate.
- Additionally, in 2018 the **Securities and Exchange Board of India (SEBI)** requires listed companies to report cases of sexual harassment annually, but data remains inconsistent and scattered.
- **Systemic Issues:** **Corruption** within the legal and law enforcement systems can undermine efforts to address crimes against women. **Bribery and misconduct can result in cases being mishandled or dismissed.**
 - Many incidents of violence are not reported due to **fear of retaliation, lack of trust in the system**, or perceived inefficacy of the legal process.
- **Cultural and Social Norms:** Deeply ingrained societal attitudes and norms can **undermine legal protections.** In some communities, violence against women may be normalised or not taken seriously.
 - Cultural attitudes and **victim-blaming can discourage women** from reporting crimes or seeking help, fearing stigma and societal judgement.
- **Legal Challenges:** Victims often **face a high burden of proof**, which can lead to **low conviction rates.** The requirement for **substantial evidence** and the legal complexity of cases can deter victims from pursuing justice.
 - The judicial process can be cumbersome, leading to prolonged trials and delayed justice for victims. This can also **discourage survivors from reporting crimes.**
- **Economic Dependence:** Economic factors can also play a significant role. Women who are **financially dependent on their abusers** may find it difficult to leave abusive relationships, even if legal protections are in place.
- **Resistance to Change:** Resistance to reform within **institutions and among policymakers** can delay or obstruct efforts to improve laws and regulations.
 - **Legal frameworks may not evolve quickly enough** to address emerging forms of violence or changes in societal attitudes.
- **Lack of Awareness and Education:** There is often limited awareness among **women about their legal rights and available support services.** This lack of knowledge can prevent them from accessing justice and support.

Note:

International Approaches in Promoting Women's Safety

➤ Key International Initiatives:

- **International Day for the Elimination of Violence Against Women: The United Nations observes 25th November** as the International Day for the Elimination of Violence Against Women every year.
 - **United Nations Women Safe Cities and Safe Public Spaces for Women and Girls:** Aimed at creating safe and inclusive public spaces for women and girls. It recognizes that public spaces are essential for women's participation in society, but they **can also be places of fear and harassment**.
 - Focuses on integrating gender perspectives into safety strategies, developing tools to combat violence against women, and promoting women's participation in urban planning.
 - **Gender Inclusive Cities Programme:** It is funded by the **UN Trust Fund** in Support of Actions to Eliminate Violence Against Women.
 - This initiative aims to improve women's safety in **cities like Dar es Salaam, Delhi, Rosario, and Petrozavodsk** by promoting equal access to public spaces.
 - **UN Development Fund for Women (UNIFEM):** It provides financial and technical assistance to promote gender equality and women's empowerment.
- #### ➤ National Approaches:
- **United Kingdom:** The London Authority's strategy tackles violence against women and girls by **boosting Safer Transport Teams**, running awareness campaigns, and enhancing enforcement.
 - **Latin America:** Cities like Bogota have developed safety strategies, including **women-only subway cars and police stations**.

Impact of Increased Mobility Among Rural Girls on Education

Why in News?

The recent research published in the *Journal of Transport Geography* sheds light on a significant rise in cycling levels among rural girls over the past decade.

- This trend, described by researchers from Indian Institute of Technology Delhi as a "**silent revolution**," highlights the impact of government interventions and **changing social norms on the mobility and education of rural girls**.

How has Increased Cycling Among Rural Girls Affected Education?

- **Growth Overview:** The percentage of girls cycling to school in rural areas more than **doubled from 4.5% in 2007 to 11% in 2017**.
 - Nationally, cycling levels among children increased from **6.6% to 11.2%**, with rural areas seeing a twofold rise from 6.3% to 12.3%. Urban areas saw only a slight increase from 7.8% to 8.3%.
- **Factors Contributed to Rise in Cycling:**
 - **Bicycle Distribution Schemes (BDS)** played a crucial role, implemented in 20 out of 35 states and Union Territories (the paper considered the undivided State of Andhra Pradesh), to boost cycling, particularly among girls.
 - States provide bicycles to **school-going children aged 14-17 to improve school enrolment**, especially among girls due to higher dropout rates.
 - **Impact:** West Bengal's BDS led to a **rise from 15.4% to 27.6% in girls' cycling levels**, making it the top state for rural girls' cycling while Bihar saw an eightfold increase.
- **Implications on Broader Social Changes:**
 - **Education:** BDS have been effective in improving school enrollment and retention rates among girls. By making it **easier for girls to commute to school**, these schemes **helped reduce dropout rates and encourage continued education**.
 - Increased access to education enhances **long-term outcomes for girls, leading to better job prospects and economic independence**. This fosters a cycle of empowerment and community economic growth.
 - **Breaking Gender Norms:** The increase in cycling among rural girls is a significant step toward **challenging patriarchal norms that traditionally restricted women's mobility**. This growth indicates a shift towards greater gender equality in rural areas.

Note:

What are the Other Schemes to Boost School Enrollment Among Girls in India?

- **Mid-Day Meal Scheme**
- **Beti Bachao, Beti Padhao scheme**
- **Sukanya Samridhi Yojana**
- **Kasturba Gandhi Balika Vidyalaya Scheme:** It was launched in 2004 to set up residential schools at the upper primary level for girls from disadvantaged communities in educationally backward blocks.
 - The scheme provides 75% reservation for **Scheduled Tribes, Scheduled Castes, Other Backward Class** or minority girls, with the remaining 25% for girls from BPL families.
 - It provides a recurring grant of Rs.1.5 lakhs per annum and a one-time grant of Rs.5 Lakhs to set up schools.
- **National Scheme of Incentives to Girls for Secondary Education:** The central government has launched an initiative to **promote secondary education for girls above Class X**, addressing the **high drop out of school by the time they hit puberty**.
 - Under this scheme, a fixed deposit of Rs 3000/- is made in the name of the girl-child. A minimum criterion of passing class X exams and reaching the age of 18 years is required to withdraw the matured amount from the fixed deposit.

State of Healthcare in Rural India 2024

Why in News?

Recently, the “**State of Healthcare in Rural India, 2024**” report was released by NGO Transform Rural India and Development Intelligence Unit.

- The survey covered **21 States** including Andhra Pradesh, Bihar, Maharashtra, Tamil Nādu, and Uttar Pradesh.
- The sample achieved included **52.5% male** respondents and 47.5% female respondents.

What are the Key Highlights of the Report?

- **Health Insurance Coverage:** Only about **50%** of rural households in the country have **government health insurance**, while **34%** lack any **health insurance coverage** at all.
 - **61%** of surveyed households do **not** have **life insurance**.

- **Access to Diagnostic Facilities:** It revealed that there is a **lack of diagnostic facilities** in the rural areas mostly because of **shortage of trained personnel**.
 - Only **39%** of respondents have access to a **diagnostic facility** within commutable distance.
 - **90%** of respondents do not undergo **routine health checkups** unless recommended by a doctor.
- **Access to Subsidised Medicines:** Only **12.2%** of households have access to subsidised medicines from **Pradhan Mantri Jan Aushadhi Kendras**.
 - Only **26%** respondents had access to a **government medical store** located within the premises of a health facility that provides **free medicines**.
 - **61%** have access to a **private medical store** within commutable distance.
- **Drainage Systems:** **20%** of the households reported **no drainage system** in their villages and only **23%** had a **covered drainage network system** in their villages.
 - **43%** of households did not have any scientific system of **waste disposal** and they ended up with dumping their waste everywhere.
 - Only **11%** burn the dry waste and convert their **wet waste into compost**, while **28%** reported that the local panchayat has made plans to **collect household waste**.
- **Elderly Care:** **73%** of the households with elderly members need **constant care** and the **majority (95.7%)** prefer **family caregivers**, predominantly female (72.1%), highlighting the need for caregiver training on home-based care.
 - Only **3%** of households have engaged in **paid external caregivers**.
 - **10%** rely on **neighbourhood support** in the absence of family caregivers.
- **Caregiving for Pregnant Women:** Majority of caregivers for **pregnant women** include **husbands (62.7%), mothers-in-law (50%), and mothers (36.4%)**.
 - The report emphasises the need for **strong social networks**, supportive environments, and capacity building for family caregivers.
- **Mental Health Disorders:** **45%** of the respondents across gender most of the time have **anxiety and worry** that impacts their state of mind.
 - Anxiety and worry impact mental health much more among the older population than the younger ones.

Note:

What are the Reasons for Poor Healthcare Infrastructure in Rural India?

- **Out-of-Pocket Expenditure:** According to the **National Health Accounts Estimates for India (2019-20)**, **out-of-pocket expenditure (OOPE)** constitutes **47.1%** of the total health expenditure.
 - In **Orissa**, 25% of households that had any healthcare costs, and 40% of households that experienced a hospitalisation, had to take out **loans or sell assets** to pay for healthcare costs.
- **Qualified Personnel Shortage:** India suffers from a severe lack of qualified healthcare professionals in rural areas.
 - Among the states, **Chhattisgarh** has the highest vacancy of doctors (**71%**), followed by **West Bengal (44%)**, **Maharashtra (37%)**, and **Uttar Pradesh (36%)** in Primary Healthcare Centers (PHCs).
 - The overall vacancy for **Auxiliary Nurse and Midwife (ANM)** in the country is 5%.
- **Doctor-Patient Ratio:** The **doctor-patient ratio** in India is approximately **1:1456**, which is below the **World Health Organization (WHO)** recommended ratio of **1:1000**.
 - The **situation is worse in rural areas**, where the ratio is significantly higher due to a shortage of doctors.
- **Low Public Health Spending:** Government expenditure on health remains low at around **1.28% of GDP**. Rural health infrastructure often receives a smaller share of this budget, leading to **underfunded facilities**.

Caste Movement in India

Why in News?

Recently, many **political parties** called for a new **Indian caste census** after the Supreme Court's judgement on **sub-categorisation** within reserved castes.

- Caste is often considered as central to **South Asian society** much like race in the United States, class in Britain, and faction in Italy.
- The **last caste census** at national level India occurred in **1931** during British rule.

What is the History of Caste Movements in India?

- **Historical Context:** By the end of the **19th century**, caste began to obtain **ubiquitous** meaning in the daily lives of Indians.

- Definitions of **caste** often revolved around **Brahminical notions** of **purity and pollution**, and often aggressive resistance to such notions by lower castes.
- Castes remained '**constrained within watertight social compartments**,' with '**social mobility**' between them prohibited by **inter-caste marriages**.
- **Colonial Legislation:** Colonial administration brought legislation like **Criminal Tribes Act, 1871**, in North India, and later extended to the **presidencies of Bengal (1876) in East and Madras (1911) in South**.
 - It authorised the colonial state to designate **entire communities as criminals**.
 - This designation was often rooted in **pre-existing biases** about certain caste or tribal groups, reinforcing negative **stereotypes** and institutionalising them through law.
 - They were considered **too inferior** in their jati and varna traits to be employed in the **colonial army and state apparatuses**.
 - The Act continued till 1949 and was replaced by the **Habitual Offenders Act, 1952**.
- **Divide and Rule Policy:** The **1857 Revolt** which was apparently led by **upper class hindu and muslim elites** forced British leaders to push for a more **diverse Indian army** and **colonial offices** and reduce the presence of **one community dominance** in these roles.
 - Thus, caste emerged as an important criterion in **provincial education** and employability of candidates in **government service**.
 - Caste was recognised as a potential obstruction to the emergence of **nationalist sentiments** and helped in perpetuation of **British rule** in the subcontinent.

What were the Key Figures in Caste Movements?

- **Jyotiba Phule:** He was a 19th century **Marathi activist** and founder of the **Satyashodhak Samaj** and was among modern India's first **anti-caste ideologists**.
 - He wrote **Gulamgiri (1873)**, an account of the plight of '**untouchables**' in India that paid rich tributes to Muslim rulers, **Christian missionaries**, and the British administration for instilling **egalitarian consciousness** in Indian society.
 - He also introduced the word '**Dalit**' ('untouchables' or broken people) into the lexicon of **anti-caste movements**.

Note:

- He promulgated his version of the **Aryan invasion theory** and projected texts like **Manusmriti** as **exploitative** and oppressive towards the nation's indigenes and tribes.
- Phule's mobilisation of anti-caste ideas later inspired **BR Ambedkar**.
- **BR Ambedkar**: He mobilised Dalits and members of **depressed classes** with the slogan, '**We must become a ruling community**.'
- In 1927, he led the **Mahad Satyagraha** to agitate for the rights of '**untouchables**' to draw water from a **public tank** in Mahad, in Maharashtra, that was hitherto denied to them by leaders of privileged castes.
- In December 1927, Ambedkar publicly set fire to the **Manusmriti** which was seen as the source for perpetuation of the **caste system** and the practice of **untouchability**.
- In 1930, he founded the **All India Depressed Classes Association**.
- Before the colonial administration, Ambedkar and Ambedkarites agitated for a **separate electorate** for Dalits and depressed classes.
- **Other Initiatives by BR Ambedkar** were **Independent Labour Party (1936)**, **All India Scheduled Castes Federation (1942)** etc.
- **M C Rajah**: The first major 20th century event of pan-Indian **Dalit movements** was the **All India Depressed Classes Leaders' Conference** at Nagpur, in 1926.
 - It resulted in the formation of the **All India Depressed Classes Association**, presided by **Rao Bahadur M C Rajah**, and with Ambedkar as one of its vice presidents.
- **Periyar**: In the Madras Presidency, Erode Venkatappa Ramasamy (or **Periyar**) founded the anti-Brahminical **Self-Respect Movement**.
 - It became an important foundation in his rise to become the leader of the **Justice Party** in 1939.
- **Mahatma Gandhi**: After the announcement of **separate electorates** (under Communal Award) for **Depressed Classes**, Gandhiji decided to go on a fast unto death to protest against this supposed '**vivisection**' (**cutting**) of the Hindu community.
 - Gandhi and Ambedkar signed the historic **Poona Pact 1932** which secured **joint electorates** for all Hindus and awarded a **reservation** to the **depressed classes** of nearly double the number of seats in Communal Award.
 - In 1932, Gandhi founded the **Harijan Sevak Sangh** for eradication of **untouchability** and **caste upliftment** but Gandhi's focus on varnashrama was not liked by Ambedkar.
- **Reversal in British Policy**: Given the imminent pressures of the **Partition** of the subcontinent, the Ambedkarite movement was gradually **overshadowed** by the need to build **India's constitutional frameworks**.
 - By 1945, the colonial administration chose to **depoliticise caste** during the transfer of power for an united India.

What is the Difference Between Gandhi's and Ambedkar's Ideologies?

Aspect	Mahatma Gandhi	B.R. Ambedkar
Views on Freedom	Freedom must be wrested from authority by the people.	Expected freedom to be bestowed by rulers.
Democracy	Sceptical of mass democracy; preferred limited government and local self-rule .	Advocated parliamentary democracy as a means for pressure and advancement of the oppressed.
Political Ideology	Believed in non-violence and practical alternatives to ideologies.	Inclined towards liberal ideology with emphasis on institutional frameworks.
Views on Village System	Supported ' Gramraj ' (village self-rule) as true independence.	Criticised 'Gramraj' for perpetuating caste and social inequalities.
Approach to Social Reform	Used moral persuasion and non-violent methods for change.	Emphasised legal and constitutional reforms , opposed the use of force.

Note:

View on Untouchability	Addressed untouchability as a moral issue , promoted ' Harijan ' as a term.	Criticised Gandhi's approach; viewed untouchability as a major issue to be addressed by legal means .
Religion and Caste System	Believed caste system was a degeneration of varna ; not a religious mandate.	Denounced Hindu scriptures for perpetuating caste and untouchability.
Legal vs. Moral Approach	Emphasised moral and ethical approaches to solve issues.	Preferred legal and constitutional methods for reform.

Mental Health in India

Why in News?

The recent report by the **National Task Force on Mental Health and Well-being of Medical Students-2024**, released by the **National Medical Commission (NMC)**, highlights troubling statistics about the **mental health** of medical students in India.

What are the Key Highlights of the Report on Mental Health of Medical Students?

- **High Levels of Stress:** 84% of postgraduate (PG) students experience moderate to very high levels of stress. 64% report that the workload significantly affects their mental health.
 - 27.8% of undergraduate medical students and 15.3% of postgraduate students have a **diagnosed mental health disorder**, indicating a widespread mental health crisis requiring immediate intervention.
 - 16.2% of undergraduate (UG) students and 31.2% of PG students have had suicidal thoughts, indicating severe mental health challenges.
- **Major Stressors:**
 - Medical students, particularly postgraduates, face **extended working hours daily**, often exceeding 60 hours a week. This leads to inadequate rest and exhaustion.
 - The **need for constant availability on duty**, often with insufficient breaks, significantly contributes to stress and burnout among medical students.
 - The **lack of adequate mental health support systems and infrastructure** within medical institutions leaves students without proper resources to manage their stress and mental well-being.
 - Around **19% of PG students expressed that they turn to substances such as tobacco, alcohol, cannabis, and other drugs** to alleviate stress. This is indicative of the **lack of adequate mental health support systems** and the need for education on healthier coping mechanisms.
- **High expenses of medical education** and insufficient stipends exacerbate financial stress for students, especially those with financially dependent families or student loans.
 - **33.9% of UG students face extreme financial stress**, with 27.2% holding educational loans and struggling with repayment pressures.
 - **72.2% of PG students find their stipend insufficient**, highlighting the need for a critical review of stipend policies.
- The intense competition, **fear of failure, and high academic expectations** in medical training place students under immense pressure, leading to procrastination, perfectionism, and, in extreme cases, suicidal thoughts.
- Experiences of **discrimination based on gender, caste, ethnicity and geography**, along with instances of **ragging and harassment** by seniors and faculty, contribute to the psychological distress of students.

National Medical Commission

- It is the **apex regulatory body for medical education and practice in India**, established in 2020 to replace the **Medical Council of India (MCI)**.
 - It consists of four autonomous boards and a **Medical Advisory Council**, responsible for overseeing major screening tests (such as **NEET-UG**) regulating **medical education and training**, registration and ethics of practitioners, and assessment and rating of institutions.
- NMC has achieved the prestigious **World Federation for Medical Education (WFME)** recognition, ensuring global recognition of its medical degrees.

What does India's Broader Mental Health Landscape Look Like?

- **High prevalence Rates:** According to the **National Mental Health Survey (NMHS) 2015-16**, 10.6% of adults in India suffer from mental health issues.

Note:

- The treatment gap for mental disorders varies between **70% and 92%, depending on the disorder.**
- Urban areas exhibit higher prevalence of mental health issues (13.5%) compared to rural areas (6.9%) and urban non-metro regions (4.3%).
- The **National Council of Educational Research and Training (NCERT)** Mental Health and Well-being of School Students Survey found that during the pandemic, **11% of students reported feeling anxious, 14% experienced extreme emotions, and 43% experienced mood swings.**
- **Economic Impact:** Mental health disorders contribute to significant productivity **losses due to absenteeism, reduced productivity, disability, and increased healthcare costs.**
- **Poverty** is shown to exacerbate mental health risks, leading to heightened psychological distress due to stressful living conditions and financial instability.

What are the Policy Challenges in Addressing Mental Health?

- **Policy Neglect:** Mental health remains a **low priority for policymakers**, partly due to a lack of political will and knowledge gaps in interventions.
- **Lack of Core Indicators:** Mental health issues are often marginalized due to the absence or minimal inclusion of **visible core indicators in international/national health metrics.**
- This absence prevents the effective allocation of resources and investment in mental health infrastructure, research, and services.
- **Budget Constraints:** Against an estimated need of over Rs 93,000 crore, the mental **health budget was only Rs 1,000 crore in 2023**, with most funds directed to tertiary institutions, leaving **little for community-based initiatives.**
- **Legislation Shortcomings:** Despite the **National Mental Health Policy of 2014** and the **Mental Health Act of 2017**, there are significant challenges in implementation and resource allocation.
- **Human Resource Planning:** In India, there is a **critical shortage of mental health professionals.** The reliance on a few specialists, such as psychiatrists, reinforces the notion of **mental health services as a luxury** rather than an integral part of primary health care.
- **Strategic Intervention Needed:** Policymaking requires a nuanced understanding of mental health challenges,

similar to the approach taken during **India's fight against Human Immunodeficiency Virus (HIV)- Acquired Immuno Deficiency Syndrome (AIDS).**

Lessons from India's HIV-AIDS Strategy

- India's **HIV-AIDS programme was based on real-time data and surveillance.** Strategies were tailored for different regions and groups based on local needs.
 - A **significant portion of the budget was allocated to engaging communities and addressing stigma**, a crucial step that mental health strategies must replicate.
- Involvement of parliamentarians, the media, judiciary, and other key sectors helped create widespread awareness and support.

What are the Initiatives Related to Mental Health in India?

- [National Mental Health Programme \(NMHP\)](#)
- [Mental Healthcare Act 2017](#)
- [National Institute of Mental Health and Neurosciences \(NIMHANS\)](#)
- [National Tele Mental Health Programme](#)
- [NIMHANS and iGOT-Diksha Collaboration](#)
- [Ayushman Bharat – HWC Scheme](#)
- [Kiran Helpline](#)
- [Manodarpan](#)
- [MANAS Mobile App](#)

Note:

- **Sustainable Development Goal (SDG) Target 3.4**, set by the **United Nations**, aims to reduce premature mortality from **non-communicable diseases** by one-third by 2030, with a particular focus on **promoting mental health and well-being.**

Multidimensional Vulnerability Index (MVI)

Why in News?

The **UN General Assembly** launched the **Multidimensional Vulnerability Index (MVI)** to assist **small island developing states (SIDS)** in securing **low-interest financing.**

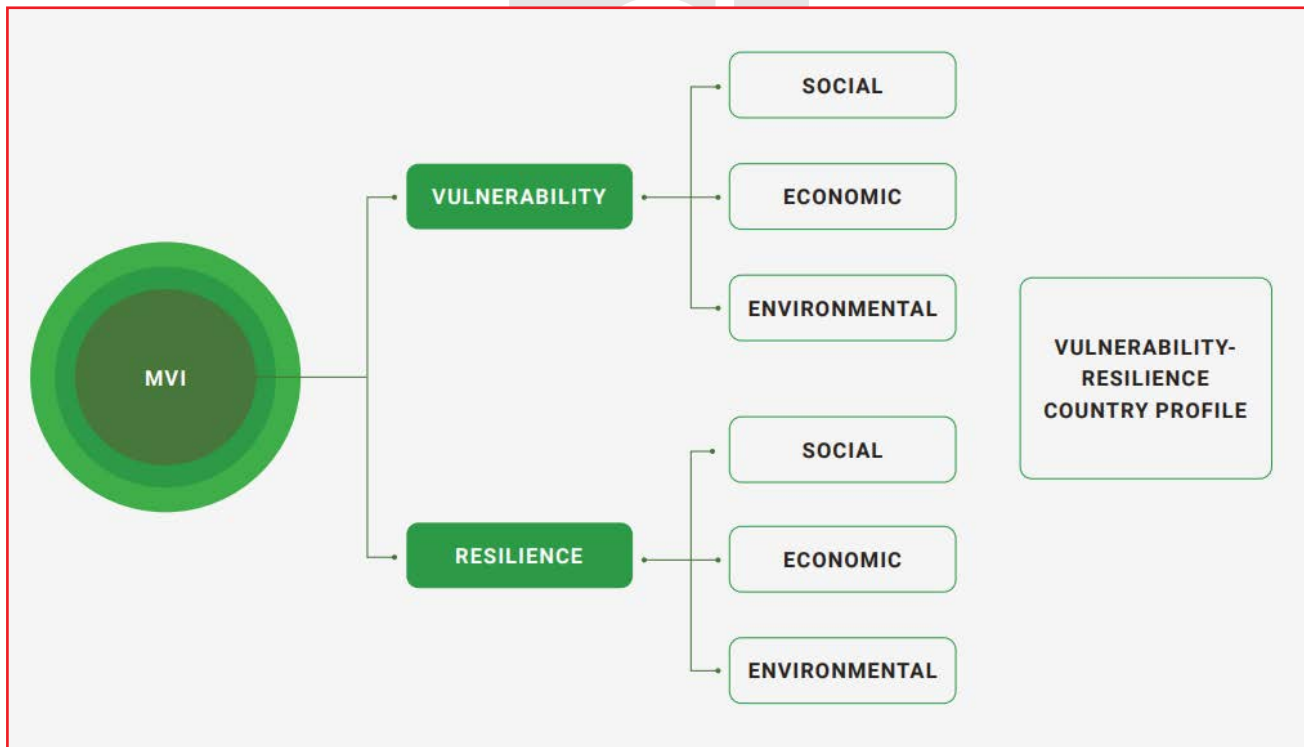
- Since the 1990s, SIDS that don't qualify for **low-interest development loans** due to their **relatively**

Note:

higher **GDP per capita** have been advocating for a measure that accounts for their **vulnerability** to external shocks like **climate change**.

What is Multidimensional Vulnerability Index (MVI)?

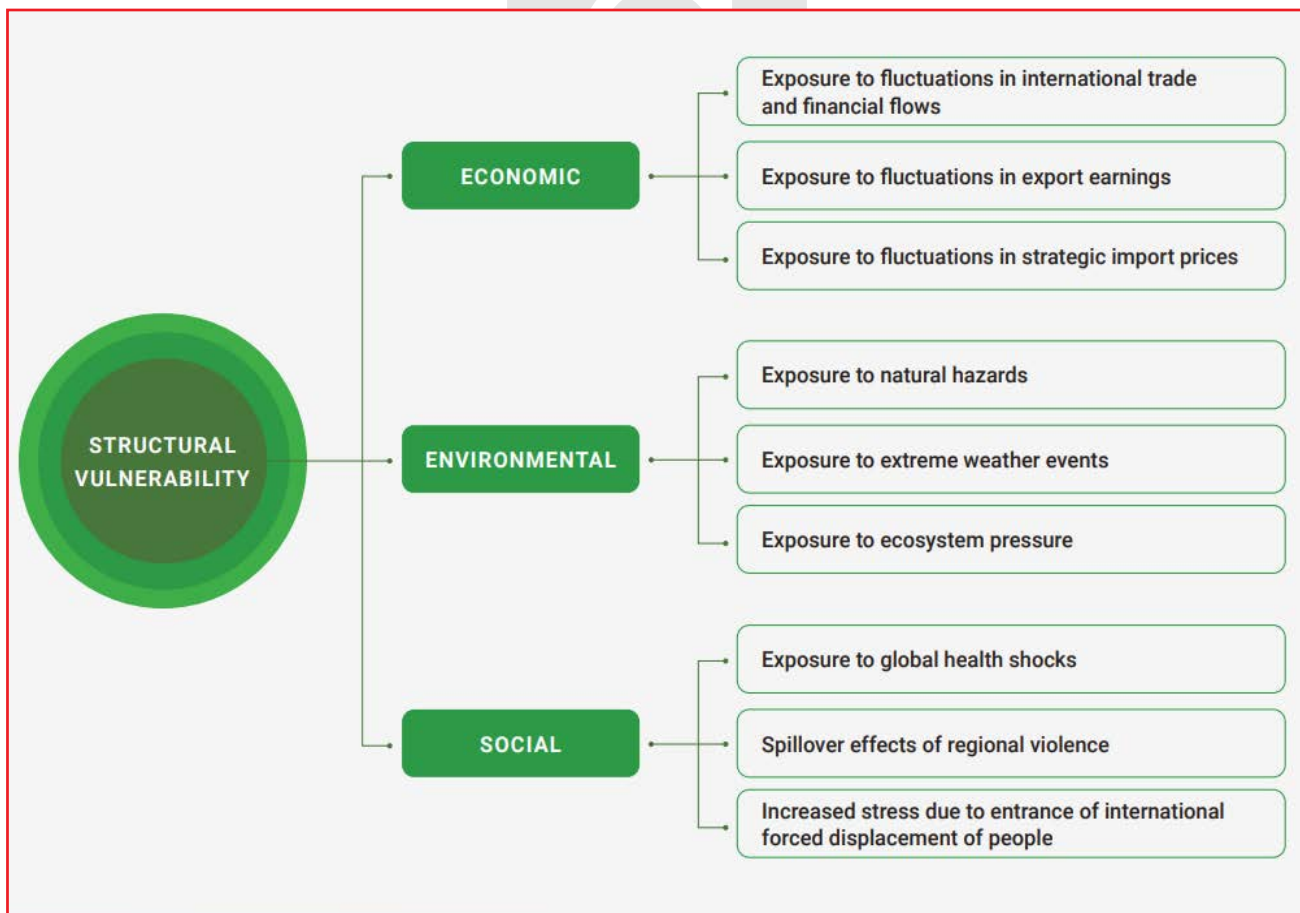
- **About:** The MVI is a new **international quantitative benchmark** to measure **structural vulnerability** and the lack of **structural resilience** across multiple dimensions of sustainable development at the national level.
 - It can be used to complement **Gross National Income (GNI) per capita**.
- **Need of MVI:**
 - **Current Limitations:** **National income**, typically measured by Gross National Income per capita, is an **inadequate indicator** of development and well-being, especially for countries facing high risks of external shocks.
 - **Access to Concessional Financing:** Countries often struggle to access **affordable development support**, such as concessional assistance, because eligibility is based on **income thresholds** rather than **vulnerability**.
 - **Inclusive Aid Allocation:** A widely accepted MVI could better guide development policies, **aid allocation**, and provide early identification of nations requiring international assistance.
- **Structure of the MVI:** It incorporates **two** main components.
 - **Universal Level Quantitative Assessment:** A summary index ranks countries based on their **structural vulnerability and resilience** using a common methodology. This is presented as an **overall MVI score**.
 - **Vulnerability-Resilience Country Profiles (VRCP):** It is a more detailed, **tailored**, and individualised characterisation of a country's vulnerability and resilience factors.



- **Key Principles Guiding MVI Index Construction:** It follows several guiding principles in construction of MVI.
 - **Multidimensionality:** Indicators used should cover all **three dimensions** of **sustainable development**, i.e. **economic, environmental, and social**.
 - **Universality:** The design of the index should capture the vulnerabilities of **all developing countries** to ensure **credibility** and comparability.

Note:

- **Exogeneity:** The index must clearly differentiate between **policy-induced and exogenous (or inherited) factors** to reflect the structural and inherent challenges faced by countries, independent of the political will of their governments.
- **Availability:** The index should use **available, recognized, comparable, and reliable data**.
- **Readability:** The design of the index should be **clear and easily comprehensible**.
- **Conceptual Framework for the MVI:** The MVI is built on two main pillars.
 - **Structural Vulnerability:** It is linked to a country's exposure to **adverse external shocks and stressors**.
 - **Structural Resilience:** The capacity of a country to **withstand and recover** from such shocks.
 - The conceptual framework elaborates the **three dimensions** of sustainable development i.e., **economic, environmental, and social** as they apply to **each pillar**:
 - **Economic Vulnerability:** Risk from adverse external economic shocks.
 - **Environmental Vulnerability:** Risk from natural hazards, climate change, and anthropogenic shocks.
 - **Social Vulnerability:** Risk from social shocks.
 - **Structural Economic Resilience:** The inherent economic capabilities and capital that strengthen a country's ability to recover.
 - **Structural Environmental Resilience:** The inherent environmental capital, including ecological resources and infrastructure, that reduces vulnerability.
 - **Structural Social Resilience:** The inherent social capabilities, including social cohesion and human capital, that enhance adaptive capacity.



Note:

- **Indicator Selection and Index Construction:** The MVI Panel chose highest-quality indicators, using available **United Nations** data. They combined these indicators into a single vulnerability metric through rescaling, aggregation, and weighting.
 - **Key Observations by MVI Panel:**
 - **Correlation:** Countries with high structural vulnerability tend to have low structural resilience.
 - **Income Independence:** MVI scores are not correlated with income, making it a valuable complement to **GNI**.
 - **Small Island Developing States (SIDS):** The MVI does not discriminate against small countries, 70% of SIDS score above the median.
 - **Ranking and Thresholds:** The majority of countries are **moderately vulnerable**. As a result, it is difficult to establish a vulnerability threshold or cutoff similar to the income cutoffs commonly used to allocate development aid.
- **Recommended Use of MVI:**
 - **Incorporation by Donors:** Donors, including **international financial institutions (IFIs)**, should be encouraged to explore how the MVI could be incorporated into existing policies and practices, pursuing a common approach to the extent possible.
 - **Debt Assessment:** Assessment of country **external debt sustainability** and the need for **concessional debt restructuring** could use the MVI, in addition to current, mostly income-based, assessments.

Dalit Business Owners Face Income Disparity

Why in News?

A study from the Indian Institute of Management Bangalore reveals that **Dalit business owners in India face a notable income gap** compared to other **marginalised groups** despite similar levels of education and social capital.

- The study underscores the impact of institutional stigma on economic outcomes for Dalits, highlighting the persistent disparities in their business income.

What are the Key Highlights of the Study?

- **Methodology:** The study utilises data from the India

Human Development Survey (IHDS) of 2011, covering over 42,000 households across 373 districts in India to analyse income disparities among business-owning households.

➤ **Impact of Institutional Stigma**

- The study highlights the unique stigma-related disadvantages faced by Dalit business owners, which are **not comparable to other identity-based challenges like gender, race, or ethnicity**.
- The study defines institutional stigma as the prejudice and negative perceptions ascribed to **individuals based on their demographic group membership**, which perpetuates through interconnected social mechanisms.
- Dalit business owners **face lower income levels due to their historically marginalised status**, which restricts their access to resources, opportunities, and individual dignity, hindering their economic advancement.

➤ **Income Disparities:** Dalit business owners face a significant income gap, earning **approximately 16% less compared to other marginalised communities**, such as **Other Backward Classes (OBCs), Scheduled Tribes (STs)**, and religious minorities like Muslims.

- This income gap persists even when controlling for factors such as **education, land ownership, urban setting, and social environment**.

➤ **Social Capital:** Social capital refers to the networks of relationships among people that enable a society or community to function effectively.

- Social capital generally benefits business owners by providing access to networks and resources; however, **Dalits benefit significantly less from these networks** compared to other disadvantaged groups.

- A standard deviation increase in **social capital results in a 17.3% increase in business income** for non-stigmatized communities, **but only a 6% increase for Dalit households**.

➤ **Human Capital:** Human capital refers to the personal attributes, including knowledge, skills, education, health, and other valued factors, that contribute to the production process.

- The study highlights that **although education benefits Dalits, it is insufficient to overcome the income disadvantage** resulting from stigma.

Note:



➤ **Limitations of the Study:**

- The study's measure of social capital is somewhat limited, capturing connections **but not the number or strength of these ties**.
- The study uses 2011 data, which may not fully capture current economic dynamics and changes in caste-based income disparities. The findings may need re-evaluation with more recent data to assess the present-day relevance of the results.

What are the Implications of this Income Disparities?

- **Challenging Conventional Views:** The study challenges the conventional view that **caste identity is just one of many factors contributing to income disparity**, instead highlighting the unique stigma-related disadvantages faced by Dalits.
- **Need for Fair Economic Systems:** The findings underscore the need for economic systems that are **fair and do not determine success based on one's born identity**.
 - The study calls for a deeper understanding of the underlying processes of discrimination faced by Dalit communities.
- **Targeted Interventions:** The study suggests that policy interventions should focus on addressing the **specific stigma-related challenges faced by Dalits**, rather than **relying on universal strategies** that may not effectively mitigate the income gap.
 - The findings open avenues for further research into the impact of stigma on economic outcomes that can better support marginalised communities in India.

Who are Dalits?

- **About:** Dalits, historically referred to as **"untouchables,"** are a marginalised group in India positioned at the bottom of the traditional caste hierarchy. This group has faced systemic discrimination, social exclusion, and economic deprivation for centuries.
 - Dalits constitute approximately **16.6% of India's population**. They are primarily concentrated in states such as **Uttar Pradesh, Punjab, Bihar, Tamil Nadu, Andhra Pradesh, Rajasthan, Orissa, and Maharashtra**.
- **Historical Evolution of the Term "Dalit":**
 - The term **"Dalit"** derives from the Sanskrit word **"Dal,"** which means **"ground," "suppressed,"** or

"crushed." It was first used by **Jyotiba Phule**, a 19th-century social reformer, to describe those oppressed by the caste system.

- Throughout history, Dalits have been known by various terms, including **Antyajas, Pariahs, and Chandalas**.
- **Mahatma Gandhi** used the term **"Harijan"** (children of God) to describe Dalits. While intended to be more respectful, **many, including Dalit leaders, found it patronising and insufficiently empowering**.
- **Scheduled Castes:** The British administration officially recognised these groups as **"Scheduled Castes"** in **1935**, formalising their status within the legal framework.
 - Currently, legally Dalits are known as **Scheduled Castes in India**, and the Constitution mandates a list of these castes for compensatory programs. As of now, there are approximately **166.6 million Dalits in India**.
 - However, the list **excludes Dalit converts to Christianity and Islam**, although it includes those who converted to Sikhism.
 - The **Constitution (Scheduled Castes) Order, 1950**, states that **only persons professing Hinduism, Sikhism, or Buddhism are deemed to be members of a Scheduled Caste**.
- **Dalit Oppression:**
 - **Caste System:** The roots of Dalit oppression trace back to the **origins of the caste system, as described in the Manusmriti**, a sacred Hindu text from the 2nd century BCE. Dalits were historically confined to menial tasks.
 - In the traditional **Varna system, untouchables were classified as Panchama Varna**, occupying the lowest rung in society. They were relegated to menial and polluting occupations and faced severe discrimination.
 - **Key Dalit Movement in Pre-Independence India:**
 - **Bhakti Movement:** The 15th-century **Bhakti Movement** promoted social equality and challenged orthodox Hinduism. It included **Saguna (God with form) and Nirguna (formless God) traditions**.
 - Saints like **Ravidas and Kabir**, who inspired Dalits by advocating for social equality and spiritual salvation.

Note:

- **Neo-Vedantic Movements:** Initiated by reformers like **Dayanand Saraswati**, these movements aimed to address untouchability within the caste system.
 - **Arya Samaj** founded by **Dayanand Saraswati** in 1875, aimed to reform Hinduism by **rejecting the caste system and promoting social equality**.
 - **Satyashodhak Samaj** established by **Jyotiba Phule** in 1873, this movement sought to **liberate non-Brahmins from Brahminical dominance**.
 - ◆ It focused on educational and social reforms to uplift the lower castes and challenged the existing caste hierarchies.
- **Sanskritization Movement:** M.N. Srinivas defined Sanskritization as **low-caste groups adopting high-caste customs** to elevate their status.
 - Dalit leaders mimicked Brahmanic practices (e.g., **vegetarianism**) as a form of social assertion and elevation.
- **Gandhi's Contributions:** He criticised untouchability and founded the **Harijan Sevak Sangh in 1932** to work towards the upliftment of Dalits.
 - **Mahatma Gandhi** viewed untouchability as a social evil and aimed to integrate Dalits into mainstream society.
- **Dr. B.R. Ambedkar's Contributions:** He led various movements and legal battles for **Dalit rights, including the Mahad Satyagrah (1927) and Kalaram Temple Satyagrah (1930)**.
 - **Dr. B.R. Ambedkar** founded the **Bahiskrit Bharat and Samaj Samta Sangh**, and established the **Scheduled Castes Federation** to promote political representation and social equality.

What are the Challenges Faced by Dalits in Contemporary India?

- **Social Discrimination and Exclusion:** Dalits are often segregated in villages and urban areas, **excluded from public spaces, and subjected to untouchability practices**.
 - Discrimination persists even during crises, such as the **2004 Tsunami**, where Dalits in Tamil Nadu faced severe exclusion from relief efforts.
- **Economic Exploitation:** Many Dalits work as **bonded labourers due to debt**, despite the practice being outlawed in 1976. They often receive **minimal or no wages**, with resistance met by violence.
 - About **80% of Dalits live in rural areas, primarily as landless labourers** or marginal farmers, exacerbating their economic vulnerability.
 - Despite legal prohibitions, **manual scavenging** remains a prevalent and degrading occupation for many Dalits.
 - According to the **"Income and Wealth Inequality in India"** report, the **top 1% of Indians received 22.6% of the national income in 2022**, up from 11.5% in 1951, while the **income share for the bottom 50% dropped from 20.6% to 15%**, and the middle 40% saw their share decline from 42.8% to 27.3% over the same period.
 - These figures underscore a **growing income gap** that has adversely affected **all disadvantaged communities, including Dalits**.
- **Political Marginalisation:** Despite reservations in political representation, Dalit issues are often sidelined by mainstream political parties.
 - Although there has been political mobilisation in recent years and the rise of Dalit leaders, the tangible benefits for the majority of Dalits have been limited.
- **Ineffective Laws:** Laws like the Protection of **Civil Rights Act, 1955** remain poorly implemented due to a lack of political will and institutional support.
- **Judicial Injustice:** Dalit women face severe discrimination due to a combination of **caste, class, and gender biases**. They are often subjected to **sexual exploitation** and violence, with **conviction rates for these crimes being significantly lower** compared to other women in India.
 - In certain regions, young Dalit girls are coerced into **prostitution** under the pretense of religious or cultural practices.
- **Migration and Urban Challenges:** Many Dalit families migrate to cities, where they often end up in **urban slums**, doing the lowest-paying jobs with minimal security.
 - However, there is a **growing Dalit middle class in cities**, gaining access to education and secure employment in public service, banking, and private industries.

Note:



What are the Initiatives and Schemes for Dalits in India?

- **Article 17 of the Constitution of India** abolishes **untouchability** and forbids its practice in any form. Enforcing any disability arising from untouchability is a punishable offence under the law.
- **Legislative Efforts:**
 - **Scheduled Castes and Scheduled Tribes (Prevention of Atrocities) Act (SC/ST Act), 1989.**
 - **Protection of Civil Rights Act, 1955:** Aims to abolish the practice of untouchability in India.
 - **Reservation Policies:** India implements **reservations for SC, ST, and OBC** in education and government jobs, aiming to provide opportunities for historically marginalised communities.
 - **National Commission for Scheduled Castes (NCSC).**
 - **Mahatma Gandhi National Rural Employment Guarantee Act/scheme (MNREGA/S).**
 - **Stand Up India Initiative.**



Note:

Science & Technology

Highlights

- *Leptospirosis Outbreak in Kerala*
- *Subclinical Tuberculosis*
- *Wolbachia-Infected Mosquitoes for Dengue Control*
- *Nanotechnology in Drug Delivery*
- *Security Alert System Based on Piezoelectric Polymer Nanocomposite*
- *Nuclear Powered Trains*
- *Dual Use Technology*
- *Impact of Space Missions on Indian Economy*
- *National Space Day 2024*
- *Presence of Water on Mars*
- *Blue Moon*
- *Completion of SSLV Development Project*
- *Hayflick Limit*
- *Watermarking on AI Generated Content*
- *Nitrogen Use Efficiency and Biofortification*

Leptospirosis Outbreak in Kerala

Why in News?

Kerala has recently experienced a sigh of relief as the threat of a **Nipah virus outbreak diminished**, with no new cases reported during the critical 42-day observation period.

- However, this respite has been overshadowed by the outbreak of **Leptospirosis**, commonly known as “**rat fever**.”
- This bacterial infection has emerged as a pressing public health concern, particularly in the wake of monsoon-related challenges.

What are the Key Facts About Leptospirosis?

- **About:** Leptospirosis is caused by pathogenic spirochaetes of the **genus Leptospira**. These bacteria are **zoonotic**, meaning they are transmitted from animals to humans.
 - **Leptospire**s are bacteria that can be pathogenic. Pathogenic leptospire s are found in the **kidneys and genital tracts** of certain animals and are the primary cause of leptospirosis in humans.
- **Reservoirs:** Many **mammalian species** can harbour leptospire s in their kidneys, with rodents, cattle, pigs, and dogs being common reservoirs.
 - Rodents are particularly significant as they **can excrete leptospire s throughout their lifespan without showing symptoms**.

- Not all infected animals exhibit symptoms. **Natural hosts often show no or few ill effects**, but may develop illness after infection with another serovar (a distinct variation within a species of bacteria).

- **Transmission:** The disease is primarily transmitted through **direct contact** with the **urine of infected animals or through contact with water, soil**, or food contaminated with their urine.

- It can enter the human body through cuts, mucous membranes, or waterlogged skin. Rarely, the disease can be transmitted from human to human.

- **Symptoms:** It presents with a wide range of symptoms, from mild flu-like illness to severe conditions like **Weil’s syndrome** (dysfunction of the kidneys and liver), **meningitis**, and **pulmonary hemorrhage**.

- The incubation period is typically 7-10 days, with symptoms such as fever, headache, and jaundice being common.

- Leptospirosis is **often underdiagnosed due to its wide range of symptoms that mimic other diseases**, and limited access to diagnostic tests.

- **Epidemiology:** It is a global disease but is **most common in tropical and subtropical regions with high rainfall**.

- It is particularly prevalent in **South-East Asia, with India, Indonesia, Thailand, and Sri Lanka** reporting most cases, especially during the rainy season.

- People in occupations with frequent animal contact, such as farmers, veterinarians, and sewer workers, are at higher risk.

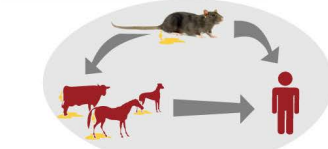
Note:



- **Prevention:** Prevention involves **controlling animal reservoirs**, avoiding contact with contaminated water or soil, wearing protective clothing, and maintaining good sanitation practices.
 - Dogs, pigs, and cattle can be vaccinated with serovar-specific vaccines. **Immunisation helps prevent disease but may not eliminate renal carriage.**
- **Treatment:** It is treated with antibiotics, such as **penicillin G, doxycycline, and ceftriaxone.**

LEPTOSPIROSIS

What is leptospirosis?
Leptospirosis is a possibly fatal bacterial disease that affects human and animals alike. It is caused by spiral shaped bacteria of the genus *Leptospira*. It spreads through the urine of infected animals. It is prevalent in fresh water, soil, and mud in tropical areas.



How do humans get infected?

1. contact with urine (or other body fluids, except saliva) from infected animals
2. contact with water, soil, or food contaminated with urine of infected animals

How does it spread?
Rats and other rodents are the most common carriers of the bacteria but it can infect all kinds of wild and domestic animals including humans. The urine of these animals can contaminate soil and mud and can be spread rapidly to human populations through fresh water or flooding.

What are the possible complications of leptospirosis?

Meningitis
Respiratory Disease
Liver Failure
Kidney Damage
DEATH

How do I prevent leptospirosis?

1. Do not swim or wade in water that might be contaminated with animal urine.
2. Do not come into contact with potentially infected animals.
3. Wear protective clothes and equipment.
4. Disinfect contaminated surfaces.
5. Take the antibiotic prophylaxis (for exposed persons in high risk areas)

What are the symptoms?
Symptoms usually occur 2 days to 4 weeks from time of exposure. Leptospirosis can cause a wide range of symptoms in humans, including:

High fever, Headache, Chills, Muscle aches, Vomiting, Jaundice (yellow skin and eyes), Red eyes, Abdominal Pain, Diarrhea, Rash.

What if I'm infected?
If you or a loved one exhibits symptoms of leptospirosis, consult a doctor immediately.

How long is the recovery time?
The illness may last from a few days to 3 weeks or longer. When left untreated, it may take several months.

Research: Arina Mae Lamorelio
Photography: Paolo Ferrero and Kaitlyn Perez
Sources: Centers for Disease Control and Prevention

India's Initiatives Related to Leptospirosis

- **Programme for Prevention and Control of Leptospirosis:** Launched during the **12th Five-year Plan**, this program aims to reduce the number of deaths and illnesses caused by leptospirosis.

- **One Health Approach:** This strategy integrates human, animal, and environmental health to control leptospirosis. **One Health Approach** emphasises the importance of a holistic approach to manage and prevent the disease.

Common Infections During the Monsoon

- Monsoon season in India brings a surge of infections like **Dengue, Malaria, Cholera, Typhoid, Flu, and Fungal infections** due to waterlogging, with risks of dehydration and **mosquito-borne diseases.**

Subclinical Tuberculosis

Why in News?

Subclinical **Tuberculosis (TB)** is a growing concern in India, contributing to the slow **decline in TB incidence rates** despite advances in detection and treatment.

What is Subclinical Tuberculosis?

- **Definition:** Subclinical TB refers to a form of **TB infection where individuals do not exhibit the typical symptoms** of the disease, such as a persistent cough.
 - This makes it harder to detect compared to active TB, which presents with more apparent symptoms.
- **Detection:** It is often identified through imaging techniques like **chest X-rays or molecular tests**, as it may not be noticeable through routine symptom-based screenings.
- **Prevalence:** Subclinical TB accounted for **42.6% of cases in the National TB Prevalence Survey (2019-2021)**, with similar findings in Tamil Nadu (39%).
 - Although asymptomatic, individuals with subclinical **TB can still spread the bacteria to others.**
 - High-burden countries, including India, have a **considerable proportion of subclinical TB, which remains largely undetected**, thus sustaining the transmission of the disease.
 - Countries like Vietnam have successfully reduced TB prevalence by screening entire populations **using X-rays and molecular tests, regardless of symptoms.**
 - Implementing similar large-scale screening in India would require strategic shifts, including mobile units and community engagement.

Note:

- **Impact:** This form of TB can contribute to the slow decline in overall TB incidence rates, as it remains largely undetected and untreated.

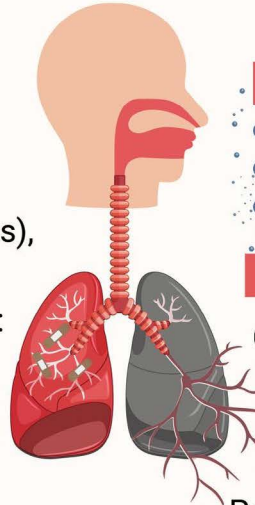
Tuberculosis




Tuberculosis (TB) is an infectious disease that affects the lungs.
Tuberculosis is preventable and curable.

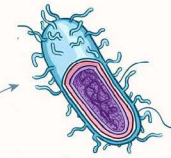
Prevention

- Seek medical intervention if symptoms persist
- If at a higher risk (HIV patients), get tested for TB.
- Practice good cough hygiene: Wear a mask and avoid contact



Causes:

- *Mycobacterium tuberculosis*
- Coughing droplets
- Prolonged exposure from a patient



Symptoms of TB:

- Chest pain
- Weakness
- Weight loss
- Fever
- Night sweats
- Prolonged cough

Facts

- 1.6 million deaths in 2021 Worldwide
- 13th leading cause of death
- India aims to achieve the UN's TB-related SDGs by 2025, five years ahead of the global target to end the TB epidemic by 2030.

#Tuberculosis

Ni-kshay Programme

- Nikshay Mitra are individuals or groups who adopt one TB patient for their treatment for a period of 6 months
- Provision of free drugs and diagnostics
- Ni-kshay Poshan Yojana for nutritional support to TB patients

What are the Key Facts About Tuberculosis?

- **About:** 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.
- **Symptoms:** Prolonged cough, chest pain, weakness, fatigue, weight loss, fever, and night sweats.
 - Diabetes, weakened immune system, malnutrition, tobacco use can increase the risk of TB disease.
- **Prevention:** Seek medical attention, get tested if at risk, early treatment. The **Bacille Calmette-Guérin (BCG) vaccine** helps prevent TB outside the lungs but not in the lungs.

Note:



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- **Prevalence and Treatment:** About 25% of the global population has been infected with TB bacteria. **5-10% of these infections progress to active TB disease.**
 - TB is preventable and curable with **antibiotics**, typically including **isoniazid, rifampin, pyrazinamide, ethambutol, and streptomycin.**
 - **Multidrug-resistant TB (MDR-TB)** is caused by bacteria resistant to first-line drugs, treatable with costly and toxic second-line drugs.
 - MDR-TB remains a public health crisis, with only about **2 in 5 people accessing treatment in 2022.**
- **TB and HIV:** People living with **HIV (human immunodeficiency virus)** are **16 times more likely to develop TB.** TB is the leading cause of death among people with HIV.
 - Without proper treatment, **60% of HIV-negative people with TB and nearly all HIV-positive people with TB will die.**
- **Impact:** TB disproportionately affects adults in low and middle-income countries, with over **80% of cases and deaths occurring in these regions.** The highest burden is in the **World Health Organization's (WHO) South-East Asian and African Regions.**
 - A total of 1.3 million people died from TB in 2022 (including 167 000 people with HIV). Worldwide, TB is the second leading infectious killer after Covid-19.
- **Initiatives Related to TB:**
 - **India:**
 - **The National TB Elimination Programme (NTEP) to Eliminate TB by 2025.**
 - **Ni-kshay Mitra Initiative.**
 - **Direct Benefit Transfer (DBT)** provided to TB patients.
 - **TB-Mukt Panchayat Initiative:** Launched to leverage the support of over 2.5 lakh Gram Panchayats to increase TB awareness, eliminate stigma, and improve service uptake.
 - **Pradhan Mantri TB Mukh Bharat Abhiyan (PMTBMBA)**
 - **Global:**
 - **The Global Tuberculosis Programme by the World Health Organization** works towards the goal of a world free of TB, with zero deaths, disease and suffering due to the disease.

- **Global Plan to End TB 2023-2030** is a plan to end tuberculosis as a public health challenge by 2030, in line with the **UN Sustainable Development Goals.**
 - **SDG 3** aims to prevent needless suffering from **preventable diseases and premature death** by focusing on key targets that boost the health of a country's overall population.
- **Global Tuberculosis Report.**

Wolbachia-Infected Mosquitoes for Dengue Control

Why in News?

Dengue fever, chikungunya, and Zika virus represent major public health challenges in India, leading to considerable economic losses and healthcare burdens.

- The **limited success of traditional control methods** underscores the need for innovative strategies, such as the use of **Wolbachia-infected mosquitoes**, which offer a promising alternative.

Note:

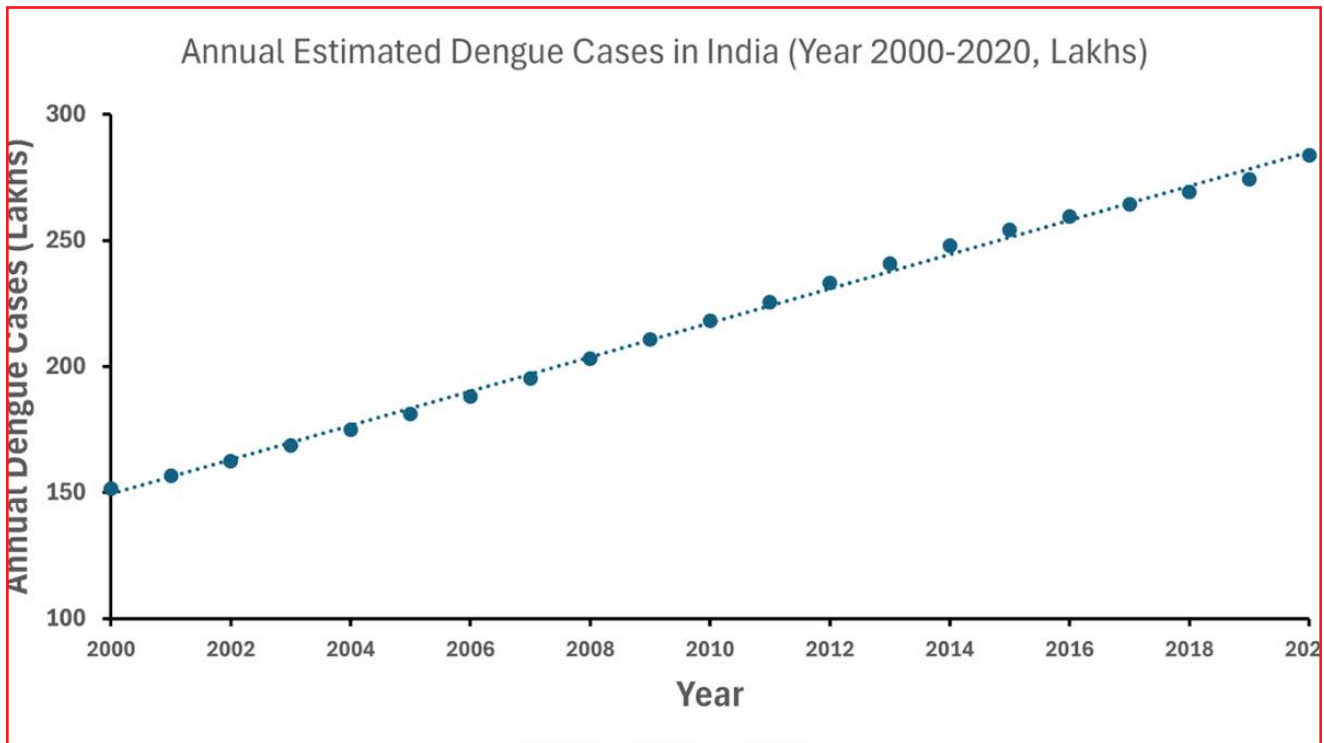
- As of April 2024, **India recorded 19,447 dengue cases and 16 deaths.** Kerala had the highest number of cases, followed by Tamil Nadu.
 - In India, the **economic impact of dengue** is estimated at **Rs 28,300 crore** annually, alongside 5.68 lakh years of young life lost.
- Globally, the **World Health Organization (WHO)** has reported over **7.6 million cases** of dengue as of April 2024.

How does Wolbachia Help in Controlling Mosquito Populations?

➤ About:

- **Wolbachia is a common type of bacteria** found in insects. Approximately **6 in 10** of all insects, including **butterflies, bees, and beetles**, around the world have Wolbachia.
 - Wolbachia bacteria **cannot make people or animals** (for example, fish, birds, pets) sick.
 - They are **not found in Aedes Aegypti mosquitoes.**
- **Aedes aegypti can spread viruses including dengue, Zika, and chikungunya.**

Note:






- Aedes mosquitoes with **Wolbachia** can be used to reduce the number of target mosquito species.
 - Mosquitoes with Wolbachia are **not genetically modified**.
- **Process of Production:** Wolbachia bacteria are first introduced into the eggs of male and female **Aedes Aegypti** mosquitoes.
 - The eggs are then used to **mass-produce new mosquitoes infected with Wolbachia**.
 - There are **2 Wolbachia strains, wMel and wAlbB**, that have been transfected into **Aedes Aegypti** mosquitoes for population replacement.
 - After production, the mosquitoes are **sorted by sex, with only the males being retained for release**, while the females are kept for further breeding in the laboratory.
- **Use for Mosquito Control:** **Wolbachia-infected mosquitoes** are used to **lower the population of target species** like **Aedes Aegypti**, the yellow fever mosquito, that can spread **dengue fever, chikungunya, Zika fever, Mayaro** etc.
 - Control professionals release male **Aedes Aegypti** mosquitoes carrying **Wolbachia** into areas with wild **Aedes Aegypti**.
 - When these **males mate with wild females that lack Wolbachia**, the **eggs produced do not hatch**. As a result, the population of **Aedes Aegypti** mosquitoes decreased.
- **Status of Wolbachia Programs in India:** India **currently lacks** an active Wolbachia mosquito release program.
 - The **Indian Council of Medical Research - Vector Control Research Center (ICMR-VCRC)** has initiated the development of **wMel Aedes strains** but has faced delays in public updates and government approvals.
 - Recent findings indicate the natural presence of Wolbachia in Aedes mosquitoes in Northeast India, **though its immediate significance is unknown**.

Note:



Most common mosquito-borne diseases

Mosquito	Type of Mosquito	Disease caused
	Aedes	Chikungunya Dengue Lymphatic filariasis Rift Valley fever Yellow Fever Zika
	Anopheles	Lymphatic filariasis Malaria
	Culex	Japanese encephalitis Lymphatic filariasis West Nile fever

Global Examples for Wolbachia Implementation

- In **Singapore**, the release of infected male mosquitoes resulted in a **90% reduction in the Aedes population** and a **77% decrease** in dengue cases in release areas.
- **Australia** adopted a population replacement strategy, leading to a stable **wMel strain** genome in wild populations and significant reductions in dengue incidence.
- A landmark randomised controlled trial in **Indonesia** demonstrated that areas with released wMel (strain) mosquitoes experienced a **77% reduction in dengue cases** and an **86% decrease in hospitalizations**.

Nanotechnology in Drug Delivery

Why in News?

A new **drug delivery** method has been developed that can prove useful to patients suffering from asthma, cystic fibrosis, **human immunodeficiency virus (HIV)**, cancer, or those exposed to corticosteroid medications for an extended duration.

- Scientists have used a **chitin** synthesis fungicide, **Nikkomycin**, to develop Nikkomycin-loaded **polymeric nanoparticles**. Nikkomycin is produced by the bacterial *Streptomyces* spp.

Note:



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Chitin

- **Chitin** is a **strong, natural material** found in the **outer shells of insects, crabs, lobsters**, and other **arthropods**, as well as in the **cell walls of fungi** but **not** found in the **human body**.
- It's made up of long chains of **glucose molecules**, similar to **cellulose** in **plants**.
- Chitin provides structural **support and protection**, acting like a tough armour for these organisms.
- In insects and crustaceans, it forms a **hard exoskeleton** that helps them keep their shape and defend against predators.
- In **fungi**, chitin strengthens the **cell walls**, helping the organism maintain its **form** and protect itself from **environmental stress**.

What are Key Facts about Nano Drug Delivery?

- **About Nanotechnology:** **Nanotechnology** is the science of designing, producing, and using systems by manipulating atoms and molecules at the **nanoscale** i.e. having **one or more dimensions** of the particle of **100 nanometres or less**.
- **Nano Drug Delivery:** It involves **delivering drugs** to a specific **target site**.
 - **Nanoparticles can entrap drugs or biomolecules** into their interior structures and/or absorb drugs onto their exterior surfaces to deliver drugs at a designated site in the body.
- **Recent Development in Nano Drug Delivery:** Nikkomycin-loaded polymeric nanoparticles were found to disrupt the growth of **Aspergillus spp** and were found effective against fungal infection known as **Aspergillosis**.
- **Significance:** The use of polymeric nanoparticles is the **most advanced** method of drug delivery.
 - The resistance to the existing **Azole drugs (antifungal drugs)** is a matter of concern and hence we need better methods of drug delivery for effective medication.
- **Future Prospects:** It can help in the development of inhalation **nanoformulations** against **pulmonary aspergillosis**.
 - Scientists are optimistic about expanding antifungal nanoformulations and exploring **public-private partnerships** for future commercialization.

What is the Role of Nanotechnology in the Healthcare Sector?

- **Precision Medicine:** Nanoparticles are engineered to deliver drugs directly to disease sites like **cancer cells**, reducing the damage to healthy tissues. e.g., **liposomes**, a type of nanoparticle, are used to deliver **chemotherapy drugs** more precisely, minimising side effects.
 - Nanoparticles are being investigated for their ability to improve **vaccine efficacy** by delivering antigens directly to **immune cells**
- **Improved Diagnostics and Imaging:** **Gold nanoparticles** are used as probes for detecting specific **DNA or RNA sequences**, enhancing the sensitivity and accuracy of diagnostic tests.
- **Regenerative Medicine:** Nanomaterials are used to create scaffolds that mimic the **structure of bone**, promoting the growth of new bone **tissue** in patients with fractures or bone loss.
- **Gene Therapy:** Advanced nanopore technologies are being developed for **gene sequencing**, allowing for rapid, low-cost, and accurate **DNA analysis**.
- **Antimicrobial Treatments:** Silver nanoparticles are incorporated into wound dressings and **coatings for medical devices to prevent infections** due to their strong antimicrobial properties.

Security Alert System Based on Piezoelectric Polymer Nanocomposite

Why in News?

Recently, the researchers from **Centre for Nano and Soft Matter Sciences (CeNS)** and **National Chemical Laboratory (CSIR-NCL), Pune** have developed a novel **piezoelectric polymer nanocomposite** for **pressure sensing and energy harvesting**.

- This can efficiently convert **mechanical energy into electrical energy** opening new avenues for applications in energy harvesting and pressure sensing.

What are Piezoelectric Polymer Nanocomposite?

- **Piezoelectric Materials/ Effect:**
 - Piezoelectric materials are materials that can

Note:

produce electricity when applied to mechanical stress. When pressure is applied to such materials, the centres of positive and negative charges shift, creating an **external electric field**.

○ **Examples:**

- **Natural materials:** Quartz, topaz, and tourmaline.
- **Organic materials:** Silk, wood, and bone.
- **Ceramics:** Lead zirconate titanate (PZT) and barium titanate (BT).
- **Polymers:** PVDF and PVDF-TrFE.
- **Ferroelectric materials:** Barium titanate (BaTiO₃) generates electric charge without mechanical pressure.

○ **Applications:**

- Piezoelectric materials are used in various applications, including microphones, electric pickups for stringed instruments, sensors, actuators, frequency standards, piezoelectric motors, and noise and vibration reduction.

➤ **Polymer:**

- A polymer is a large molecule composed of chains or rings of linked repeating subunits called **monomers**, typically having high melting and boiling points due to their high molecular masses.

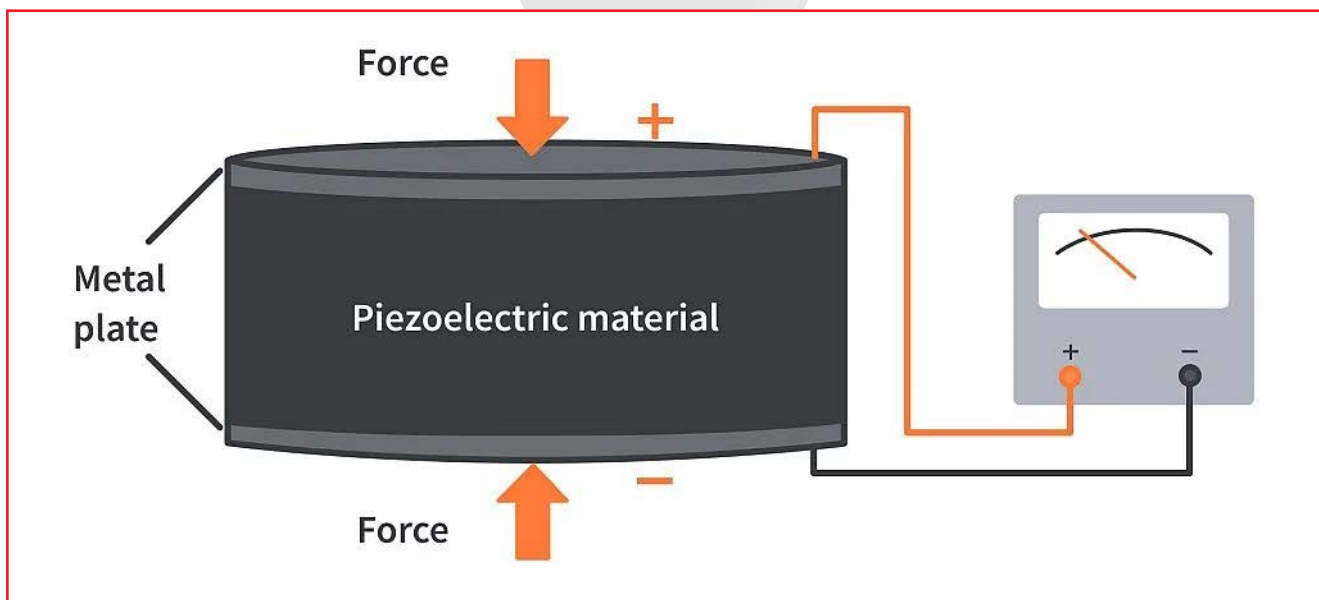
- Natural polymers include silk and DNA, while synthetic polymers, like nylon and polyethylene, are made from oil or bio-based sources.

➤ **Piezoelectric Polymers:**

- These are **polymers** that can generate electric charges on the surface under pressure/strain thus converting mechanical energy into electrical energy.
- **Example:** Poly(vinylidene fluoride), also known as **PVDF**, Poly(vinylidene fluoride-trifluoroethylene) copolymer or **P(VDF-TrFE)**.

➤ **Polymer Nanocomposites:** These are materials **made from polymer matrices** combined with small percentages of **nanometer-sized additives**, aimed at **enhancing the properties of polymers** such as mechanical, thermal, and electrical characteristics.

- **Nanomaterials** are the material having structural components with **at least one dimension** in the nanometer scale, that is, **1-100 nm**.
- **Nanocomposite** is a solid material made up of two or more different substances, where at least one of these substances has dimensions in the nanoscale range, specifically between 1 nm and 3 nm.



What are the Key Facts About the Study?

➤ **About:**

- The researchers aimed to study how the **different crystal structures** of the **zirconia nanoparticles** affected the **piezoelectric capabilities** of the composite material.

Note:

➤ **Process:**

- Researchers created two types of **zirconia-based Metal-organic frameworks (MOFs) (UiO-66 and UiO-67)** and converted them into **zirconia nanoparticles**.
 - **Metal-organic frameworks (MOFs)** are crystalline materials composed of metal ions or clusters linked to rigid organic molecules, resulting in one-, two-, or three-dimensional porous structures.
- Then **these nanoparticles** are mixed with a piezoelectric polymer called **poly(vinylidene difluoride) (PVDF)** to make **polymer nanocomposite films**.

➤ **Findings:**

- Researchers found that the **surface properties and crystal structure** of the nanoparticles significantly

influenced the piezoelectric performance of the polymer.

➤ **Practical Applications:**

- **Security Alert System:** A **Bluetooth-based security alert system** uses a **piezoelectric pavement prototype** that generates voltage from footsteps.
 - If unauthorised entry is detected, the system activates and sends alerts to a connected device, like an Android smartphone, via Bluetooth.
- **Electricity Generation:** The prototype can also **generate electrical energy from mechanical energy input**.
 - This feature is particularly beneficial in **enhancing the efficiency of energy use** in smart cities and **automated security systems**.



Nuclear Powered Trains

Why in News?

Indian Railways (IR) is exploring the use of **nuclear power** through captive units as it seeks to increase reliance on **non-fossil fuel sources** and **renewable ones**.

- Apart from nuclear power, the Railways is already in the process of commissioning **solar power units** and **wind-based power plants**.

What are Nuclear Powered Trains?

- **About:** A **nuclear-powered train** uses heat generated from a **nuclear reaction** to produce high-pressure steam.
 - This steam drives **two turbines**, one turbine **powers the train**, while the other generates **electricity for equipment** like air conditioners and lights.

Note:

- The concept of nuclear-powered trains was first seriously considered in the **1950s**, when it became an official goal of the **USSR's Ministry of Transport**.
- **Functioning of Nuclear-Powered Trains:** The proposed design involves a **portable nuclear reactor** that heats fluid to produce steam. This steam drives **electric turbines**, generating power for the train.
- **Safety Considerations:** The use of **thorium reactors** is considered due to their relatively **low radiation risk** compared to other nuclear materials. The reactor's design includes safety features to minimise risks and prevent misuse.
- **Potential Benefits:**
 - **Reduced Carbon Emissions:** Nuclear power can significantly **reduce CO2 emissions** compared to fossil fuels, aligning with global efforts to combat **climate change**.
 - **Energy Efficiency:** Nuclear reactors provide a **high energy output** with minimal fuel. This could potentially reduce the **operational costs** and environmental impact of rail transport over long distances.
 - **Low Infrastructure Requirements:** Nuclear-powered trains could operate **independently** of overhead electric lines, reducing infrastructure costs and providing greater flexibility in operations.
 - **Extended Range:** Nuclear-powered trains could operate over **long distances** without the need for frequent **refuelling**. This would be advantageous for freight and passenger services on extensive rail networks.
 - **High Efficiency:** The potential for high **operational efficiency** is a major advantage. Nuclear reactors could provide continuous power, optimising rail transport performance.
- **Challenges of Nuclear-Powered Trains:**
 - **Radiation Risks:** Handling nuclear materials and ensuring safety against **radiation leaks** are significant challenges. Adequate **shielding and safety measures** are essential to protect passengers and crew.
 - **High Costs:** The **initial costs** for developing and implementing nuclear-powered trains are **high**. This includes the expense of developing **small, safe reactors and integrating** them into locomotives.
 - **Technical Complexity:** Designing and maintaining nuclear reactors for **moving trains** involves complex engineering challenges.

How Indian Railways Plans to Reduce its Reliance on Fossil Fuel Sources?

- **Nuclear Power Exploration:** Discussions with the **Nuclear Power Corporation of India (NPCIL)** are planned to explore the use of **nuclear power**.
 - Indian Railways is looking to have its own captive use power plants, **small reactors**, captive power generating units and so on.
- **Net Zero Carbon Emission Target:** The Railways plans to become a **net zero carbon emitter by 2030**. For it, **IR** will need **30,000 MW** of renewable capacity by **2029-30**.
- **Current Renewable Energy Efforts:** For use of renewables, the Railways is exploring partnerships with **Solar Energy Corporation of India (SECI)**, NTPC, the Ministry of New and Renewable Energy (MNRE), among others.
- **Renewable Energy Achievements:** In 2023, about **147 MW of solar plants** (both on rooftops and on land) and about **103 MW of wind power plants** have been commissioned.
 - Railways has electrified nearly **63,500 Kilometres** till FY24, or over **96%** of the total broad-gauge network.
 - **2,637 stations** and service buildings have been provided with **solar roof-top plants** with a total power generation capacity of **177 MW**.

Why Indian Railways Need Alternative Sources of Energy?

- **High Energy Consumption:** The Indian Railways consumes over **20 billion kWh** of electricity annually, which is **around 2%** of the country's total power consumption.
 - This high level of consumption underscores the need for more **sustainable energy** solutions.
- **Increasing Power Demand:** Power requirements are projected to **grow** from **4,000 MW in 2012** to approximately **15,000 MW by 2032** due to ongoing electrification efforts.
 - This substantial increase highlights the need for **diversified energy** sources.
- **Electrification Targets:** Indian Railways aims to electrify **100%** of its broad-gauge network by **2030**. This ambitious goal will significantly increase the demand for electricity, necessitating alternative energy sources to meet this need sustainably.

Note:

- **Environmental Impact:** The railway's reliance on **diesel and electricity** results in high CO₂ emissions.
 - As a part of its **low-carbon strategy**, the Indian railways has envisaged a target of **33% reduction** in its emissions intensity below 2005 levels by **2030**.
- **Diminishing Revenue Surplus:** Railways' revenue earnings have barely been able to keep up with its revenue expenditure.
 - Between **2013-14 and 2023-24**, Railways' revenue expenditure is estimated to grow at an annualised rate of **7.2%**, faster than its revenue receipts (annual growth of **6.3%**).
 - Indian Railways aims to **generate its own energy** to reduce its expenditure on outside energy sources.
- **Cost Optimisation:** Indian Railways is the **largest consumer of electricity and spends close to Rs 20,000 crore annually** to run their trains and offices.
 - The organisation is **looking to reduce costs through renewable energy** procurement and lower-cost models for power generation.

Dual Use Technology

Why in News?

Recently, United States (US) government officials are sensitising Indian companies and exporters to deter them from supplying **dual-use technology** to Russia.

- Exporting chemicals, aeronautic parts, and components that can be used in defence equipment can attract Western sanctions.

What are Dual Use Goods/Technologies?

- **About Dual Use Goods:**
 - Dual-use goods are items that can be used both for **civilian and military applications**.
 - Examples of dual-use goods and technology include **global positioning satellites**, missiles, nuclear technology, chemical and biological tools, **night vision technology**, thermal imaging, drones etc.
- **Examples of Dual-Use Technologies:**
 - **Hypersonics:** **Hypersonic systems** fly at or above 5 times the speed of sound. They could be used for **low-cost satellite launches** and as a backup if satellites fail.
 - **Integrated Network Systems-of-Systems:** It allows governments to better integrate many diverse

mission systems and provide **fully networked command, control**, and communication that is capable, resilient, and secure.

- **Microelectronics:** Every military and commercial system relies on **microelectronics** for creation of personal computers, cell phones and defence equipment.
- **Export Controls Provisions Related to Dual Use Goods/Technologies:** Their trade and export are regulated by multilateral dual-use export control regimes.
 - **Wassenaar Arrangement (WA):** It aims to contribute to regional and international security and stability, by promoting **transparency** and greater **responsibility** in transfers of **conventional arms and dual-use goods and technologies**.
 - **India** was inducted to the **Wassenaar Arrangement** in **2017** as the **42nd member**.
 - **Nuclear Suppliers Group (NSG):** **NSG** is a group of **nuclear fuel/technologies supplier countries** that seeks to contribute to the non-proliferation of nuclear weapons.
 - **India is not a member** of the NSG as India's non-signatory status to the **Nuclear Non-Proliferation Treaty**.
 - Although **India** is not a member of the NSG, it **voluntarily practices non-proliferation of nuclear technologies**
 - **Australia Group:** It is an informal forum of countries which, through the harmonisation of export controls, seeks to ensure that exports do not contribute to the development of **chemical or biological weapons**.
 - India joined the **Australia Group** in 2018.
 - **Missile Technology Control Regime (MTCR):** **MTCR** is an informal and voluntary partnership among 35 countries to prevent the proliferation of **missile and unmanned aerial vehicle technology** capable of carrying greater than 500 kg payload for more than 300 km.
 - **India** was inducted into the Missile Technology Control Regime in **2016**.
 - **CWC and BWC:** India is a signatory to international conventions on disarmament and non-proliferation, viz. the **Chemical Weapons Convention (CWC)** and **Biological and Toxin Weapons Convention (BWC)**.

Note:



- **UN Security Council Resolution 1540:** The **United Nations** requires member countries to **control the export of goods that could cause harm to humanity** and the pursuit of global peace.

What are Key Developments in Dual-Use Defence Technology in Relation to Russia?

- **Fear of Sanctions:** Indian companies are at a risk of facing sanctions from the US under the **Countering America's Adversaries Through Sanctions Act (CAATSA)**.
- **Limiting Financial Access:** U.S. Treasury officials have advised Indian banks and financial institutions that doing business with **Russia's military-industrial base** could risk their access to the U.S. financial system.
- **India's Position on Dual-Use Exports:** The items identified by the US are not **Special Chemicals, Organisms, Materials, Equipment and Technologies (SCOMET) items**, which require licensing for trade.
 - Dual-use goods are categorised under the SCOMET list in India.
- **India's Role and US Concerns:** The US believes certain **SCOMET items** are entering the Russian defence manufacturing system.
 - **India's exports** to Russia increased by 40% in 2023, surpassing **USD 4 billion**. **Engineering goods** played a major role, with exports nearly doubling from **USD 680 million** in 2022 to USD 1.32 billion in 2023.
- **China's Role and US Concerns:** The US said that China is the top supplier of machine tools, **microelectronics**, and nitrocellulose, which are critical for manufacturing munitions and **rocket propellants**.
 - The US has blacklisted over 300 companies, citing China as the top supplier of critical dual-use items to Russia.
 - **Iran has supplied Russia with munitions**, artillery shells, and drones.

Note:

- **Russia's Increased Defense Spending:** Russia's military spending grew by 24% in 2023 to an estimated USD 109 billion, as per the **Stockholm International Peace Research Institute (SIPRI)**.
- As per the **World Bank**, economic activity in Russia was influenced by a significant increase in military-related activity in 2023.

What is India's Strategic Trade Control System?

- **About:** Strategic Trade Controls are **laws and regulations** on managing the flow of dual-use goods, services and technologies across national borders.
 - **Important Legislations Include**
 - **Weapons of Mass Destruction and their Delivery Systems (Prohibition of Unlawful Activities) Act, 2005**
 - **Arms Act, 1959**
 - **Atomic Energy Act, 1962**
 - **Chemical Weapons Convention Act, 2000**
 - **Explosives Act 1884**, etc.
 - These laws and regulations primarily focus on controlling the export of such items to balance the country's **commercial and security considerations**.
- **SCOMET List:** India regulates the exports of dual-use items, nuclear-related items, and military items, including software and technology under the SCOMET list.
 - The SCOMET list is our **National Export Control List** of dual-use items, munitions and nuclear-related items, including software and technology

Impact of Space Missions on Indian Economy

Why in News?

A recent study commissioned by **Indian Space Research Organisation (ISRO)** and an European Space Consultation agency, Novaspace has revealed that the economic impact of their space missions was 2.5 times the investment, amounting to billions of dollars.

- Earlier, ISRO launched the **Earth Observation Satellite (EOS)-08** onboard the **Small Satellite Launch Vehicle (SSLV)-D3**.

How ISRO's Space Programmes and Investments in the Space Sector have Benefited Society?

- **Employment Generation:** ISRO has created numerous jobs, directly employing scientists, engineers, and technicians, and indirectly generating opportunities in related industries, such as satellite manufacturing and data analysis.

Note:

- **Other Economic Benefits:** As per the ISRO estimates, investing in the space missions have yielded a **return of approximately 2.54 times the amount spent.**
 - A report by **Novaspaces** reveals that between 2014 and 2024, the Indian space sector has generated **USD 60 billion for the national economy**, created **4.7 million jobs**, and **contributed USD 24 billion in tax revenues.**
 - ISRO's satellites enhance **communication, weather forecasting, and navigation**, benefiting various sectors and boosting economic productivity.
- **Agricultural Development:** ISRO's Earth Observation Satellites, like Resourcesat and Cartosat, enhance agricultural development by monitoring crop health, soil moisture, and land use, helping farmers make informed decisions and improve productivity.
- **Disaster Management and Resource Planning:** Satellites provide critical data for disaster management, enabling timely response to natural calamities. They also assist in monitoring natural resources, supporting sustainable management and agricultural planning.
 - ISRO has helped around **8 lakh fisher folk daily** and 1.4 billion Indians get the benefit of **satellite-based weather forecasts.**
- **Urban Planning and Infrastructure Development:** High-resolution satellite imagery aids in **urban mapping, traffic management, and infrastructure monitoring.** This data allows cities to optimise land use and improve public services, contributing to sustainable urban development.
- **Inspiring Youth and Education:** ISRO's achievements, like Chandrayaan and Mangalyaan, inspire students and promote careers in **STEM** fields. Educational initiatives related to space technology further stimulate interest in science and technology.
- **Lunar Exploration and Scientific Advancement:** The Chandrayaan missions have advanced lunar exploration and demonstrated India's capabilities in space science, fostering national pride and contributing to global space exploration efforts.
- **International Collaboration and Soft Power:** ISRO's success in launching over 300 foreign satellites has established it as a global space technology leader, boosting India's international reputation and soft power while fostering global collaborations.
 - ISRO's **low-cost approach to space missions**, such as **Mangalyaan**, makes India an attractive partner for **international collaborations.**

- The growth of **space-related startups** fosters innovation and contributes to economic development.

What is India's Current Position in the Space Sector?

- As of 2024, the **Indian space economy** is valued at around Rs 6,700 crore (USD 8.4 billion), contributing **2%-3% of the global space economy** which is expected to reach **USD 13 Bn by 2025** at Compound annual growth (CAGR) of **6%.**
 - As per the new estimates by ISRO, the **gross value added** by the Indian space sector between 2014 and 2023 was **USD 60 billion**, and in the **next 10 years** it can go up to **USD 89 billion to USD 131 billion.**
 - India aims to **capture a 10% share** of the global economy by the next decade.
- ISRO is the **sixth** largest space agency in the world and has a high success rate of launch missions.
 - US' **NASA**, **China National Space Administration (CNSA)**, **European Space Agency (ESA)**, **Japan Aerospace Exploration Agency (JAXA)** and **Russian Federal Space Agency (Roscosmos)** are among the other five major space agencies.
- India has over 400 private space companies. The number of **startups in India's space sector** has surged from **54** in 2020, coinciding with the establishment of the **Indian National Space Promotion and Authorization Center (IN-SPACe)**, to **over 200** currently.

Amended FDI Policy for the Space Sector

- **About:**
 - Recently, the government has made **amendments in the FDI policy pertaining to the space industry.**
 - It aims to align with the **Indian Space Policy 2023**, which seeks to unlock the nation's potential in the space domain through enhanced private participation.
- **Amendments in FDI Policy for Space Sector:**
 - **100% FDI Allowed:** After the recent amendment, **100% FDI** is permitted in the space sector, aiming to **attract potential investors** to Indian space companies.
 - **Liberalised Entry Routes:** The entry routes for various space activities are as follows:
 - **Up to 74% under Automatic Route:** Satellites-Manufacturing & Operation, Satellite Data Products, Ground Segment & User Segment.

Note:

- Beyond 74%, the government route applies.
- **Up to 49% under Automatic Route:** Launch Vehicles, associated systems or subsystems, Creation of Spaceports.
 - Beyond 49%, the government route applies.
- **Up to 100% under Automatic Route:** Manufacturing of components and systems/ sub-systems for satellites, ground segment, and user segment.

What is the Indian Space Policy 2023?

- **Transition of ISRO's Role:** The Indian Space Policy 2023 establishes 4 key entities to enhance private sector participation in space activities traditionally managed by ISRO:
 - **ISRO:** ISRO is directed to shift its focus from routine tasks to research and innovation, developing advanced space technologies to maintain India's leadership in space infrastructure, transportation, applications, capacity building, and human spaceflight.
 - ISRO has announced its vision to increase India's share in the global space economy from approximately 2% to 10% by 2034.
 - **InSPaCe (Indian National Space Promotion and Authorisation Centre):** Acts as the single-window agency for authorising space activities and promoting industry-academia collaboration.
 - **New Space India Limited (NSIL):** It has been tasked with commercialising space technologies and platforms, manufacturing, leasing, or procuring space components, and servicing space-based needs on commercial principles.
 - **Department of Space:** Implements the policy, ensures safe space operations, and coordinates international cooperation.
- **Private Participation Encouragement:** Private companies, termed **non-governmental entities** were allowed to engage in end-to-end space activities, including **launching and operating satellites, developing rockets, building spaceports**, and offering services like **communication, remote sensing, and navigation** both domestically and internationally.

Major Developments in the Space Sector in India

- **Recent Major Successful Missions:**
 - [Aditya L1](#)
 - [Chandrayaan 3](#)
 - [Mars Orbiter Mission \(Mangalyaan\)](#)
- **Advancements in Launch Vehicles:**
 - [GSLV Mark III](#)
 - [Small Satellite Launch Vehicle \(SSLV\)](#)
 - [PSLV](#)
- **Missions for International Clients:**
 - [TeLEOS-2 \(2023\)](#): Singaporean Earth observation satellite
 - [PSLV-C51 \(2021\)](#): Launched Brazil's Amazonia-1 satellite and 18 smaller satellites.
- **Other Key Developments:**
 - [NavIC](#)
 - [Bhuvan](#)

How can India Increase the Share of the Space Sector in the Economy?

- **Skill Development:** Investing in **space-related education and training programs** is essential to build a highly skilled workforce capable of driving innovative space projects.
 - Establishing Space Technology Incubation Centres can help nurturing talent and fostering advanced research.
- **Infrastructure Development:** Upgrading **space launch facilities and research centres** will provide the necessary infrastructure to support more ambitious and large-scale space missions.
 - The development of the **Virtual Launch Control Center (VLCC)** at the Vikram Sarabhai Space Centre is a step in the right direction, enhancing operational capabilities.
- **Government-Industry Collaboration:** Strengthening partnerships between government agencies and private enterprises can leverage the strengths of both sectors. Collaborative efforts can accelerate advancements in space exploration and technology, driving innovation and expanding capabilities.
- **Promotion of Indigenous Technologies:** Encouraging the development of homegrown technologies will foster self-reliance and reduce dependence on external sources for space hardware. Investing in indigenous research and manufacturing will enhance India's capacity to design and produce advanced space technologies.

Note:

National Space Day 2024

Why in News?

Recently, India celebrated its **first National Space Day** on 23rd August 2024. It is celebrated to mark the **safe and soft landing of Vikram Lander** of **Chandrayaan-3 mission**, on the lunar surface on **23rd August 2023**.

- Additionally, the recent findings based on **Chandrayaan-3**, represent the first analysis of the Moon's southern topsoil composition and support the hypothesis of the sea of molten material on the lunar surface.

CHANDRAYAAN 3

India's 3rd lunar mission; a successful attempt at achieving a soft landing on lunar south

BRIEF HISTORY

Lunar Mission	Aim	Launch Vehicle	Success
<p>● Chandrayaan 1 (2008)</p>	Create a 3D atlas of moon & Mineralogical mapping	PSLV – C11	Detection of water and hydroxyl on lunar surface
<p>● Chandrayaan 2 (2019)</p>	Exploring lunar south pole	GSLV MkIII-M1	Lander and rover crashed but orbiter successfully collected data



COMPONENTS

- Lander - **Vikram**; Rover - **Pragyan** (same as Chandrayaan 2)
 - ▶ Both designed to last for 14 days; not supposed to come back to the earth
- Spectro-polarimetry of Habitable Planet Earth (**SHAPE**)
 - ▶ An experimental payload in propulsion module
 - ▶ Study spectro-polarimetric signatures of Earth (near-infrared wavelength range)

India became the 1st country to successfully land on Lunar south pole and 4th to achieve soft-landing on Lunar surface (after US, Russia and China)

ASPECTS TO STUDY

- Lunar quakes
- Thermal properties of lunar surface
- Changes in plasma near the surface
- Accurately measuring distance b/w Earth and the moon

Why Chandrayaan 3 Succeeded?

- A "failure-based design", unlike the "success-based design" of Chandrayaan-2
 - ▶ Even if all the sensors failed and engines stopped, **Vikram was sure to make the landing**
 - ▶ Provision of **multiple attempts** for landing if attempt 1 failed
- Developed accordingly to **rule out the scenario of crash landing**
 - ▶ Expanded landing area for more flexibility to land safely
 - ▶ Equipped with more fuel to enable longer-distance travel



Importance of Lunar South Pole

- Vastly different, more **challenging terrain** compared to lunar equatorial region
- Potential repositories of valuable **information about early Solar System**
- Impact **future deep space exploration** significantly
- **Water may be concentrated** in the moon's southern hemisphere



Drishti IAS

Note:

Why is National Space Day Celebrated?

- **About:**
 - **National Space Day, celebrated on 23rd August**, commemorates India's space achievements, particularly Chandrayaan-3's success.
 - With the launch of **Chandrayaan-3** in 2023, India became the **fourth nation to successfully land** on the Moon and the **first to reach its southern polar region**.
 - It highlights India's space exploration capabilities and aims to inspire future generations to pursue careers in **science, technology, engineering, and mathematics (STEM)**, contributing to India's ongoing space endeavours.
- **Theme for 2024:**
 - The theme for **National Space Day 2024** is 'Touching Lives while Touching the Moon: India's Space Saga'.

What are the Recent Findings of Chandrayaan-3?

- **Key Findings:**
 - The terrain around **Chandrayaan 3's** landing sight is fairly uniform.
 - A **sea of hot, molten rock or magma** once existed under the lunar surface.
 - The **Moon's crust was formed layer by layer**, which supports the **lunar magma ocean (LMO) hypothesis**.
 - The **topsoil around the lunar south pole** has a greater-than-expected sprinkling of minerals which compose the lower layers of the lunar crust.
- **LMO Hypothesis and Lunar Crust Formation:**
 - The **Moon is believed to have formed from a giant asteroid impact** with Earth about 4.5 billion years ago, creating a **molten surface** that eventually cooled.
 - In this process, **heavier minerals** like **olivine and pyroxene** sank to the lower crust and upper mantle, while **lighter minerals like calcium** and sodium-based compounds **floated to form the upper crust**.

What are the Highlights of Indian Space Missions in 2003-24?

- **Aditya-L1 Mission:**
 - **Aditya-L1** is the first **space based observatory class Indian solar mission** to study the Sun from the first **Earth-Sun Lagrange point, L1**.

- **Gaganyaan TV-D1 Test:**
 - ISRO conducted its **Flight Test Vehicle Abort Mission-1 (TV-D1)**, using a modified **L-40 Vikas engine** for the **Gaganyaan** human spaceflight mission.
 - The test demonstrated the **Crew Escape System (CES)** capabilities, including **separation from the test vehicle, crew module safety, and deceleration** before splashdown in the Bay of Bengal. The module was recovered by the Indian Navy vessel **INS Shakthi**.
- **XPoSat Launch:**
 - On 1st January 2024, ISRO launched the **X-ray Polarimeter Satellite (XPoSat)**, aimed at studying **radiation polarisation in space**.
 - The satellite is the second space-based observatory of its kind, following **NASA's Imaging X-ray Polarimetry Explorer (IPEX)** launched in 2021.
- **RLV-TD Experiments:**
 - ISRO conducted two landing experiments using a downscaled version of the **Reusable Launch Vehicle, Pushpak**, in March and June 2024, at its **Aeronautical Testing Range Chalkere, Karnataka**.
 - These tests simulated space landing conditions, with Pushpak being dropped from a **Chinook helicopter** to assess landing performance.
- **SSLV Development:**
 - In August 2024, ISRO launched the third and final development flight of the **Small Satellite Launch Vehicle (SSLV)**, successfully placing the **EOS-08 and SR-0 Demosat satellites** in orbit.
 - With two consecutive successful test flights, ISRO concluded the SSLV's development and transferred it to industry.
- **Private Space Missions:**
 - In March 2024, **Agnikul Cosmos** successfully launched its **SoRTeD-01 vehicle**, marking the first launch of a vehicle powered by a **semi-cryogenic engine** as its first stage from Indian soil.
 - **Skyroot Aerospace** is progressing towards its **Vikram 1 launch vehicle**.
 - **Dhruva Space and Bellatrix Aerospace** conducted experiments on the fourth stage of the **PSLV-C58** mission in January 2024, utilising the stage as an orbiting platform for their payloads.

Read more: [Chandrayaan 3](#)

Note:

Presence of Water on Mars

Why in News?

Recently, scientists have found **frost atop Mars' tallest volcano, Olympus Mons**, indicating the presence of a sparse but active **water cycle** on the **Red Planet** for the first time.

- In another development, a study suggested the existence of immense reserves of liquid water deep within Mars' rocky outer crust, marking the first discovery of liquid water on the planet.

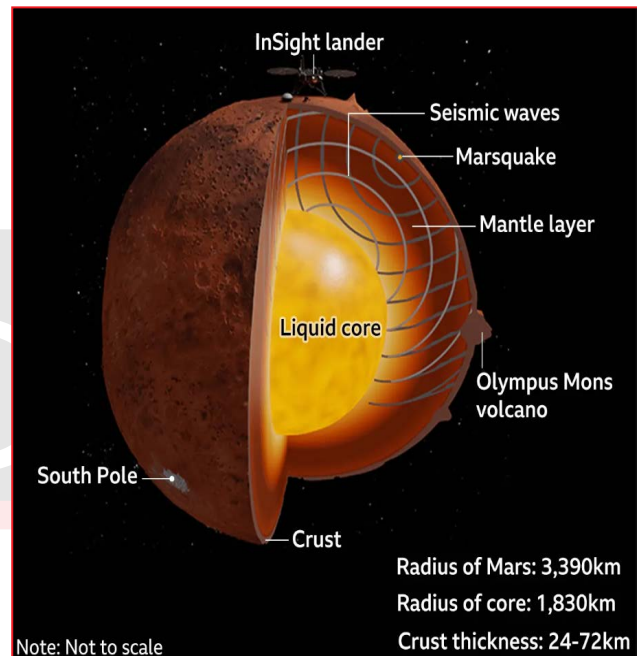
What are the Recent Findings Related to Water on Mars?

- **Water on Mars' Volcano:** For a few hours each morning during Mars' winter seasons, frost forms in the ancient **calderas** of the **Tharsis volcanic region**, which includes Olympus Mons. The patches of frost **evaporate** as sunlight shines down on the equator of Mars.
 - The **European Space Agency (ESA)**'s Trace Gas Orbiter and Mars Express Orbiter discovered frost, which forms due to unique **microclimates** created by air circulation around mountain summits and through calderas.

Note:

- **Olympus Mons** is the **tallest volcano** on Mars with a height of **29.9 kilometres** (around 2.5 times the height of **Mount Everest**). It is located close to the **Martian equator**, in Mars' **western hemisphere**.
- A **caldera** is formed when a volcano erupts and collapses inward, resulting in a **depression** on the surface.
- The **Tharsis area** is the largest volcanic region on Mars which hosts 12 large volcanoes.
- **Water in Mars' Crust:**
 - The study, titled '**Liquid Water in the Martian Mid-Crust**' used the data from NASA's **Mars InSight Lander** which was equipped with a **seismometer** which recorded **seismic waves** of Mars for four years.
 - Mars InSight Lander was the **first mission** to study in depth the inner parts of Mars i.e., its **crust, mantle, and core**.

- The data collected by **InSight Lander** can be best explained if, deep below the surface of Mars, there lies a layer of fractured **igneous rock**, such as **granite**, whose cracks are filled with liquid water.
- The water likely infiltrated from the surface **billions of years ago** when Mars had rivers, lakes, and potentially oceans, indicating a **warmer upper crust** at the time.
- While the discovery does not confirm the existence of life on Mars, it suggests the possibility of a **habitable environment**, as water is essential for life.



Key Facts About Mars

- Mars is the **fourth planet** out from the Sun. It is also the **second smallest** planet in the Solar System after **Mercury**.
- It is called the "**Red Planet**" because iron **minerals oxidise** in the Martian atmosphere causing the surface to look red.
- Mars has two small moons, **Phobos and Deimos**.

Important Missions to Mars

Mission Name (Year)	Space Agency/Country	Objective
Mariner 4 (1964)	NASA	First spacecraft to fly by Mars, and the first to provide images of the Red Planet.

Note:



Viking 1 and Viking 2 (both 1975)	NASA	First spacecraft to successfully land on Mars
Curiosity Rover (2011)	NASA	Studied Martian climate and geology; found evidence of past water on Mars.
Mangalyaan (Mars Orbiter Mission) (2013)	ISRO	First Indian mission to Mars; studied Martian surface features, morphology, atmosphere, and mineralogy.
InSight (2018)	NASA	Studied the interior of Mars, including its crust, mantle, and core, to understand the planet's geological activity.
Tianwen 1 (2020)	CNSA (China)	To study Martian topography and geology and look for water-ice content.
Perseverance Rover (2020)	NASA	First mission to demonstrate gathering samples from Martian rocks and soil.
Hope Mars Mission (2020)	United Arab Emirates	Creating mankind's first integrated model of the Mars' atmosphere.

Read More: [Marsquake](#)

Blue Moon

Why in News?

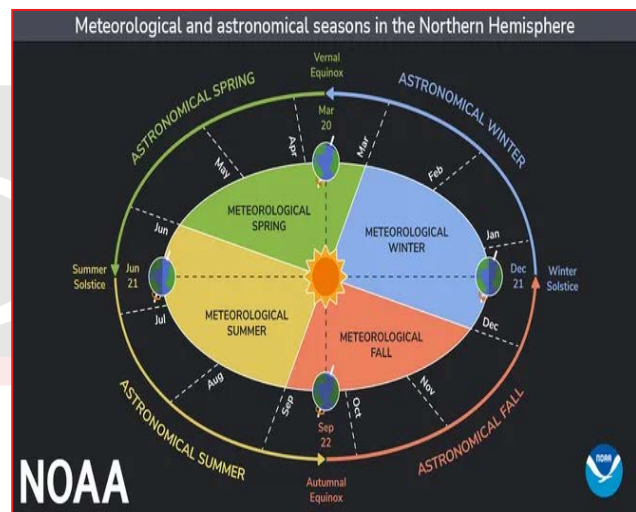
Recently, the phenomenon of the “**blue moon**” occurred in August 2024. This has prompted discussions regarding its origins, significance, and the diverse interpretations associated with it.

What is the Blue Moon?

- **About:** A blue moon is the **second full moon** that occurs within a single calendar month.
 - The next Blue Moon will occur on 31st May 2026.

➤ **Types:** There are 2 types of Blue Moons, neither of which involve the moon's colour.

- **Seasonal Blue Moon:** A Seasonal Blue Moon happens when there are **4 full moons** in a single astronomical season- **spring, summer, autumn (fall), or winter**, rather than the usual 3. The **third full moon** in this series is referred to as a “**Blue Moon.**”
 - Typically, each season spans about 3 months, allowing for 3 full moons. However, due to the **lunar cycle's** duration (about 29.5 days), occasionally, 4 full moons can occur within one season.
 - When this happens, the **third of these four full moons is called a “Seasonal Blue Moon.”**



- **Monthly Blue Moon:** It is the **second full moon** in a single calendar month.
 - Since **full moons typically happen once a month**, having two in the same month is rare, making the **second one a “Blue Moon.”**
 - The upcoming Blue Moon on 31st May 2026, will be a monthly Blue Moon.
- **Formation:**
- The moon phases complete a cycle in 29.5 days, resulting in **12 lunar cycles** over 354 days.
 - Consequently, approximately **every 2.5 to 3 years**, a 13th full moon occurs within a calendar year, known as a **Blue Moon**, which **does not follow the standard naming conventions.**
 - Since **February** has only 28 days in a regular year and 29 days in a leap year, **it can never have a Blue Moon.**

Note:

Instances When Moon Actually Appeared Blue Due to Atmospheric Conditions

- **Eruption of Mt. Tambora in Indonesia (1815):** It was the most powerful eruption following the prior eruption of **Mayon volcano** in the Philippines.
 - This, **along with other climatic factors**, resulted in a significant **global temperature drop of 0.4-0.7° C** in 1816, leading to the phenomenon known as the **'year without summer.'**
 - The **volcanic ash and particles** in the atmosphere during this time may have also **caused the moon to appear blue.**
- **Eruption of the Indonesian volcano Krakatoa (1883):** It produced ash that reached an altitude of 80 kilometers. The minute ash particles, approximately one micron in size, **filtered the light and caused the moon to appear in a noticeable blue-green hue.**
- **1983 El Chichon eruption** in Mexico and those of **Mt. St. Helens** in 1980 and **Mount Pinatubo** in 1991, have also been associated with the phenomenon of blue moons.



Completion of SSLV Development Project

Why in News?

The **Indian Space Research Organisation (ISRO)** successfully launched the third developmental flight of the **Small Satellite Launch Vehicle (SSLV)**.

- It placed the **Earth observation satellite** EOS-08 precisely into orbit. It also marked the completion of ISRO/ Department of Space's SSLV Development Project.

Note:



What are Key Facts about SSLV?

➤ About:

- ISRO's SSLV is a three-stage **Launch Vehicle** configured with three Solid Propulsion Stages.
 - It also has a liquid propulsion-based **Velocity Trimming Module (VTM)** as a terminal stage to help adjust the velocity to place the satellite in orbit.

➤ Need of SSLVs:

- The aim behind SSLVs is to make **low-cost launch vehicles** with **short turnaround times** and minimal infrastructural requirements.
- The SSLV is capable of launching **Mini, Micro or Nanosatellites (10 to 500 kg mass)** into a **500 km orbit**.
- Satellite launches by businesses, government agencies, universities and laboratories need smaller payloads.
 - **New Space India Limited (NSIL)** is the **commercial arm of ISRO** with the primary responsibility of facilitating Indian industries to take up advanced technology space related activities.

➤ Benefits of SSLV:

- It takes only **72 hours to integrate**, unlike the 70 days for **Polar Satellite Launch Vehicle (PSLVs)** and **Geosynchronous Satellite Launch Vehicles (GSLVs)**.
- It is an on-demand vehicle. **Only six people are needed to complete** the job quickly and at a **cost of around Rs 30 crore**.

What are PSLVs and GSLVs?

- **PSLVs:** It is the **third generation** of Indian satellite launch vehicles.
 - It was first used in **1994** and more than **50 successful PSLV launches** have taken place.
 - It has also been called "**the workhorse of ISRO**" for consistently delivering various satellites into low earth orbits (less than 2,000 km in altitude) with a high success rate.
 - It successfully launched two spacecraft "**Chandrayaan-1** in 2008 and **Mars Orbiter Mission** in 2013".
 - It can take up to 1,750 kg of payload to **Sun-Synchronous Polar Orbits (SSPO)** of 600 km altitude.

- **SSPO is synchronous with the sun** i.e., they pass over an Earth region at the **same local time every day**.

- **GSLVs:** It has been designed, developed, and operated by ISRO to launch satellites and other space objects into **Geosynchronous Transfer Orbits (GTO)**.
 - GTO is an **elliptical orbit** that a spacecraft takes as the first step towards achieving a **geosynchronous or geostationary orbit** around Earth.
 - GSLV is a three-stage vehicle.
 - The first stage comprises **solid booster**, second stage is a **liquid engine** and third stage is the indigenously built **Cryogenic Upper Stage (CUS)** carrying cryogenic propellants.

NewSpace India Limited (NSIL)

- NSIL is a wholly owned Government of India company, under the administrative control of the **Department of Space (DOS)**.
- The major business areas of **NSIL** include:
 - Production of **Polar Satellite Launch Vehicle (PSLV)** and **Small Satellite Launch Vehicle (SSLV)** for industry.
 - Production and marketing of **space-based services**, including launch services and space-based applications like transponder leasing, **remote sensing** and mission support services.
 - Building of **Satellites** (both Communication and Earth Observation) as per user requirements.
 - Transfer of technology developed by ISRO centers/ units and constituent institutions of Department of Space.

Read more: [Indian Space Situational Assessment Report 2023, India's Space Launch Vehicle Supply and Demand, Space Tourism](#)

Hayflick Limit

Why in News?

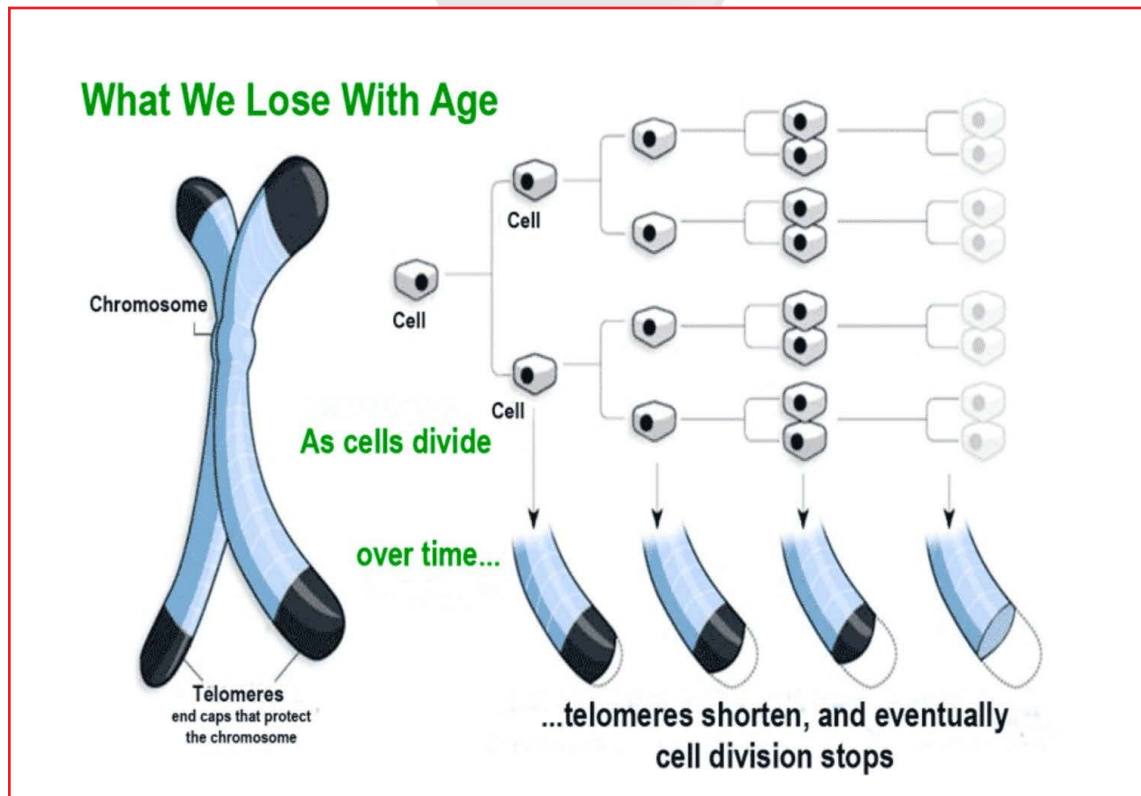
The recent death of **Leonard Hayflick**, a prominent biomedical researcher has brought renewed attention to his groundbreaking **discovery, known as the Hayflick limit**.

- This discovery fundamentally altered the **understanding of ageing, challenging the previous belief that ageing** was solely influenced by external factors such as disease, and environmental conditions.

Note:

What is the Hayflick Limit?

- **About:** Leonard Hayflick, in the 1960s discovered that **somatic (non-reproductive) cells** can only divide approximately **40-60 times before they stop dividing**, a phenomenon known as **cellular senescence (those that have stopped dividing)**.
 - This cessation (ceasing) of cell division, which leads to the **accumulation of senescent cells**, is posited to be a key factor in ageing. As more cells stop dividing, the **body begins to age and experience decline**.
 - The Hayflick limit suggests that there is an inherent cellular clock in organisms, including humans, **determining the maximum lifespan**.
 - For humans, this limit is estimated to be around 125 years, beyond which no external factors or genetic modifications can extend life.
- **Comparison of Species:** Hayflick and other scientists documented the Hayflick limits in various animals.
 - For example, cells of **Galapagos turtles**, which can live for over 200 years, divide approximately **110 times before reaching senescence**.
 - In contrast, laboratory mice cells become senescent after just 15 divisions, correlating with their much shorter lifespans.
- **Further Studies:** In the 1970s, researchers discovered **telomeres**, which are **repetitive Deoxyribonucleic Acid (DNA) sequences at the end of chromosomes** that protect them during cell division.
 - With each cell division, **telomeres become shorter until they reach a critical length**, signalling the end of cell division and contributing to ageing.
 - While **telomere shortening is linked to ageing**, the exact correlation between telomere length and lifespan is not straightforward. For instance, Mice have longer telomeres than humans but live significantly shorter lives.
 - Some researchers argue that **telomere loss and the Hayflick limit are not direct causes of ageing but symptoms of the ageing process**.



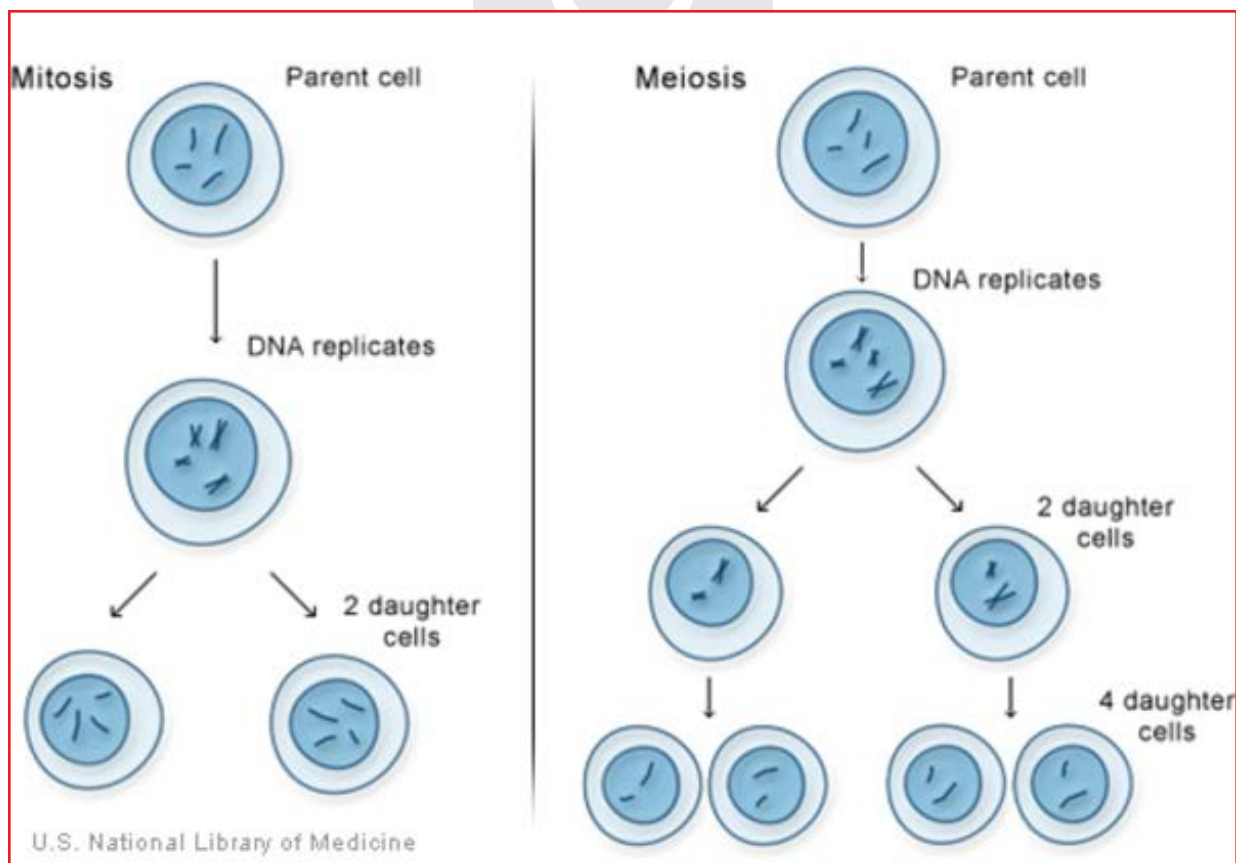
Note:

Note: In the 1980s, scientists discovered a protein called **telomerase** that can produce new telomeres. This protein is **active in cancer cells**, allowing them to bypass the **Hayflick limit and continue dividing indefinitely**. This is why, as Hayflick himself said, cancer cells are not subject to the Hayflick Limit.

- However, telomerase is primarily active in cancer cells, complicating its potential use in healthy cells.
- Although scientists have **synthesised telomerase and some in vitro studies** have indicated they may slow down telomere loss in normal human cells, practical application remains distant.

What is Cell Division?

- **About:** Cell division is a fundamental biological process where a **parent cell divides to form two or more daughter cells**. This process is critical for growth, repair, and reproduction in living organisms.
 - Cell division in humans occurs through two main processes: **mitosis and meiosis**.
- **Mitosis:** This is the process through which somatic (body) cells divide.
 - Mitosis results in **two daughter cells**, each with the same number of chromosomes as the original cell. It is crucial for **growth, tissue repair, and asexual reproduction in unicellular organisms**.
 - Mitosis is a highly regulated process that ensures genetic consistency in somatic cells.
- **Meiosis:** This type of cell division is specific to the **formation of gametes (sperm and egg cells)**.
 - Meiosis **reduces the chromosome number by half, creating four non-identical daughter cells**, each with 23 chromosomes.
 - This reduction is essential for **maintaining the species' chromosome number across generations**.
 - Meiosis also introduces **genetic variation through processes like crossing over and independent assortment** (different genes independently separate from one another during the development of reproductive cells).



Note:

Watermarking on AI Generated Content

Why in News?

Recently, ChatGPT-maker OpenAI developed a tool to detect whether its **AI (Artificial Intelligence)** chatbot has been used to write essays, research papers, or generate photos.

- To address issues concerning the authenticity and ownership of such content, leading technology companies like OpenAI, Meta, Microsoft, Google, and Adobe are **developing and implementing watermarking techniques**.

Artificial Intelligence (AI)

AI is the simulation of human intelligence in machines programmed to think and learn like humans, capable of problem-solving, reasoning, and adapting to new information.

AI Timeline - Major Milestones

- 1950s Turing Test Proposed; First AI Programs Developed
- 1956 Dartmouth Conference Coins "Artificial Intelligence"
- 1960s Eliza Chatbot Created; Early Neural Networks Emerge
- 1996 Deep Blue - a Chess-Playing Program
- 2012 Deep Learning Breakthrough in Image Recognition
- 2014 Generative Adversarial Networks (GANs) Introduced
- 2020 GPT-3 Demonstrates Advanced Language Generation
- 2022 Chatgpt Launches, Bringing Conversational AI to Masses
- 2023 Generative AI Boom; Major Tech Companies Release AI Models

Applications of AI

- 🕒 **Healthcare:** Personalised medicine
- 🕒 **Finance:** Algorithmic trading
- 🕒 **Transportation:** Autonomous vehicles
- 🕒 **Marketing & Customer Service:** Targeted advertising, chatbots
- 🕒 **Education:** Adaptive learning systems, personalised tutoring
- 🕒 **Agriculture:** Crop monitoring
- 🕒 **Cybersecurity:** Threat detection
- 🕒 **Energy:** Smart grid management, consumption forecasting

Concerns

- 🕒 Deepfakes & misinformation
- 🕒 Privacy issues
- 🕒 Algorithmic bias
- 🕒 Data ownership & liability issue
- 🕒 Automation & job displacement
- 🕒 Ethical decision-making complexes

Regulating AI

- 🕒 **Global Partnership on AI (GPAI)** launched in 2020
- 🕒 **Bletchley Declaration (2023):** Enhance Global Collaboration on AI
- 🕒 **G20 New Delhi Leaders' Declaration (2023):** Harnessing AI responsibly for good and for all
- 🕒 **Hiroshima AI Process (2023)** by G7

India and AI

- 🕒 **National Strategy For AI 2018**
- 🕒 **AI For All:** Self-learning online program
- 🕒 **GPAI Summit 2023** hosted by India
- 🕒 **IndiaAI Mission 2024**
- 🕒 **US India Artificial Intelligence (USIAI) Initiative:** AI cooperation in critical areas
- 🕒 **AIRAWAT (AI Research, Analytics and Knowledge Assimilation Platform):** Supercomputer

KEY COMPONENTS OF AI

Machine Learning

Deep Learning

Cognitive Computing

Neural Network

Computer Vision

Natural Language Processing (NLP)

Note:

What is Watermarking on AI Generated Content?

➤ About:

- The AI watermarking technique is **used to identify what's AI-generated and what is an original work.**
 - It is a **digital signature that serves as a unique identifier**, akin to a fingerprint, allowing for the tracing of the AI model used to create the content back to its origin.

➤ Need of Watermarking:

- **Authentication and Validation:** It provides a reliable method for verifying the authenticity of digital files, crucial in combating **deepfake** videos, manipulated images, and deceptive media in a digitally-driven world.
- **Tamper-Evident Records:** Integrating AI watermarking with **blockchain** and **public key infrastructure** ensures that any attempts to alter or manipulate content are detectable, preserving the integrity of digital records.
- **Trust and Confidence:** By assuring the authenticity of media, AI watermarking helps content creators, distributors, and consumers combat **misinformation** and counterfeiting, bolstering trust and understanding of content provenance.

➤ Steps to Ensure AI Authenticity:

- **Coalition for Content Provenance and Authenticity (C2PA):** A collaboration between Adobe, Intel, Microsoft, Sony, and other leading firms to establish standards for verifying the authenticity of audio-visual content.
- **Use of Blockchain Technology:** **Blockchain technology** ensures transparency by providing an immutable, publicly accessible record of digital asset ownership and provenance.
- **Ethereum Improvement Proposal:** This project proposes adding C2PA consent data, including content consent for AI and ML (Machine Learning) data mining, to on-chain metadata, leveraging blockchain technology **to enhance security and transparency.**

Nitrogen Use Efficiency and Biofortification

Why in News?

Recently, **biotechnologists** have found significant variation in nitrogen-use efficiency among popular Indian

rice varieties, enabling the development of **high-yielding**, low-nitrogen varieties to cut fertiliser costs and reduce pollution. The most efficient varieties had a **nitrogen use efficiency (NUE)** that was five times higher than the least efficient ones.

- In another development, the Prime Minister of India launched 109 high-yielding, climate-resilient, **biofortified** seed varieties developed by the **Indian Council of Agricultural Research (ICAR)** to boost farm productivity and farmers' incomes.

What is Nitrogen Use Efficiency (NUE)?

➤ About:

- It is used to describe the efficiency of a plant in using **applied or fixed nitrogen** for biomass production.
- It is further defined as the **ratio** between **crop yield** and the **amount of nitrogen absorbed** from the soil through roots or from the atmosphere through fixation by bacteria.
- NUE in cereals, particularly rice, is a **critical factor** in agricultural sustainability.

➤ Concerns:

- **Poor NUE** wastes Nitrogen fertilisers worth **Rs 1 lakh crore** a year in India and over **USD 170 billion per year** globally.
- Nitrogen fertilisers are the main source of **nitrous oxide** and **ammonia pollution** of air and nitrate/ammonium pollution of water, affecting our health, biodiversity, and climate change.
- **India** is the world's **second-largest** source of **nitrous oxide (N₂O)**, a greenhouse gas that heats up the atmosphere far more than carbon dioxide.
 - In 2020, nearly **11%** of such global man made emissions were from **India**, next only to China (16%). The major source of these emissions is **fertiliser usage.**

What is Nitrogen Pollution?

➤ About:

- Nitrogen pollution is caused when some **nitrogen compounds** like ammonia and nitrous oxide become too abundant in the environment posing health risks.
- In the past 150 years, human-driven flows of **reactive nitrogen** have increased **tenfold**, contributing to a dangerous **accumulation** of unused reactive nitrogen.
- The uptake by crops of nitrogen as fertiliser is limited. Each year, 200 million tonnes of **reactive nitrogen (80%)** is lost to the environment, **leaching** into soil, rivers and lakes and emitted to the air.

Note:

- As a result, ecosystems are **over-enriched**, biodiversity lost and human health affected. In some forms, it contributes to **ozone depletion** and **climate change**.

➤ **Effects:**

○ **Climate Change and the Ozone Layer:**

- Nitrous oxide is **300 times** more **potent** than methane and carbon dioxide as a **greenhouse gas**.
- It is also the biggest human-made threat to the **ozone layer**.

○ **Biodiversity and Ecosystems:**

- Nitrogen pollution can **degrade soils**. Excessive application of synthetic fertilisers make soil acidic, damaging soil health and reducing the productivity of soils.
- It can cause the inadvertent **fertilisation** of trees and grasslands or nitrogen tolerant species to outcompete more sensitive wild plants and **fungi**.
- Nitrogen pollution can create **“dead zones”** in the ocean and cause toxic **algal blooms** to spread in **marine ecosystems**.

○ **Air:**

- Nitrogen oxides generated from coal power plants, factory emissions and vehicle exhausts, can lead to **smog** and **ground-level ozone**.
- Agricultural ammonia emissions combined with pollution from vehicle exhausts create extremely dangerous **particulates** in the air, which can exacerbate **respiratory diseases**.

What are the Biofortified Seed Varieties Developed by ICAR?

- **About:** The biofortified seed varieties, launched recently by the PM, cover 61 crops, including 34 field crops and 27 horticultural varieties.
- **Crop Varieties:** Cereals, millets, forage crops, oilseeds, pulses, sugarcane, cotton, and fibre crops.
 - **Horticulture:** Fruits, vegetables, plantation crops, tubers, spices, flowers, and medicinal plants.
 - **Some Examples:**
 - **CR Dhan 416:** It is a rice variety ideal for **coastal saline areas**. It is moderately resistant to **brown spot, neck blast, sheath rot, rice tungro disease, and glume discoloration**, besides offering full resistance to **brown plant hopper, grasshopper and stem borer**.
 - **Durum Wheat Variety:** It is adapted for **irrigated conditions** and suitable for Maharashtra, Karnataka, and the plains of Tamil Nadu. It is

tolerant to **terminal heat, resistant to stem and leaf rusts, and biofortified** with higher levels of zinc (41.1 ppm) and iron (38.5 ppm). It also contains 12% protein.

➤ **About Biofortification:**

- **Biofortification** is the process by which the **nutrient density** of food crops is increased through conventional plant breeding, improved **agronomic practices** and modern **biotechnology** without sacrificing any characteristic that is preferred by consumers.
- It is recognized as a **nutrition-sensitive-agriculture intervention** that can reduce vitamin and mineral deficiency.
- **Examples of biofortification projects include:**
 - **Iron-biofortification** of rice, beans, sweet potato, cassava and legumes;
 - **Zinc-biofortification** of wheat, rice, beans, sweet potato and maize;
 - **Provitamin A carotenoid-biofortification** of sweet potato, maize and cassava; and
 - **Amino acid and protein-biofortification** of sorghum and cassava.

➤ **Need of Biofortification:**

- **Malnutrition:** India has very high levels of malnutrition among women and children. According to **NFHS-5 2019-21**, 57% of women in the age group 15-49 and 67% children between 6 and 59 months are anaemic. Iron, **Vitamin A**, and Iodine deficiencies are the most prevalent ones.
 - Biofortification can help reduce the occurrence of malnutrition and hidden hunger by providing deficient nutrients.
- **Disease Resilient:** Biofortified crops are often more resilient to **pests, diseases, high temperatures, and drought**, while also offering high yields.
- **Sustainable:** Once biofortified seeds are developed, they can be replicated and distributed without losing their **micronutrient concentration**, making them cost-effective and sustainable.
- **No Behaviour Change Needed:** It seamlessly delivers nutrients without altering people’s food habits or cultural practices, making it a socio-culturally acceptable approach.
- **Cost Effective:** Biofortification is cost-effective using the existing technology and delivery platforms. The **Copenhagen Consensus** estimates that every 1 Rupee spent on fortification results in 9 Rupees in benefits to the economy.



Note:



Environment and Ecology

Highlights

- NGT Imposed Penalty on State Govt of Punjab
- Air Quality Life Index (AQLI) 2024
- Horseshoe Crabs
- Registration of Exotic Animals
- Critical Threats Facing the Aravallis
- Climate Change Impact on Panama Canal
- Nanjarayan and Kazhuveli Bird Sanctuary & Tawa Reservoir as New Ramsar Sites

NGT Imposed Penalty on State Govt of Punjab

Why in News?

Recently, the **National Green Tribunal (NGT)** has imposed a penalty of Rs 1,000 crore on the Punjab government for its **failure to manage solid and liquid waste in the state**, despite multiple warnings. The amount is to be deposited with the **Central Pollution Control Board (CPCB)** within one month.

Why has the NGT Penalised the Punjab Government?

- **Fines Imposed over Past Six Months:** The NGT determined this penalty on account of failure to manage solid and liquid waste.
 - The penalty was calculated based on environmental fines over six months for 5.387 million tonnes of **legacy waste** and for **untreated sewage** due to a **gap in sewage treatment capacity**.
 - The NGT underlined that **Solid Waste Management Rules, 2016**, and Section 15 of the **Environment (Protection) Act, 1986** apply in this case.
- **Repeated Offenders:** The tribunal found that the Punjab government had also **failed to comply with its previous orders in 2022**, including the creation of a **ring-fenced account for Rs 2,080 crore** under the **Section 26 of NGT Act, 2010**.
 - The NGT has issued **show cause notices** to the Chief Secretary and Additional Chief Secretary (Urban Development) of Punjab, asking for their explanations.

Solid Waste Management Rules 2016:

- These rules replaced the **Municipal Solid Wastes (Management and Handling) Rules, 2000** and focused on segregation of waste at source, responsibility on the manufacturer to dispose of sanitary and packaging wastes, user fees for **collection, disposal and processing from the bulk generator**.
- **Key Features:**
 - **Responsibilities of Generators** have been introduced to segregate waste in to three streams – wet (biodegradable), dry (plastic, paper, metal, wood, etc.) and domestic hazardous wastes (diapers, mosquito repellents, etc.) and handover segregated wastes to authorised rag-pickers or waste collectors or local bodies.
 - **Waste Generators will have to pay:**
 - 'User Fee' to waste collectors.
 - 'Spot Fine' for Littering and Non-segregation.

What is the National Green Tribunal?

- **About:**
 - The NGT was established in **2010** under the **National Green Tribunal Act 2010**.
 - Its primary focus is to facilitate the swift and efficient resolution of cases related to **environmental protection, conservation of forests, and preservation of natural resources**.
 - The Tribunal is headed by the **Chairperson (appointed by Central govt in consultation with the CJI)** who sits in the **Principal Bench** and has at least 10-20 judicial members and expert members.
- **Jurisdiction:**
 - The Tribunal's jurisdiction **extends to enforcing environmental rights, granting relief and**

Note:

compensation for damages to individuals and property, and addressing matters associated with environmental protection and conservation.

- Apart from original jurisdiction on filing of an application, NGT also **has appellate jurisdiction to hear appeal as a Court (Tribunal)**.
- **The NGT deals with civil cases under following laws:**
 - **The Water (Prevention and Control of Pollution) Act, 1974**
 - The Water (Prevention and Control of Pollution) Cess Act, 1977
 - **The Forest (Conservation) Act, 1980**
 - The Air (Prevention and Control of Pollution) Act, 1981
 - **The Environment (Protection) Act, 1986**
 - **The Public Liability Insurance Act, 1991**
 - **The Biological Diversity Act, 2002**

NATIONAL GREEN TRIBUNAL

The National Green Tribunal (NGT) is a specialised body for swift resolution of environmental and natural resource cases.

About

- ④ **Establishment:** By National Green Tribunal Act 2010
- ④ **Objective:** Quick resolution of environmental & natural resource cases
- ④ **Case Resolution:** Within 6 months
- ④ **Places of Sitting:** New Delhi (Principal), Bhopal, Pune, Kolkata, and Chennai

Powers & Jurisdiction



- ④ **Jurisdiction:** Civil cases on environmental issues and rights
- ④ **Suo Motu Powers:** Granted since 2021
- ④ **Roles:** Adjudicatory, preventative, and remedial
- ④ **Procedures:** Follows Principles of natural justice
 - Not bound by the CPC, 1908 or Indian Evidence Act, 1872
- ④ **Principles:** Sustainable Development; Precautionary; Polluter pays
- ④ **Orders:** Executable as civil court decrees; offers relief and compensation (**decisions are binding**)
- ④ **Appeals:** Tribunal can review its decisions.
 - If decision fails - Appeal to the SC to be filed within 90 days

Structure

- ④ **Composition:** Chairperson, Judicial Members, and Expert Members
- ④ **Tenure:** Up to 5 years/until age 65 (no reappointment)
- ④ **Appointments:** Chairperson - Central Government (with the CJI's consultation)
 - 10-20 judicial members & 10-20 expert members - Selection Committee

NGT deals with Civil Cases under

- ④ Water (Prevention and Control of Pollution) Act, 1974
- ④ Water (Prevention and Control of Pollution) Cess Act, 1977
- ④ Forest (Conservation) Act, 1980
- ④ Air (Prevention and Control of Pollution) Act, 1981
- ④ Environment (Protection) Act, 1986
- ④ Public Liability Insurance Act, 1991
- ④ Biological Diversity Act, 2002

Drishti IAS

India is the third country globally (after Australia and New Zealand) and the first developing nation to establish a specialised environmental tribunal like NGT.

Note:

➤ **Powers:**

- The Tribunal is **not bound by the procedure laid down under the CPC 1908**, but shall be guided by principles of 'natural justice'.
- NGT by an order, can provide:
 - **relief and compensation to the victims of pollution** and other **environmental damage** (including accident occurring while handling any hazardous substance),
 - for **restitution of property damaged**, and
 - for **restitution of the environment** for such areas or areas, as the Tribunal may think fit.
- **An order/decision/award of Tribunal is executable as a decree of a civil court.**
- The NGT Act also **provides a procedure for a penalty for non compliance:**
 - Imprisonment for a term which may extend to three years,
 - Fine which may extend to ten crore rupees, and
 - Both fine and imprisonment.
- **An appeal against order/decision/ award of the NGT lies to the Supreme Court**, generally within ninety days from the date of communication.

What are the Major Administrative Challenges in Solid Waste Management?

- **Inadequate Implementation of Regulations:**
 - Urban centers across India frequently suffer from inadequate waste management infrastructure, characterized by **outdated, damaged, or insufficient garbage bins**.
 - A critical concern is the **failure to enforce waste segregation at the source**, resulting in the **mixing of unprocessed waste in landfills**, in violation of the **Solid Waste Management Rules, 2016**.
- **Poor Interdepartmental Coordination:**
 - Solid waste management requires coordinated efforts across various departments such as urban development, environment, and public health. State governments often struggle with interdepartmental coordination, leading to inefficiencies in waste collection, processing, and disposal.
- **Resource Allocation and Infrastructure Deficiencies:**
 - Insufficient allocation of financial and technical resources by state governments hampers the development of necessary waste management

infrastructure. This includes delays in setting up waste processing facilities, composting units, and waste-to-energy plants, particularly in urban areas.

➤ **Challenges of Waste Disposal Sites:**

- The **scarcity of land for waste processing plants in metropolitan cities has led to the accumulation of untreated waste**. This situation is further aggravated by **illegal dumping practices**. A significant portion of **solid waste remains unprocessed**.

Air Quality Life Index (AQLI) 2024

Why in News?

Recently, the **Energy Policy Institute at the University of Chicago (EPIC)** released the **Air Quality Life Index (AQLI) 2024**.

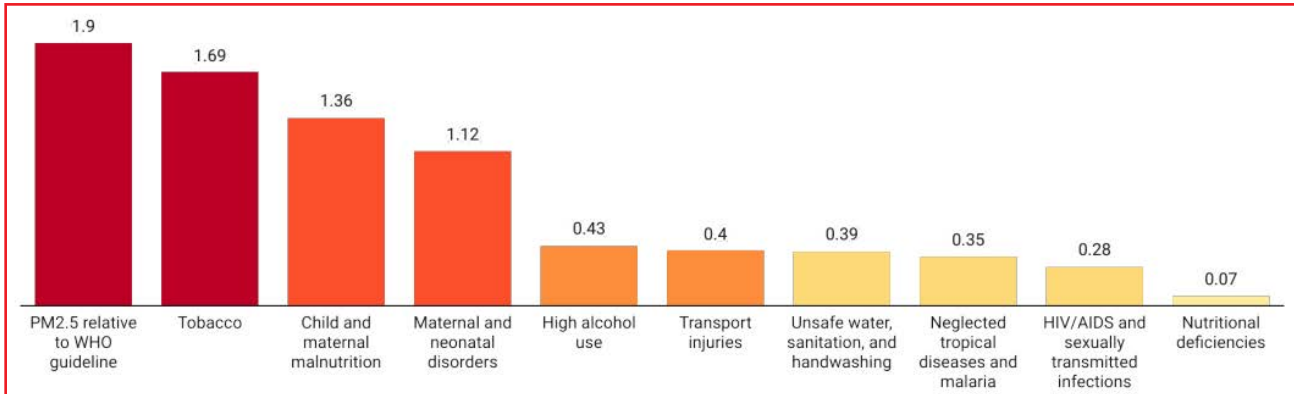
- In India, where the annual **PM2.5** standard is **40 µg/m³**, more than **40%** of the population breathes air that **exceeds the standard**.

What are the Key Findings of the Air Quality Life Index (AQLI) 2024?

- **Impact of Air Pollution on Life Expectancy:** The report revealed that if **PM2.5** (particulate matter that are **2.5 micrometres or less in diameter**) pollution were reduced to meet the guidelines set by the **World Health Organization (WHO)**, the average person could live **1.9 years longer**, adding a total of **14.9 billion life years globally**.
 - The **WHO guidelines** state that annual average concentrations of **PM2.5** should not exceed **5 micrograms per cubic meter (µg/m³)**.
- **Deadlier than Chronic Diseases:** The **effects** of air pollution **surpass** those of smoking, heavy drinking and are several times greater than other major health risks like **HIV/AIDS** and **malnutrition**.
- **Uneven Distribution of Pollution:** The burden of pollution is **not evenly distributed**.
 - People in the **most polluted areas** breathe **six times more polluted air** than those in the cleanest regions, **reducing** their life expectancy by an average of **2.7 years**.
- **Non-Compliance:** While many countries have established **national air quality standards**, the report finds that enforcement and compliance remain significant challenges.

Note:

- According to the report, **94 countries** have established **PM 2.5 standards**, of which **37 fail** to meet their own guidelines. Additionally, **158 countries** have **not set any standards** at all.
- **Potential Benefits:** The potential benefits of meeting WHO pollution standards are **substantial**.
 - If all countries achieved their goals, the average person in these regions would **gain 1.2 years** of life expectancy.



➤ Global Scenario:

- **US, China, Europe:** The **United States, Europe, and China** have implemented stringent policies, leading to significant reductions in pollution levels.
 - In **China**, air pollution has decreased by **41% since 2014** and extended the life of Chinese by **2 years**.
 - The **US** has reduced pollution by **67.2%** since 1970, extending the average lifespan by **1.5 years**.
 - **Europe** has seen a **30.2% reduction** since 1998, adding **5.6 months** to life expectancy.
- **South and Southeast Asia:** South and Southeast Asia saw notable improvements in 2022, observing a **4% decline in PM2.5 levels** compared to 2012.
 - Despite this improvement, **South Asia** remains the world's **most polluted** region, accounting for **45% of global life years lost** due to high pollution.
 - Bangladesh, India, Nepal, and Pakistan are among the most polluted countries globally.
 - In **Myanmar**, air pollution is reducing life expectancy by **2.9 years**.
- **Africa:** Air pollution in Central and West Africa has remained **largely unchanged** in 2022.
 - The region's average **PM2.5 concentration** is **22.2 micrograms per cubic meter ($\mu\text{g}/\text{m}^3$)**, **4.4 times higher** than the WHO guideline.
 - This pollution level is reducing life expectancy by an average of **1.7 years** across the region.
 - However, **Nigeria, Rwanda and Ghana** have recently implemented air quality regulations and standards.
- **West Asia:** **Middle East and North Africa (MENA)** region has emerged as a new pollution hotspot, reducing life expectancy by an average of **1.3 years** across the region.
 - **Qatar and Iraq** are the most polluted countries in the region.
- **Latin America:** Latin America's PM2.5 levels increased by **4.8%** from 2021 and 3% from 1998.
 - **Bolivia** is the **most polluted** country in Latin America; air pollution in Guatemala reduces life expectancy by 2.1 years.
 - Cities like **Bogotá, Mexico City, and Quito** implement driving restrictions and improve public transport to combat pollution.

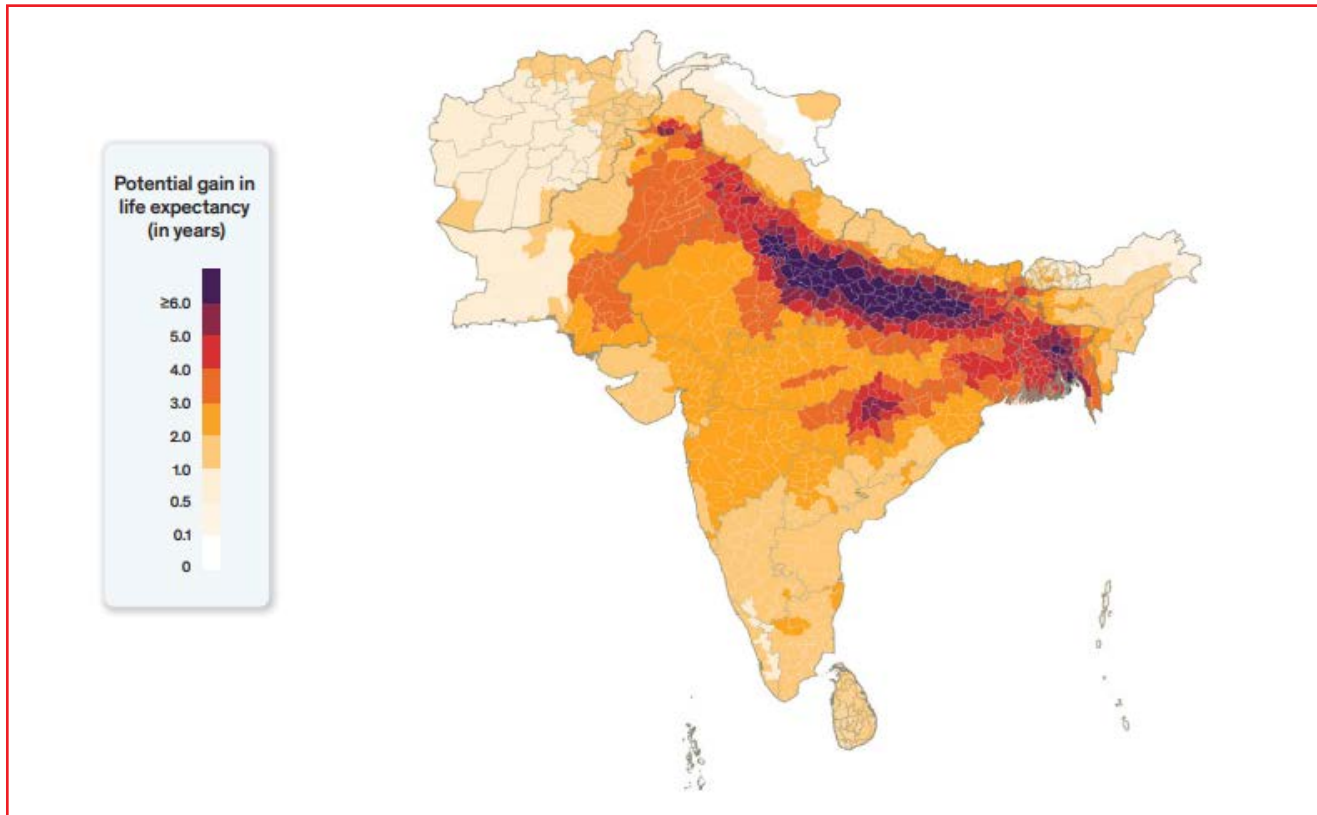
What are India Specific Findings in Air Quality Life Index (AQLI) 2024?

- **Impact of Cleaner Air on Life Expectancy in Delhi:** Cleaner air that meets **WHO guidelines** of $5 \mu\text{g}/\text{m}^3$ can **increase** the life expectancy of Delhi's 18.7 million residents by **7.8 years**.

Note:



- Achieving **India's national air quality standard (40 $\mu\text{g}/\text{m}^3$)** could increase life expectancy by **4.3 years**.
- **Current Air Quality and Trends in Delhi:** Delhi is the **most polluted city** in India, with an average PM2.5 level of **84.3 $\mu\text{g}/\text{m}^3$ in 2022**.
 - However, with an average annual PM2.5 concentration of 84.3 $\mu\text{g}/\text{m}^3$ in 2022, Delhi has seen **significant improvement**.
- **Improvement in Air Quality Across India:** India saw a **decrease** in particulate pollution from an average of **49 $\mu\text{g}/\text{m}^3$** over the last decade to **41.4 $\mu\text{g}/\text{m}^3$** in 2022.
 - If this reduction continues, the average Indian could live **9 months longer** than if exposed to the previous decade's pollution levels.
- **Comparison with Other Health Risks:** While particulate pollution takes 3.6 years off the life of an Indian resident, **malnutrition** takes off 1.6 years, **tobacco** 1.5 years, and **unsafe water and sanitation** 8.4 months.



What is the Air Quality Life Index (AQLI)?

- The AQLI is a **pollution index** that translates the **effect of particulate air pollution** into its impact on life expectancy.
- The Index then **combines the** relationship between long-term **human exposure to air pollution** and **life expectancy** to provide the true cost of particulate pollution in communities around the world.
- The Index also illustrates how **air pollution policies** can **increase life expectancy** when they meet the **WHO's guideline** for what is considered a safe level of exposure, existing national air quality standards, or user-defined air quality levels.

Note:

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.

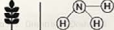
Carbon Monoxide (CO)



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.



How Can We Control Air Pollution?

- **Prevention:** Adopt pollution prevention approaches to **reduce, eliminate, or prevent** pollution at its source.
 - Examples are to use less toxic raw materials or **fuels**, use a less-polluting industrial process, and to improve the efficiency of the process. E.g., **BSVI engine**.
- **Adoption of Clean Air Technology:** Air pollution prevention and control technologies can help in controlling air pollution.
 - It includes **wet scrubbers**, fabric filters (baghouses), **electrostatic precipitators**, condensers, absorbers, adsorbers, and **biological degradation**.

- **Economic Incentives:** Economic incentives such as **emissions trading** and emissions caps can be used for **polluting industries**.
- **Scrapping Old Vehicles:** Scrapping of the current **End-of-life vehicles (ELVs)** burden of the country will lead to **15-20% reduction** in emissions due to **vehicular pollution**.
- **Work-from-Home:** To combat air pollution, the government may promote **work-from-home policies** during high pollution days like winters.
- **Artificial Rain:** It can **wash away** pollutants that are suspended in the air, such as particulate matter (PM), nitrogen oxides (NOx), and sulphur dioxide (SO₂).
- **Behavioural Change:** Promoting the use of **public transportation, walking, and cycling** can reduce the number of individual vehicles on the road, leading to lower emissions and **lower air pollution**.

What are the Government Initiatives Taken for Controlling Air Pollution?

- [System of Air Quality and Weather Forecasting and Research \(SAFAR\) Portal](#)
- [Air Quality Index](#)
- [Graded Response Action Plan](#) (for Delhi)
- [New Commission for Air Quality Management](#)
- [National Air Quality Monitoring Programme \(NAMP\)](#)

Horseshoe Crabs

Why in News?

Recently, the **Zoological Survey of India (ZSI)** and Odisha Forest Department have started the exercise to tag **Horseshoe Crabs** to conserve this ancient species.

- **ZSI planned to tag hundreds of crabs** to determine their **population pattern and threats to them**.



Note:

What are the Key Facts About Horseshoe Crabs?

- **About:**
 - Horseshoe crabs are **marine and brackish water arthropods** of the family **Limulidae** and the only living members of the order **Xiphosura**.
 - These are **one of the oldest living creatures** on Earth (emerged **250 million years ago**), also called **living fossils**.
- **Species and Location:** There are **4 existing species** of horseshoe crabs.
 - India has **2 species** of horseshoe crabs: **Tachypleus Gigas** (found in Odisha and West Bengal) and **Carcinoscorpius rotundicauda** (found in Sundarbans mangroves of West Bengal).
 - **American horseshoe crab (*Limulus polyphemus*):** Found along the eastern coast of the USA and in the Gulf of Mexico.
 - **Tri-spine horseshoe crab (*Tachypleus Tridentatus*):** Found in the Indo-Pacific region.
- **Threat:**
 - **Destructive fishing** practices and **illegal smuggling**.
- **Conservation Status:**
 - **Wildlife Protection Act (WPA), 1972:** Indian species are protected under **Schedule II** of **WPA 1972**.
 - **IUCN Status:**
 - American horseshoe crab: **Vulnerable**.
 - Tri-spine horseshoe crab: **Endangered**.
 - The two other species are **not listed yet**.
- **Medicinal Uses:**
 - Its **carapace (hard upper shell)** is applied onto scars.
 - Horseshoe crab blood is **bright blue** and contains **immune cells** that are **sensitive to toxic bacteria**.
 - These cells **clot around invading bacteria**, protecting the horseshoe crab's body.
 - Scientists used these cells to develop a test called **Limulus Amebocyte Lysate (LAL)**, which **checks new vaccines for contamination**, preventing the distribution of vaccines with harmful bacteria.
- **International Horseshoe Crab Day** is celebrated on **20th June** every year to showcase the collective conservation efforts for horseshoe crabs.

Living Fossils

- Living fossils are **species that have survived for millions of years**, maintaining the **same traits as their ancient ancestors**.
- These organisms provide **invaluable insights into Earth's evolutionary history** and ancient ecological landscapes.
- **Other Examples of Living Fossils:**
 - **Coelacanth:** Rediscovered in 1938 off the coast of South Africa, **this deep-sea fish is notable for its lobed fins**, which function similarly to limbs.
 - **Ginkgo Biloba:** The **sole surviving member of an ancient group of plants**, it has distinctive **fan-shaped leaves that have remained unchanged** for millions of years.
 - **Wollemi Pine:** A **rare plant discovered in 1994 in Australia**, known for its ancient lineage.
 - **Tuatara:** A **reptilian species unique to New Zealand**, representing a link to ancient reptiles.

Registration of Exotic Animals

Why in News?

Recently, the **Ministry of Environment, Forest and Climate Change (MoEFCC)** asked people, organisations, and zoos to register any **exotic animals** they have that are listed under **Schedule IV** of the **Wild Life (Protection) Act, 1972 (Amendment Act, 2022)**.

- The registration must be done electronically through the **PARIVESH 2.0 portal** and submitted to the **Chief Wildlife Warden** of the respective State.

What are the Key Facts About the Exotic Species?

- **About Exotic Animals:**
 - **Exotic species** are animal or plant species **moved** from their **original range (location)** to a new one. These species are introduced to a **new location** most often by **people**.
- **Examples of Exotic Animals:**
 - **Ball python** (western Africa), **Iguana** (Central and South America), **Cockatiel** (Australia), **Red-eared slider turtle** (USA and Mexico), **African grey parrot** (Central Africa), **Amazonian parrot** (South and Central America) etc are examples of exotic animals in India.

Note:



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

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)

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

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)



Legal Requirement:

- As per the **Living Animal Species (Reporting and Registration) Rules, 2024**, any person possessing a species listed in **Schedule IV** of the **Wild Life (Protection) Act, 1972**, must report and register the species.

Note:

- **Wild Life (Protection) Amendment Act, 2022** introduced **Section 49 M**, requiring the registration of possession, transfer, birth, and death of species listed in the **CITES Appendices** and **Schedule IV of the Wild Life (Protection) Act, 1972**.
- **Concerns with Exotic Species:**
 - **Non-Regulation:** Exotic species are imported to India and bred in captivity **without proper registration** which may pose a threat of **zoonotic diseases**.
 - **Impending Pandemic:** The **Covid-19 pandemic**, a zoonotic disease, brought attention to the **dangers** of unregulated trade and ownership of **exotic animals**.
 - **Smuggling of Exotic Animals:** Activists have raised concerns about the increased **smuggling of endangered exotic animals** into India from Southeast Asia and other regions.
 - There has been a notable increase in the **seizure** of exotic animals, particularly in **Assam and Mizoram**, where species like **Kangaroos** (Australia), **Koalas** (Australia), and **Lemurs** (Madagascar) have been confiscated and temporarily housed in zoos.

What are the Key Facts About the Wild Life (Protection) Act, 1972 (WPA)?

- **About WPA, 1972:** It aims to protect **wild animals, birds, and plants**, and address related issues to ensure the ecological and **environmental sustainability** of the country.
- **Schedules of WPA, 1972:** The Wildlife (Protection) Act, 1972 has **four schedules** after the **Wild Life (Protection) Amendment Act, 2022**.
 - **Schedule I:** For species that receive the **highest level of protection**. E.g., **Tiger, Elephants, Rhino** etc.
 - **Schedule II:** For species that receive a **lesser degree of protection**. E.g., **Kites, Eagle, Falcons** etc.
 - **Schedule III:** For **plant species**
 - **Schedule IV:** For species **protected** under the Convention on International Trade in Endangered Species of Wild Fauna and Flora (**CITES**). E.g., **Bear**.
 - CITES is an **international agreement** that aims to ensure that international trade in specimens of wild animals and plants **does not threaten the survival** of the species.

What is the PARIVESH 2.0 Portal?

- **About:** PARIVESH 2.0 is a **web-based application** for online **submission and monitoring** of Environmental, Forest, Wildlife, and Coastal Regulation Zone clearances.
 - PARIVESH is an acronym for **Pro-Active and Responsive facilitation by Interactive, Virtuous, and Environmental Single Window Hub**.
- **Ministry:** It has been developed by the **Ministry of Environment, Forest and Climate Change (MoEFCC)**.
- **Function:** It provides a comprehensive **single window solution** for the **administration of all green clearances** and monitors their subsequent compliance across the nation.
 - Process transformation, technology transformation, and domain knowledge intervention are the key drivers behind the framework of the new **PARIVESH 2.0** portal.

Critical Threats Facing the Aravallis

Why in News?

A recent scientific study on **land use dynamics in the Aravallis** has highlighted that the ongoing destruction of the hills has resulted in significant biodiversity loss, soil degradation, and reduced vegetation cover.

What are the Key Challenges Highlighted in the Study Regarding the Aravallis?

- **Loss of Hills:** Between 1975 and 2019, **nearly 8% (5,772.7 sq km) of the Aravali hills** have disappeared, with 5% (3,676 sq km) **converted into barren land** and 1% (776.8 sq km) into settlements.
 - The destruction of the hills has enabled the **Thar desert's** expansion toward the **National Capital Region**, causing increased desertification, higher pollution, and erratic weather.
- **Increase in Mining Area:** From 1.8% in 1975 to 2.2% in 2019.
 - **"Explosive" urbanization and unchecked mining** are key contributors to the ongoing deterioration of the Aravali hills.
 - Over 25% of the Aravallis and 31 hill ranges in Rajasthan have vanished due to illegal quarrying.

Note:

'3.5% OF HILLS TO BE TAKEN UP FOR MINING BY 2059'

RECEDING HILLS

5772.7 sq km

7.6% of total forest land in the Aravalis was flattened between 1975 and 2019

16,360 sq km

21.6% of the Aravalis will be lost by 2059 if the degradation continues, according to projections

MINING RAMPANT

1,650.3 sq km

2.2% of Aravali area where illegal mining was active in 2019

2,628.6 sq km

3.5% of the hills will be taken up for mining by 2059, according to projections



CONSEQUENCES



Desert-like conditions will expand from Thar in Rajasthan towards north India, including Delhi-NCR. Sandstorms may become more frequent.



Loss of wildlife habitat and indigenous flora of the hills.

- Mining contributes to the major air pollution in the NCR region, especially through **Respirable Particulate Matter (RPM)**.
- **Increase in Human Settlements:** From **4.5% in 1975 to 13.3% in 2019**.
- **Forest Cover:** In the **central range dropped by 32%** between 1975-2019, with a significant rise in cultivated land.
 - During 1999 to 2019, the forest area decreased **up to 0.9% of total area**.
 - The average annual **deforestation rate was 0.57%** during the study period.
- **Impact on Water Bodies:** **Water bodies** expanded from **1.7% in 1975 to 1.9% in 1989**, but have since **steadily declined**.
 - Mining to great depths has punctured **aquifers**, disturbing water flow, drying lakes, and creating new water bodies due to depressions left by illegal miners.
- **Impact of Protected Areas in Aravalis:** **Todgarh-Raoli and Kumbhalgarh wildlife sanctuaries** in the central Aravali Range **positively impacted the eco-sensitive zone**, leading to minimal forest depletion.
- **Enhanced Vegetation Index (EVI):** EVI least value of 0 to -0.2 in upper central Aravali region (Nagaur district) - indicating unhealthy vegetation.

Note:



- **Future Projections:** By 2059, the total loss of Aravali area is projected to reach 22% (16,360 sq km), with 3.5% (2,628.6 sq km) of the total area likely to be used for mining.
- Other Major Challenges faced by Aravalis:
 - Significant decline in flora and fauna, including **leopards, striped hyenas, golden jackals, and other species.**
 - Many rivers originating in the Aravallis, like **Banas, Luni, Sahibi, and Sakhi, are now dead.**
 - Loss of natural forests along the Aravallis has escalated human-wildlife conflicts.

What is Enhanced Vegetation Index (EVI)?

- **About:**
 - EVI is an **advanced vegetation index created with higher sensitivity to biomass**, atmospheric background, and soil condition.
 - It is regarded as the modified version of **Normalized Difference Vegetation Index (NDVI)** with a high potentiality of vegetation monitoring by correcting all the external noises.
- **EVI Value Range:**
 - **Ranges from 0 to 1**, with values closer to 1 indicating healthy vegetation and values closer to 0 indicating unhealthy vegetation.

Note:

- **Lantana camara**, a thorny, aromatic shrub that can grow up to 20 feet tall, has invaded large areas of the Aravalli hills in Rajasthan and South Delhi.

What are the Key Facts About Aravalis?

- About:
 - The Aravali Range extends from **Gujarat to Delhi through Rajasthan**, 692 km in length and varies between 10 to 120 km in width.
 - The range acts as a natural green wall, **with 80% located in Rajasthan and 20% in Haryana, Delhi, and Gujarat.**
 - The aravali mountains are divided into two, main ranges – **the Sambhar Sirohi Range and the Sambhar Khetri Range in Rajasthan**, where their extension is about 560 km.
 - It serves as an **ecotone** between the **Thar Desert and the Gangetic Plain.**

- Ecotones are areas where **two or more ecosystems, biological communities, or biotic regions meet.**

- **Gurusikhar (Rajasthan)**, the highest peak in the range, reaches an elevation of 1,722 meters.
- **Significance of Aravalis:**
 - The Aravallis **prevent the Thar Desert from encroaching** on the Indo-Gangetic plains, historically serving as a catchment for rivers and plains.
 - The range **supports 300 native plant species, 120 bird species**, and exclusive animals like jackals and mongooses.
 - During **monsoons**, the Aravallis **direct monsoon clouds eastward**, benefiting sub-Himalayan rivers and North Indian plains. In winter, they **shield fertile valleys from cold westerly winds.**
 - The range **aids in groundwater replenishment** by absorbing rainwater, thus reviving groundwater levels.
 - The Aravallis act as the “**lungs**” for **Delhi-NCR**, mitigating some effects of the **region’s severe air pollution.**

What are the Supreme Court’s Rulings and Legal Notifications on the Aravallis?

- **2018 Ruling:** Banned illegal construction activities in the Aravalli range in Haryana, directing the demolition of the Kant Enclave and reimbursement to investors.
- **2009 Order:** Imposed a ban on mining throughout the Aravallis.
- **2002 Order:** Prohibited mining activities in Haryana due to large-scale degradation.
- **1996 Ruling:** Mandated that mining leases could not be renewed within 2-5 km radius of Badkhal Lake without permission from pollution control boards.
- **Precautionary Principle (1996):** **Supreme Court** established the principle that governments must foresee and prevent environmental degradation without waiting for scientific evidence (**Vellore Citizens Welfare Forum v Union of India**).
- **National Green Tribunal (2010):** Adopted the precautionary principle for environmental decisions under Section 20 of the **NGT Act.**
- **MoEFCC Notification (1992):** Prohibited new industries, mining, deforestation, and construction in the Aravalli range without prior permission from the MoEFCC

Note:

- **Other Measures taken by Government:** Creation of **Commission for Air Quality Management** in the NCR to deal with the Air Pollution menace in the region.
 - To prevent illegal mining in the Aravalis, a seven-member “Aravalli Rejuvenation Board” has been established in Gurugram.

Climate Change Impact on Panama Canal

Why in News?

The **Panama Canal**, a critical global shipping lane, is facing significant challenges due to prolonged drought conditions exacerbated by **climate change**.

- This situation has led to reduced water levels in **Lake Gatun**, prompting discussions about long-term solutions to sustain the Panama canal's operations.

What is the Impact of Climate Change on the Panama Canal?

- **Drought and Reduced Passage of Ships:** The Panama Canal is experiencing a prolonged **drought** that began in early 2023.
 - Rainfall in October 2023 was **43% below average**, making it the driest October since the 1950s.
 - Traffic through the canal dropped to as low as **22 ships per day in December 2023**, down from the usual **36 to 38 ships**, due to low water levels in Lake Gatun.
- **Restriction on Size of Ships:** Lower water levels restrict the size of ships that can pass through the canal, as larger, heavier vessels are at higher risk of **running aground** in shallower waters.
 - Large ships also require more lake water to lift them in the locks.
- **Effect on Global Trade:** The Panama Canal accounts for **5% of global shipping**, so disruptions here affect the worldwide supply chain, resulting in delayed shipments, more fuel usage, and **GDP losses**.
 - Ships are forced to take the long way around i.e., travelling down to the southern points of South America.

What are Key Facts about the Panama Canal?

- **About Panama Canal:**
 - It is an **artificial** 82 kilometers waterway in Panama that connects the **Atlantic Ocean** with the **Pacific Ocean**.



- It cuts across the **Isthmus of Panama**, and is a conduit for maritime trade.
 - It saves approximately 12,600 km in a **trip between New York and San Francisco**.
 - The **first ship** passed through the Panama Canal on **15th August 1914**.
- **Functioning of Panama Canal:**
 - It is a sophisticated, highly-engineered system which uses a system of **locks and elevators** to take ships from one end to the other.
 - This is needed because the **two oceans that the Panama Canal connects do not lie at the same elevation**, with the Pacific slightly higher than the Atlantic.

Note:

- For a ship entering the canal through the Atlantic, it **needs to gain elevation during its journey to the Pacific**. This is achieved using a **lock system** that lifts and drops vessels to the required sea level at either end of the canal.
- Locks are either **flooded (to gain elevation)** or **drained (to lose elevation)**, and act as water elevators.
 - In total, the system comprises **12 locks in total** which are serviced using artificial lakes and channels.

Isthmus of Panama

- An isthmus is a **narrow strip of land that connects two larger landmasses and separates two bodies of water**.
 - They are natural sites for **ports and canals** linking terrestrial and aquatic trade routes.
- The Isthmus of Panama **links the continents of North and South America, and separates the Pacific and Atlantic Oceans**.
- It was formed when the **Caribbean tectonic plate** got pushed between the **North and South American Plates**. The resultant tectonic activity **raised the seafloor**.

Note:

- A **strait is a narrow waterway between two pieces of land** that connects two large bodies of water e.g., **Strait of Gibraltar** links the **Mediterranean Sea** and the **Atlantic Ocean**.
- **Straits are important transportation routes** since they allow ships to pass from one body of water to another.



What are Other Important Canals Around the World?

- **Suez Canal:** The canal connects the **Gulf of Suez and the Mediterranean Sea**, separating Asia from Africa. It extends between Port Said in the north and Suez in the south.
 - It separates **Asia** from the **African** continent and provides the **shortest maritime route** between Europe and the regions around the Indian Ocean and the Western Pacific Ocean.
- **Kiel Canal:** It connects the **Baltic Sea with the North Sea**. Opened in 1895, the 98 km-long Kiel Canal helps vessels bypass the longer route that goes via **Denmark (peninsula of Jutland)**.
- **Corinth Canal:** The Corinth Canal in **Greece** is considered the **world's narrowest canal**. It connects the **Corinthian Gulf** of the Ionian Sea and the **Saronic Gulf** of the Aegean Sea.
- **Kra Isthmus Canal (Thai Canal):** It is a **proposed canal** that would connect the **Andaman Sea to the Gulf of Thailand** across the Kra Isthmus in southern Thailand.
 - The canal would provide a **shortcut** to routes between India and China, **avoiding the Strait of Malacca**.
- **Great Lakes Seaway Navigation System:** In the United States, the five **Great Lakes**, their connecting channels, and the **St. Lawrence River** forms one of the longest navigation systems in the world. The waterway flows from west to east and drains into the **Atlantic Ocean via the St. Lawrence River**.

Nanjarayan and Kazhuveli Bird Sanctuary & Tawa Reservoir as New Ramsar Sites

Why in News?

Recently, the centre declared the **Nanjarayan Bird Sanctuary** and **Kazhuveli Bird Sanctuary** in **Tamil Nadu** and **Tawa Reservoir** in **Madhya Pradesh** as three new wetlands as **Ramsar Sites**.

- With these inclusions, India has increased its tally of **Ramsar sites to 85**.
- Now, **Tamil Nadu** harbours a maximum number of **Ramsar Sites (18 sites)** followed by **Uttar Pradesh (10 sites)**.

Note:

What are the Key Facts About Three New Ramsar Sites?

➤ Nanjarayan Bird Sanctuary:

- It is a large shallow wetland in northeastern Uthukuli Taluk, Tiruppur District, **Tamil Nadu**. Centuries ago, it was restored by a local **King Nanjarayan**.
- Spanning 125.865 hectares, the lake relies on rainfall from **Nallar drainage** and also supports agriculture and groundwater recharge.
- It hosts bird species like Bar-headed Goose, Northern shoveler, Spot-billed Pelican, Heronry.
- Designated as Tamil Nadu's **17th bird sanctuary**, it is actively protected and managed by the local community and forest department.

➤ Kazhuveli Bird Sanctuary:

- It spans over 5151.6 hectares on the **Coromandel Coast** in Villupuram district, north of **Pondicherry**.
- This large brackish lake, connected to the Bay of Bengal via the **Uppukalli creek and Edayanthittu Estuary**, is a vital wetland with diverse water features like estuarine, creek-fed brackish, and freshwater basins.
- In areas of brackish water, highly degraded mangrove patches containing **Avicennia species** are found.
- Also, in this area, reed (*Typhaangustata*) is found in several hundred hectares.

➤ The Tawa Reservoir:

- It is situated at the confluence of the **Tawa and Denwa rivers** near **Itarsi town**, was originally built for irrigation and now also supports power generation and aquaculture.

- The reservoir lies within the **Satpura Tiger Reserve**, bordering the **Satpura National Park** and **Bori Wildlife Sanctuary**.
- **River Malani, Sonbhadra, and Nagdwari** are the major tributaries of the Tawa reservoir.
- The **Tawa River**, a left-bank tributary, originates in the **Mahadeo Hills of Chhindwara district**, flows through **Betul district**, and meets the **Narmada River** in Narmadapuram district.
 - It is the longest tributary of the Narmada river.
- The reservoir hosts Spotted deer and Painted Stork.

What is the Ramsar Convention?

- The **Ramsar Convention** is an international treaty signed in 1971 in Ramsar, Iran, under the auspices of **UNESCO**, aimed at conserving wetlands of international importance.
 - In India, **it came into force on 1st February 1982**, under which wetlands of international importance are declared as Ramsar sites.
- **Montreux Record** is a register of **wetland sites** of International Importance where **changes in ecological character have occurred, are occurring**, or are likely to occur as a result of technological developments, pollution or other human interference.
 - It is maintained as part of the **Ramsar List**.

Read more: [Amrit Dharohar Capacity Building Scheme](#)



Note:



drishti

Art and Culture

Highlights

- *Martand Sun Temple Glows in Tricolor*

Martand Sun Temple Glows in Tricolor

Why in News?

The **Martand Sun Temple** in Anantnag district, J&K has been illuminated with the **tricolors** of the Indian flag as part of the Independence Day celebrations.

- The illumination has filled local residents and tourists with a deep sense of **pride and joy**, drawing large crowds to witness this historic moment.

What are Key Facts About Martand Sun Temple?

- **Construction:** The Martand Temple was constructed around 1200 years ago by King **Lalitaditya Muktapida** of the **Karkota dynasty**, who ruled Kashmir from 725 AD to 753 AD.
 - It was dedicated to Martand, the **Sun god**, and featured grand architecture with influences from **Egyptian, Greek, and Gandharan styles**.
 - The temple had massive **grey stone walls** and a courtyard filled with river water, symbolising its grandeur and significance in **Kashmiri architecture**.
- **Historical Reference:** The temple's history is documented in the **Rajatarangini**, written by Kalhana in the 12th century.
- **Architectural Features:** The temple had three distinct chambers i.e., the **mandapa, garbhagriha, and antralaya**, making it unique among Kashmiri temples.
 - The ruins suggest the temple was surrounded by a **peristyle of 84 pillars**, a characteristic of Kashmiri temple architecture.
 - The use of **lime mortar** in the construction, unusual for its time, suggests the involvement of immigrant **Byzantine architects**.
- **Cultural Assimilation:** The Martand Temple's architecture shows a confluence of styles, including

Classical **Greco-Roman, Buddhist-Gandhara, and North Indian**, reflecting Kashmir's historical connections with various cultures and empires.

- **Association with Harsha:** **King Harsha** (1089 AD to 1101 AD) of the first **Lohara dynasty** who looted temples for treasure, is noted for **sparing the Martand Temple**, unlike other temples which he desecrated for wealth.
- **Destruction:** The temple is believed to have been partially demolished by **Sultan Sikandar Shah Miri**, who ruled Kashmir from 1389 to 1413, though this is disputed by some historians.
 - Today, the temple stands partially intact with its impressive **grey walls** and carved deities still visible.
- **Current State:** The ruins of the temple have been protected by the **Archaeological Survey of India (ASI)**, including during the decade of militancy in the 1990s, as a "**monument of national importance**".

Kashmiri Temple Architecture

- The **Kashmiri temple architecture** has its unique features suited to local geography and are renowned for its exquisite stone carvings.
- Due to its location on the important trade routes, the architectural style is inspired by many foreign sources.
- Temple-making **reached a great height under the rulers of Karakota dynasty and Utpala dynasty**.
- The **main features of Kashmir style of architecture are:**
 - Trefoil arches (Gandhara influence)
 - Cellular layout and Enclosed courtyard
 - Straight-edged Pyramidal roof
 - Column walls (Greek influence)
 - Triangular pediments (Greek influence)
 - Relatively more number of steps.



Note:

History

Highlights

- Colonisation of Indigenous Tribes
- 130th Anniversary of Natal Indian Congress

Colonisation of Indigenous Tribes

Why in News?

Recently, **New Zealand's Māori King**, Kiingi Tuheitia Pootatau Te Wherowhero VII, died, days after the celebration of his 18th year on the throne.

- He was the 7th monarch in the **Kiingitanga movement** (Māori King movement).
 - The **Kiingitanga movement** was founded in **1858** to **unite New Zealand's Indigenous Māori tribes** in the face of British colonisation.
 - The movement's primary goals were to end the sale of land to non-Indigenous people and stop inter-tribal warfare.

What were the Various Indigenous Tribes Colonised by Europeans?

- **Māoris in New Zealand:** New Zealand transitioned from an **exclusively Māori world** to one dominated by **Pākehā (Europeans)** in terms of population, politics, society, and economy.
 - This transformation took place between **Captain James Cook's arrival in 1769** and the outbreak of the **First World War in 1914**.



Note:



- Māori and Europeans indulged in **several conflicts** in New Zealand over land ownership and British control of indigenous resources. E.g., **Wairau Valley clash (1843), Flagstaff War (1845-46), Waikato War (1863-64)** etc.
- **Aboriginals in Australia:** Aboriginal land was taken over by British colonists on the premise that the land belonged to “no-one” (“terra nullius”).
 - Aboriginals had associations with land on a **spiritual and inheritance basis**. Nonetheless, they did not believe in British sovereignty.
 - Australia’s colonisation resulted in a **drastic decline** in the Aboriginal population.
 - Many Indigenous men, women and children died of introduced **diseases** to which they had **no resistance** such as **smallpox, influenza and measles**.
 - Many also died in random killings, punitive expeditions and **organised massacres e.g., the Myall Creek massacre (1838)**.
- **Red Indian of North America:** The European colonisation of the Americas that began in **1492** resulted in a **substantial decline** in the size of the **Native American population** because of newly introduced diseases like **Smallpox**.
 - By the close of the Indian Wars in the late **19th century**, fewer than **238,000 Indigenous people** remained, a sharp decline from the estimated **5 million to 15 million** living in North America when Columbus arrived in **1492**. E.g., **Gnadenhutten Massacre (1782)**.
- **Boer War in South Africa:** Between **1899 and 1902**, the British Army fought a bitter colonial war against the **Boers in South Africa**.
 - Boers were South Africans of Dutch or German descent, especially one of the **early settlers** of the Transvaal and the Orange Free State.
- **Massacre in Africa:**
 - **Namibia:** In Namibia, **German colonial authorities** brutally suppressed uprisings by the **Herero and Nama people**, who resisted the expropriation of their lands, livestock, and resources.
 - **Congo:** The **Congo Free State**, a personal colony of **King Leopold II of Belgium**, became notorious for extreme violence against indigenous people, including **mutilation, torture, and mass killings**, to enforce rubber quotas.

- **Libya:** During Italy’s colonial rule in **Libya**, the indigenous **Bedouin and Senussi tribes** resisted Italian attempts to expropriate their lands and resources.
 - Italy employed brutal counterinsurgency tactics, including **concentration camps and mass executions**. An estimated **80,000 to 100,000 Libyans**, a significant portion of the population, perished during this period.

What is Colonialism?

- Colonialism is defined as “**control by one power over a dependent area or people.**”
- It occurs when one nation **subjugates** another, conquering its population and exploiting it, often while forcing its **own language and cultural values** upon its people.
- By **1914**, a large majority of the world’s nations had been colonised by **Europeans** at some point.
- Prominent colonists were **Portugal, Spain, England, the Netherlands, France, and Germany**.
- Even former colonies eventually became colonists themselves. E.g., The **U.S.**, which was formerly held by Great Britain, extended its territory shortly after winning the War of Independence and later expanded its claims to the **Pacific and Latin America**.
- **India** was colonised by the **British Empire** for over **200 years**. The **British East India Company**, supported by the British crown, gradually conquered much of India throughout the **18th century**.

What are the Remnants of Colonial Possession in the Modern World?

- **French Guiana:** **French Guiana** is located on the North Atlantic coast of **South America**.
 - French Guiana is a **European presence** in South America.
 - French Guiana is governed by the provisions of the **French constitution** as a territorial collectivity of France.
 - It forms an **integral part of the French Republic**.
- **Falkland Islands:** The **Falkland Islands** are an overseas territory of the **United Kingdom**, but they are also claimed by **Argentina**, which calls them **Las Malvinas**.
 - In **1982**, a **war** was fought between Argentina and Great Britain over control of the Falkland Islands.

Note:

- **Réunion Islands:** It was settled by the **French** in the 17th century. It is one of the many **French Overseas Territories**.
- **Guam Islands:** The United States occupied the **Guam Islands** in the **North Pacific Ocean** in the aftermath of the **Spanish-American War of 1898**. It is home to a large US **military base**.
- **British Indian Ocean Territory (BIOT):** **BIOT** is an archipelago of **58 islands** covering some 640,000 sq km of ocean. It is administered from London and is located approximately halfway between **East Africa and Indonesia**.

What are the Present Day Challenges to Indigenous People?

- **Green Colonialism:** **Global North** countries promote **militarised fortress conservation models** in countries of the **Global South**.
 - **Global North** often targets territories of **indigenous peoples**, who are **driven off** so that those lands can be incorporated into **national parks**.
 - This phenomenon is called '**green colonialism**' and explains how '**Big Green**' conservation NGOs from the Global North are reinforcing colonial power over Indigenous Peoples.
- **Neocolonialism:** Neocolonialism is a form of imperialism where a state uses **economic, political, and psychological pressure** to control and exploit another country, while maintaining the appearance of **national sovereignty**.
 - It is a system where **former colonial powers and new superpowers** use economic and political strategies to maintain control of a region. E.g., **US invasions of Vietnam and Afghanistan, US invoking regime change in unfriendly countries**.
- **Impact of Climate Change:** Indigenous peoples are among the first to face the direct consequences of **climate change**.
 - Climate change threatens the habitats and ecosystems on which Indigenous people rely for food, water, medicine, livelihood, and cultural identity.
- **Encroaching on their Right to Self-Determination:** Many indigenous peoples are denied the **right to freely choose their own government** or political systems. E.g., Indonesian government has employed military and police forces to **suppress dissent and resistance in West Papua**.

- This is despite the fact that indigenous peoples were governing themselves freely for thousands of years prior to the arrival of colonists from the 15th century onwards.
- **Forced Assimilation:** During the 19th and 20th centuries, Canada removed Indigenous children from their families and placed them in **federally funded boarding schools**, with the intent of **assimilating** them into broader Canadian society.
 - At these "**Indian Residential Schools**", they were not allowed to speak their languages or express their cultural heritage and identities.
- **Trespassing on their Right to Cultural Lands:** Indigenous Peoples' lands which are home to over **80% of our planet's biodiversity** and often rich in natural resources, such as **oil, gas, and minerals** are routinely appropriated, sold, leased or simply plundered and polluted by vested authorities.

130th Anniversary of Natal Indian Congress

Why in News?

Recently, 22nd August 2024 marked the 130th foundation year of **Natal Indian Congress (NIC)** which was established in **August 1894**, based on a proposal by **Mahatma Gandhi** on 22nd May 1894.

- It was formed to fight discrimination faced by Indians in South Africa.

What was the Natal Indian Congress?

- The **Natal Indian Congress (NIC)** was the **first Indian Congress** established, founded by **Mahatma Gandhi** in **1894** to **fight against discrimination** faced by Indian in Natal (province of South Africa).
- From the 1920s, the NIC operated under the **South African Indian Congress (SAIC)**.
- The organisation underwent a shift towards more **radical leadership** in the **1930s-1940s** with the emergence of **Dr. G.M. Naicker**, who became its leader in 1945.
- The NIC's increased militancy led to the **imprisonment of several leaders** by the 1950s and 1960s.
- Despite **not being officially banned**, repression and harassment led the NIC to halt activities until its **revival in 1971** with a focus on civic work.

Note:

- In the mid-1980s, the NIC was key in forming the **United Democratic Front (UDF)**.
 - The UDF's goal was to establish a “**non-racial, united South Africa**”.

What was the Role of Mahatma Gandhi in Satyagraha in South Africa?

➤ **Mobilisation of Indian Community and Satyagraha:**

- **Natal Satyagraha:** On 7th June 1893, Mahatma Gandhi faced racial discrimination when he was forced off a first-class train compartment at Pietermaritzburg railway station in South Africa. This incident ignited his spirit of civil disobedience through his **first non-violent protest** in the **Natal Satyagraha**.
 - Gandhi established the **Natal Indian Congress (NIC)** to unite the Indian community and address issues like voting rights and discriminatory laws.
- **Transvaal British Indian Association:** In 1903, Gandhi founded this association to continue **advocating for rights of Indian**, particularly against increasing restrictions in the Transvaal region.
- **Launching Satyagraha:** In 1906, **Gandhiji initiated his first satyagraha** (nonviolent resistance) campaign in Johannesburg against the **Asiatic Registration Act**, leading to mass protests and civil disobedience.
 - The **Asiatic Registration Act of 1906** in Transvaal required male Asians, particularly Indians and Chinese, to **register, provide fingerprints, carry a registration certificate**, and submit to physical examinations. It aimed to **control and restrict the entry and movement of Asians** in the region.
 - Indians in South Africa resisted a discriminatory law by forming the **Passive Resistance Association**. They publicly burned their registration certificates, which brought negative attention to the South African government. Ultimately, the conflict ended with a compromise settlement.

➤ **Organising the Ambulance Corps:**

- During the **Anglo-Boer War (1899-1902)**, Gandhi formed an Ambulance Corps of **Indian volunteers to support the British**, hoping for improved treatment of Indians, though this **hope was not realised**.

➤ **Establishment of Communal Living:**

- Gandhi founded the **Phoenix Settlement in Durban in 1904** as a community living experiment.
 - He had set up this farm after being inspired by a reading of **John Ruskin's Unto This Last**, a critique of capitalism.
- He established the **Tolstoy Farm near Johannesburg in 1910** to prepare Satyagrahis (followers of nonviolence).
- These initiatives aimed to foster self-reliance, promote communal harmony, and provide training in practical skills.

➤ **1913 Satyagraha Campaign:**

- Gandhi led a major satyagraha against the **poll tax, Registration of Marriages Act**, and passed laws, with significant participation from Indian women, including his wife, Kasturba.
 - Also, the Supreme Court had **invalidated all marriages not conducted according to Christian rites**, drawing the anger of the Indians and others who were not Christians.

➤ **Legal Reforms and Recognition of Indian Rights:**

- The sustained pressure from Gandhi's protests forced the South African government to pass the **Indian Relief Act, 1914** addressing several of the Indian community's grievances.

➤ **Impact of Gandhian Movements:**

- **Development of Satyagraha:** Gandhi's experiences in South Africa were crucial in developing his **philosophy of nonviolent resistance**, which he later applied in India's struggle for independence.
- **Global Impact:** Gandhi's methods in South Africa laid the foundation for **future civil rights movements** worldwide and significantly influenced global efforts against **racial and colonial oppression**.
 - Both **Nelson Mandela** and **Martin Luther King** were greatly influenced by Gandhiji and his satyagraha.

Note:

Mohandas Karamchand Gandhi



“The weak can never forgive. Forgiveness is the attribute of the strong.”

Brief Description

Birth: 2nd October 1869, Porbandar (Gujarat).

2nd October is observed as **International Day of Non-Violence**.

Profile: Lawyer, Politician, Social activist, Writer and led Nationalist Movement.

Father of the Nation (first called by Netaji Subhash Chandra Bose).

Ideology: Believed in the ideas of non-violence, Truth, Honesty, Care for Mother Nature, Compassion, Welfare of Downtrodden etc.

Political Mentor: Gopal Krishna Gokhale

Death: Shot dead by Nathuram Godse (30th January, 1948).

30th January is observed as **Martyrs' Day**

Nominated for the Nobel Peace Prize five times.



Gandhi in South Africa (1893-1915)

Used satyagraha against racist regime (Native Africans and Indians were discriminated).

Pravasi Bharatiya Divas (PBD) is celebrated every year on 9th January, to commemorate his return from South Africa.

Contribution in India's Freedom Struggle

Small-scale movements like Champaran Satyagraha (1917)—First Civil Disobedience, Ahmedabad Mill Strike (1918)— First Hunger Strike, and Kheda Satyagraha (1918)—First Non-Cooperation.

Nationwide Mass Movements: Against Rowlatt Act (1919), Non-Cooperation Movement (1920-22), Civil Disobedience Movement (1930-34), Quit India Movement (1942).

Gandhi-Irwin Pact (1931): Between Gandhi and Lord Irwin that marked the end of a period of civil disobedience.

Poona Pact (1932): Between Gandhi and **B.R. Ambedkar**; this abandoned the idea of separate electorates for the depressed classes (Communal Award).



Books Written

Hind Swaraj, My Experiments with Truth (Autobiography)

Weeklies

Harijan, Navjivan, Young India, Indian Opinion.

Gandhi Peace Prize

is given by India for social, economic, and political transformation through Gandhian methods.

“Happiness is when what you think, what you say, and what you do are in harmony.”

“You must not lose faith in humanity. Humanity is an ocean; if a few drops of the ocean are dirty, the ocean does not become dirty”



Note:

Geography

Highlights

- Transboundary Rivers of India
- Cold War Data Challenges Climate Model Accuracy
- Waterspout
- Kosi-Mechi River Linking Project

Transboundary Rivers of India

Why in News?

Bangladesh has recently faced severe **floods**, leading to concerns that the water might be coming from the **Dumbur dam in Tripura**, India.

- However, the Indian government has clarified that the flooding is caused by heavy rainfall in the larger catchment areas of the **Gumti River**, which flows through both nations, rather than the dam's water release.

Gumti River and Dambur Dam and Dumboor Lake:

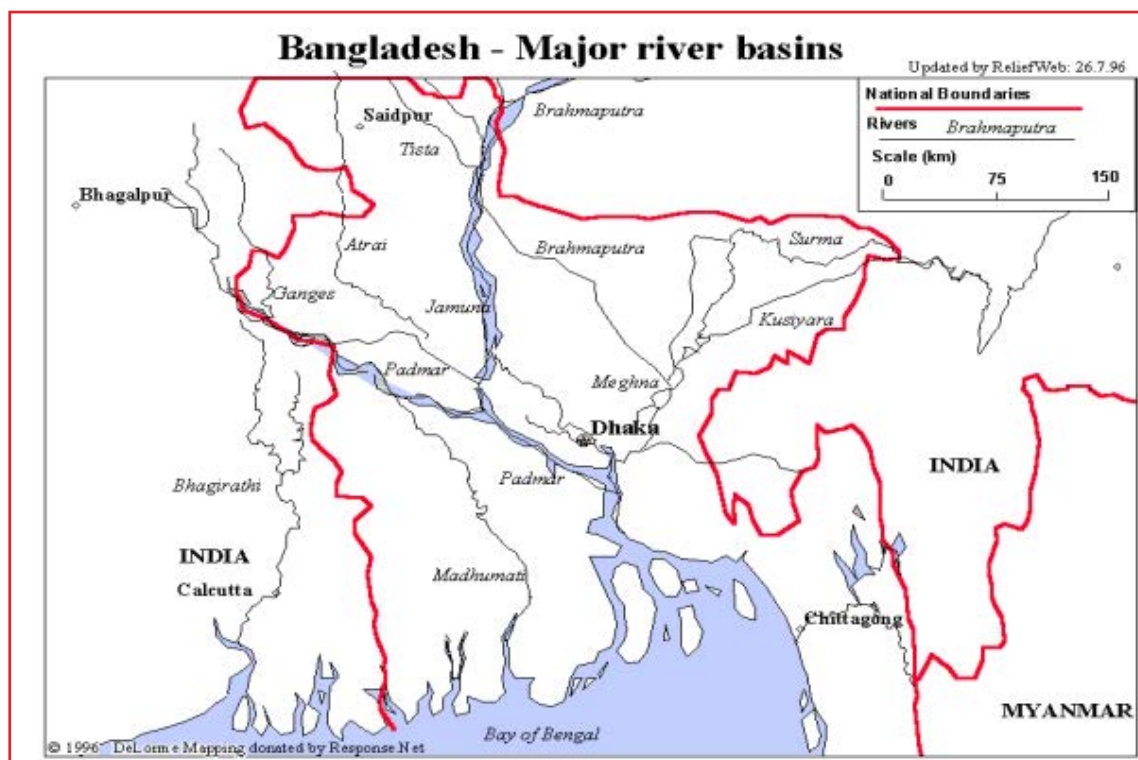
- **Gumti River:**
 - It is also known as Gomti, Gumati, or Gomati, which originates in **Tripura** and flows through the district of Comilla in Bangladesh.
 - The **right bank tributaries** of Gumti river include **Kanchi Gang, Pitra Gang, San Gang, Mailak Chhara, and Surma Chhara**, while the **left bank tributaries** are **Ek Chhari, Maharani Chhara, and Ganga**.
- **Dumbur Dam:**
 - It is built upon the **Gumti river** in Tripura.
 - It is 30 metres in height and generates power that feeds into a grid. Bangladesh draws **40 megawatts (MW)** of power from Tripura.
- **Dumboor Lake:**
 - It is situated in **Gandacherra, near Agartala** and is near the **Tirthamukh Hydrel Project**, the source of the Gomati River.
 - Formed by the confluence of the **Raima and Sarma rivers**, it is known for its diverse fish species.
 - The lake hosts the annual '**Poush Sankranti Mela**' on 14th January every year.

What are the Transboundary Rivers of India with Neighboring Countries?

- **India-Bangladesh:** India and Bangladesh share **54 rivers**, with India having the most rivers flowing into the Bay of Bengal via Bangladesh. **Major rivers are:**
 - **The Ganges (Padma in Bangladesh):** This major river flows from India into Bangladesh, **traversing the Gangetic plain of North India**.
 - Major left-bank tributaries include the **Gomti, Ghaghara, Gandak and Kosi**.
 - Major right-bank tributaries include the **Yamuna, Son, Punpun and Damodar**.
 - **Ghaghara:** Originating in the Tibetan Plateau, it joins the Ganges near Patna and is notable for its high discharge, especially during the monsoon.
 - **Son River:** Flowing through the Kaimur Range, it covers 487 miles before joining the Ganges above Patna, Bihar.
 - In Bangladesh, the Ganges has only one tributary, the **Mahananda**, while it has distributaries such as the Ichamati, Nabaganga, Bhairab, Kumar, Goari Madhumati, and Arial Khan.
 - **Teesta:** It originates in the **Himalayas** and flows through Sikkim and West Bengal before **merging with the Brahmaputra in Assam and the Jamuna (called Brahmaputra in India) in Bangladesh**.
 - Bangladesh is advocating for a fair allocation of Teesta River waters from India, similar to the **Ganga Water Treaty of 1996**. However, this request has not been successful.
 - The **1996 Ganges Water Treaty** between Indian and Bangladesh aimed to **resolve disputes between India and Bangladesh over water flow entitlements**, which **emerged after the Farakka Barrage** was built in 1975 to **divert Ganges water to the Hooghly River for maintaining Calcutta port**.

Note:

- **Feni:** This river flows 135 km south of Agartala, the capital of Tripura. Out of its 1,147 square km catchment area, 535 square km is in India, with the remainder in Bangladesh.
 - It forms part of the India-Bangladesh border.
 - **Maitri Setu**, a 1.9 km Long Bridge over Feni River, is constructed in Tripura to link India and Bangladesh.
 - Some notable tributaries of the Feni River include the **Muhuri River, Raidak River, Chandkhira River, Ryang River, and Kushiya River.**
- **Kushiya River:** It is a distributary of the **Barak River**, originates at the **Amlshid bifurcation point** on the **India-Bangladesh border**, where the Barak divides into the **Kushiya** and **Surma** rivers.
 - It begins in Assam and gathers tributaries from Nagaland and Manipur.
- **Brahmaputra River:** It originates from **Chemayungdung glacier** as the **Yarlung Tsangpo** in **Tibet** near **Mount Kailash**, flows through India and Bangladesh forming a **natural border** between the two countries.
 - It passes through **Arunachal Pradesh, Assam, and Meghalaya** before entering **Bangladesh** (called as the **Jamuna**).
 - Major tributaries include the **Subansiri, Kameng, Manas, and Dhansiri** rivers in India, and the **Teesta River** in Bangladesh.
 - The Brahmaputra River joins the Ganga River in Bangladesh, forming the **Padma River**, which then merges with the **Meghna River** and flows into the Bay of Bengal through the **Meghna Estuary**.
- **Meghna:** Barak river in India divides into 2 streams **Surma and Kushiya** in Karimganj district in Assam. Surma and Kushiya rejoin at **Kishoreganj district in Bangladesh** to be known as Meghna.
 - Upto Chandpur in Bangladesh, it is known as Upper Meghna and after meeting Padma in Chandpur, it is known as Lower Meghna.
- **Jamuna (called Brahmaputra in India):** Jamuna is a **distributary of Brahmaputra**, separating from the mainstream at the point where **Brahmaputra meets Teesta** in Bangladesh, and flows with the name Jamuna till **Goalundo ghat in Bangladesh** where it meets **Padma river (called Ganga in India)**.



Note:



- **India-China:** The Trans-border rivers flowing from China to India fall into two main groups.
 - **Brahmaputra River System:** The **Brahmaputra river system** on the eastern side, which consists of river **Siang** (main stream of river Brahmaputra) and its tributaries, namely **Subansiri** and **Lohit**, with the river Brahmaputra called Yaluzangbu or Tsangpo in China; and
 - **Indus River System:** The **Indus River system** on the western side, consisting of river **Indus** and the river **Sutlej**.
 - There are two MoUs signed between India and China for provision of hydrological information on these two rivers by China to India.

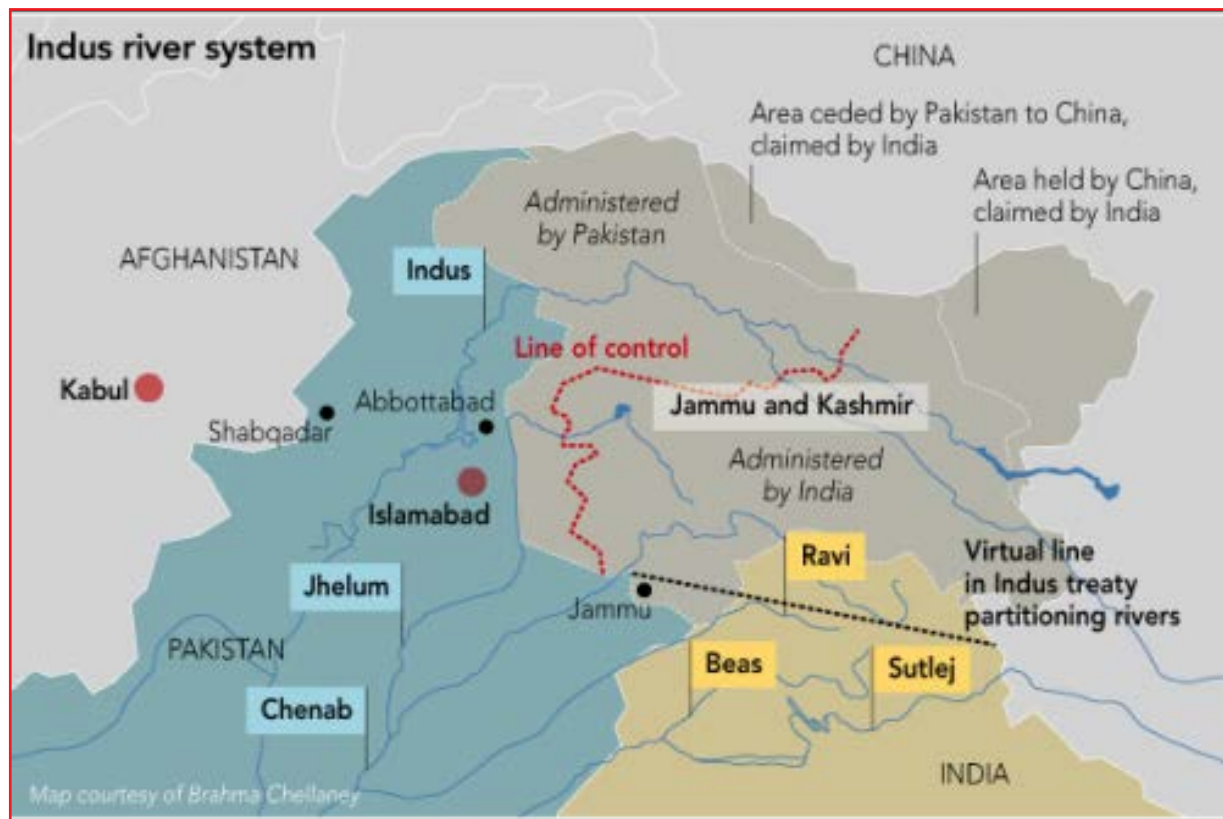
The Ganges-Brahmaputra Basin



- **India-Pakistan:**
 - **Indus River:** The **Indus** is a trans-boundary river in Asia that **originates in Western Tibet**, flows northwest through the Kashmir, and then continues south-by-southwest through Pakistan, eventually emptying into the Arabian Sea near Karachi.
 - The water of the Indus River and other west-flowing rivers from India has been a **contentious issue** between India and Pakistan since independence.
 - **Sutlej:** It is a major tributary of the Indus River, originating at **Rakas Lake** in Pakistan.
 - It flows parallel to the Indus for about 400 kilometres, enters India through **Himachal Pradesh's Shipki La Pass**, and continues through Punjab.
 - There, it meets the **Beas River**, forming part of the **India-Pakistan border** before joining the **Chenab River**.
 - The combined flow creates the **Panjnad River**, which empties into the Indus.
 - **Chenab:** It is a major tributary of the Indus River, originating from the confluence of the **Chandra and Bhaga streams at Tandri** in **Himachal Pradesh**.
 - Known as Chandrabhaga in its upper reaches, it flows west through **Jammu and Kashmir** and then southwest into Pakistan.

Note:

- It descends into the **Punjab** province's alluvial lowlands and **meets the Jhelum River near Trimmu** before emptying into the **Sutlej River**.
- **Jhelum:**
 - Originating from **Verinag Spring in the Kashmir Valley**, it travels through Jammu and Kashmir and Punjab.
 - It passes through Srinagar and **Wular Lake**, entering Pakistan through a **gorge near Gilgit** and merging with the **Chenab River** near Jhang.
- **Beas:**
 - The Beas River originates at **Beas Kund near Rohtang Pass** in **Himachal Pradesh**.
 - It flows through the **Kullu valley** and joins the Sutlej River at **Harike** in Punjab.
- **Ravi:**
 - Ravi River originates at **Bara Bangal of Kangra district**, Himachal Pradesh, and flows through Bara Bansu, Tretha, Chanota and Ulhansa, covering 158 km before entering Punjab state.
 - Its famous tributaries are **Budhil, Siul, Baljeri, Chatrari and Baira**.
- The **1960 Indus Waters Treaty** has allocated control of the **Beas, Ravi, and Sutlej rivers to India** and the **Indus, Chenab, and Jhelum rivers to Pakistan**.



➤ **India-Nepal:**

- The **Kosi** and **Gandak** are major rivers from Nepal that flow into India. Other significant rivers include the **Rapti, Narayani, and Kali**.
- These rivers, which enter India from Nepal, primarily originate in the **Tibetan Plateau** and the **Himalayan ranges**.
- **Kosi:**
 - The Kosi River, a transboundary river flowing through **China, Nepal, and India**, is a major **tributary of the Ganges**.

Note:

- Originating from the confluence of the **Sun Kosi, Arun Kosi, and Tamur Kosi** in the Himalayas, it flows through Nepal and Bihar before **joining the Ganges** in Bihar.
- Kosi is known for its frequent course changes and flooding, earning it the nickname “**sorrow of Bihar.**”
- **Gandak:**
 - It is also known as the **Gandaki or Narayani River**, flows through northern India and Nepal.
 - Originating in Tibet near the Nepal border at an altitude of 7,620 metres.
 - It passes through **Bihar and Uttar Pradesh** before merging with the Ganges near Patna.
 - Major tributaries include the **Mayangadi, Bari, Trisuli, Panchand, Sarhad, and Budhi Gandak.**
- **Sharda/Kali/Mahakali River:**
 - It originates at **Kalapani in Uttarakhand**. It flows along the western border of **Nepal and India**.
 - After merging with the **Ghaghra River** and passing through the hills as the Kali River, it enters the Terai plains and is known as the **Sharda River**.
 - The **Pancheshwar Dam**, a joint **India-Nepal** project for irrigation and hydroelectric power, has been proposed for this river.
 - India and Nepal have traditionally disagreed over the interpretation of the **Sugauli Treaty 1816**, which delimited the boundary along the **Maha Kali River in Nepal**, with the two countries differing as to which stream constitutes the source of the river.

Cold War Data Challenges Climate Model Accuracy

Why in News?

Recently, a study published in the *journal Science* by an international team of researchers has shed new light on the accuracy of current climate models. By analyzing data from nuclear bomb tests conducted during the **Cold War**, scientists have found that these models **may be overestimating how long plants retain carbon.**

- This discovery has significant implications for understanding the **carbon cycle** and its role in **climate change mitigation efforts.**

What are the Key Highlights of the Study?

- **Radiocarbon Data Usage:** The Cold War nuclear tests, though devastating, have provided a unique opportunity for climate research. **Radioactive isotopes like carbon-14** released during these tests have been used to track carbon movement in the atmosphere.
 - In 1963, the **Limited Test Ban Treaty (LTBT)** prohibited nuclear testing over land, air, and under water, leading to a **steady drop in atmospheric radiocarbon concentration.**
 - The study **utilised radiocarbon data between 1963 and 1967** to observe changes in atmospheric carbon levels and plant absorption rates.
 - Radiocarbon bonds with **oxygen to form CO₂**, which plants and vegetation absorb during **photosynthesis** to produce food and energy, as suggested by the models.
 - This data revealed that **plants might be absorbing and releasing carbon more quickly than previously estimated.**
- **Carbon Storage in Plants:** Researchers found that **plants absorb more CO₂ from the atmosphere during photosynthesis than previously estimated** but also release it back into the environment more quickly.
 - Previous estimates indicated that **vegetation worldwide stores 43-76 billion tonnes of carbon annually**, but the new study **proposes this could be around 80 billion tonnes.**
 - The **faster cycling of carbon between plants and the atmosphere** indicates that current climate models may need adjustments, challenging earlier models of **carbon sequestration.**
- **Implications for Climate Models:** The findings indicate that **current climate models may overestimate** how long plants hold onto carbon, necessitating adjustments to improve accuracy.
 - The study points out that many climate models, including those used in the **Coupled Model Intercomparison Project (CMIP) by World Climate Research Program**, have not adequately incorporated radiocarbon data.
 - This lack of data integration may lead to inaccuracies in carbon storage and climate projections.

Note:

- The 'Community Earth System Model 2' developed in the US was the **only model that accounted for radiocarbon in its simulations**, but it predicted that plants had absorbed much less radiocarbon than what was found.
- **Future Implications:** The study underscores the **need for improved climate models with better representation of isotopes** like radiocarbon for more accurate predictions is crucial for refining future climate assessments and enhancing model accuracy.

What is the Carbon Cycle and its Impact on Climate?

- **About:** The **carbon cycle describes the flow of carbon** through different reservoirs on Earth, including the atmosphere, hydrosphere, lithosphere, and biosphere.
- **Impact of the Carbon Cycle on Climate:** The carbon cycle helps regulate atmospheric CO₂ levels, maintaining a balance between **carbon sources (e.g., respiration, combustion) and sinks (e.g., forests, oceans)**.
 - Variations in CO₂ levels affect the **greenhouse effect**, which influences global temperatures and climate patterns.
 - Oceans absorb a significant portion of atmospheric CO₂. Increased CO₂ levels lead to **higher carbonic acid concentrations, causing ocean acidification**.
 - Activities such as deforestation reduce the land's capacity to sequester carbon, leading to higher atmospheric CO₂ levels.
 - Warming temperatures can **thaw permafrost**, releasing stored **methane**, a potent greenhouse gas, which further accelerates climate change.

What are Climate Models?

- **About:** Climate models are essential **tools for understanding and predicting climate change**. They use mathematical **equations to simulate the Earth's climate system**, including interactions **between the atmosphere, oceans, land surface, and ice**.
 - These models help scientists project **future climate conditions based on various greenhouse gas emission scenarios** and assess potential impacts on weather patterns, sea levels, and ecosystems.
 - Climate Models provide essential **information to inform decisions on water resource management, agriculture, transportation, and urban planning**.

- **Climate Models and Weather Prediction Models:** Unlike weather forecasts, which predict specific daily conditions, climate models **provide probabilistic projections** of long-term climate patterns and trends.
 - Climate models **focus on global patterns and historical weather records** under similar conditions, rather than short-term predictions.

Waterspout

Why in News?

Recently, a **luxury yacht sank** after being struck by a **violent storm off the coast of Sicily, Italy**. Experts believe the storm may have been a **waterspout**, which is a **tornado-like phenomenon that forms over water**.

What is a Waterspout?

- **About:**
 - A waterspout is a **rotating column of air and mist that forms over a body of water**. It is **less intense than tornadoes** and usually persists for about 5-10 minutes.
 - On average, a waterspout has a **diameter of approximately 165 feet and wind speeds reaching 100 kilometers per hour**.
- **Types of Waterspouts:**
 - **Tornadic Waterspouts:** They are tornadoes that either **develop over water or move from land to water**.
 - As per **National Oceanic and Atmospheric Administration (NOAA)**, they are linked to severe **thunderstorms** and are often **accompanied by strong winds, rough seas, large hail, and frequent dangerous lightning**.
 - Tornadic waterspouts can be significant in size and **capable of causing substantial destruction**.
 - **Fair-Weather Waterspouts:** This type of waterspouts are **far more common and form exclusively over water**.
 - They develop during calm weather conditions and are typically smaller and **less dangerous than tornadic waterspouts**.

Note:

INSIDE A TORNADO

A tornado occurs when a rotating column of air forms between thunderclouds and the ground. The most destructive tornadoes usually arise from supercells, which are strong, rotating thunderstorms.

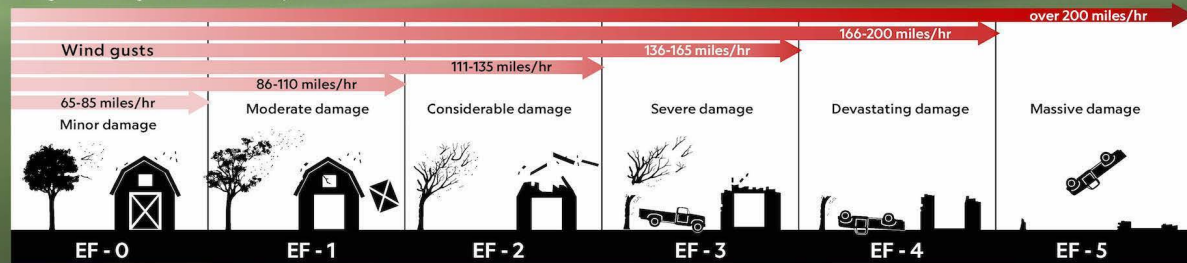
Winds at higher altitudes move faster and in a different direction than winds at lower altitudes. This is called wind shear. As a result, the storm will begin to tilt and rotate.

Warm, wet air gets pulled upward and forms a funnel. At the same time, cooler air falls toward the ground. This helps concentrate the funnel's rotation and brings it closer to the ground.

If the funnel reaches the ground, it becomes a tornado. Scientists don't know why some funnels reach the ground and others don't.

Tornado Categories

After a tornado has hit, experts assess the damage and rate the tornado's strength according to the Enhanced Fujita Scale.



Cyclones are given different names in different regions of the world:

- **Typhoons:** In the China Sea and Pacific Ocean
- **Hurricanes:** In the West Indian islands in the Caribbean Sea and Atlantic Ocean
- **Tornadoes:** In the Guinea lands of West Africa and southern USA
- **Willy-willies:** In north-western Australia
- **Tropical cyclones:** In the Indian Ocean

Kosi-Mechi River Linking Project

Why in News?

The Kosi-Mechi River Linking Project, part of India's ambitious **National Perspective Plan (NPP) for interlinking rivers**, has become a point of contention. **Flood** victims in Bihar have protested against its implementation.

- The project is aimed at improving irrigation in the region. However, locals argue that it **fails to address the critical issue of flood control**, which affects them annually.

What are the Key Facts About the Kosi-Mechi River Linking Project?

- **About:** The project involves linking the **Kosi River** with the **Mechi River**, a tributary of the **Mahananda River**, impacting regions in Bihar and Nepal.
 - Aims to provide annual irrigation to 4.74 lakh hectares (2.99 lakh hectares in Bihar) and 24 million cubic meters (MCM) of domestic and industrial water supply.

Note:

- Upon completion, the project is expected to release an additional 5,247 cubic feet per second (cusecs) of water from the Kosi barrage.
- The project is overseen by the **National Water Development Agency (NWDA)**, under the **Union Ministry of Jal Shakti (Water Resources)**.
- **Concerns:** The project is designed primarily for irrigation purposes, with an aim to support 215,000 hectares of agricultural land in the Mahananda river basin during the **Kharif season**.
- Despite government claims, the project does not have a **significant flood control component**, which is a major concern for the flood-prone region.
- The project will release only 5,247 cubic feet per second (cusecs) of additional water from the barrage, which is negligible compared to the barrage's capacity of 900,000 cusecs.
 - Locals argue that such a **small reduction in water flow will not be effective in preventing the annual flooding** that devastates the region.
- Flooding and **land erosion** have destroyed homes and inundated crops, affecting local livelihoods and villagers living between embankments.
- The project's focus on irrigation does not address these immediate and recurring challenges.



Note:



What are the Key Facts About Kosi River and Mechi River?

- **Kosi River:** It is known as the “Sorrow of Bihar,” originates over 7,000 metres above sea level in the Himalayas, within the catchment area of **Mount Everest** and **Kanchenjunga**.
 - Flowing through China, Nepal, and India, it enters India near Hanuman Nagar and merges with the **Ganga River** near Kursela in Katihar district Bihar.
 - The Kosi River is formed by the confluence of three main streams: the **Sun Kosi, Arun Kosi, and Tamur Kosi**.
 - The Kosi river is known for its **tendency to shift its course westward**, having moved 112 km over the last 200 years, devastating agricultural lands in Darbhanga, Saharsa and Purnea districts.
 - **Tributaries:** The river has several important tributaries, including the **Trijunga, Bhutahi Balan, Kamla Balan, and Bagmati**, all of which join the Kosi River during its course through the plains.
- **Mechi River:** It is a **trans-boundary river flowing through Nepal and India**. It is a **tributary of the Mahananda River**.
 - The river Mechi is a **perennial river** which rises in the inner valley of the **Himalaya in Mahabharat range of hills in Nepal** and then flows through the Indian state of Bihar to join the Mahananda in Kishanganj district.

Mahananda River

- It is a part of the Eastern Himalayan river system. The Mahananda River consists of **two streams**, one rises in the **Himalayas in Nepal, flows through Bihar**, and meets the Ganga from the north. Locally named **Fulahar**.
 - The other rises in Darjeeling, West Bengal, enters Bangladesh, and merges with the **Ganga near Godagarighat, Bangladesh**. Known as Mahananda.
- **Catchment Area:** Stretches over the sub-Himalayan region of Nepal and West Bengal, one of the highest rainfall regions in India.
- **Flooding:** The streams often combine during peak monsoon months, leading to **significant inundation in Bihar and West Bengal**. Flooding is exacerbated when the Ganga is at its peak, causing extensive waterlogging in affected districts like Purnea and Katihar in Bihar, and Darjeeling, West Dinajpur, and Malda in West Bengal.

What is the National Perspective Plan for Interlinking Rivers?

- **About:** NPP was formulated in 1980 by the Ministry of Irrigation (now Ministry of Jal Shakti), to **develop water resources through the inter-basin transfer of water**.
- **Components:** The plan is divided into two main components: the **Himalayan Rivers Development Component and the Peninsular Rivers Development Component**.
- **Projects Identified:** 30 link projects have been identified, with 16 under the Peninsular Component and 14 under the Himalayan Component.
 - **Key Projects Under Peninsular Component:** Mahanadi-Godavari Links, Godavari-Krishna Links, Par-Tapi-Narmada Link, and **Ken-Betwa Link** (first project under the NPP to begin implementation).
 - **Key Projects Under Himalayan Component:** Kosi-Ghaghra Link, Ganga (Farakka)-Damodar-Subernarekha Link, and Kosi-Mechi Link.
- **Significance:** The NPP aims to **manage flood risks in the Ganga-Brahmaputra-Meghna basin**.
 - It seeks to address **water shortages in western and peninsular states** such as Rajasthan, Gujarat, Andhra Pradesh, Karnataka, and Tamil Nadu.
 - The plan aims to **improve irrigation in water-scarce regions**, boosting agricultural productivity and thereby enhancing food security and potentially doubling farmers’ incomes.
 - It will facilitate the development of **infrastructure for freight movement** via environmentally friendly **inland waterways**.
 - The NPP is designed to **utilise surface water to alleviate groundwater depletion** and reduce the amount of freshwater flowing into the sea.
- **Challenges:** Comprehensive feasibility studies assessing the economic, social, and ecological impacts are often incomplete or lacking.
 - Inadequate data can lead to uncertainties about the project’s effectiveness and potential unintended consequences.
 - Water being a state subject complicates agreements on **water sharing between states, leading to potential disputes**. For example, issues have arisen between Kerala and Tamil Nadu.

Note:

- Large-scale water transfers can **worsen flooding**, disrupting local ecosystems and communities. Additionally, changes in **water flow may lead to water logging and increased salinity** in agricultural lands, negatively affecting soil quality and crop yields.
- The extensive financial outlay for construction, maintenance, and operation of dams, canals, and related infrastructure presents a significant economic burden.
- **Climate change** can alter rainfall patterns, which may affect the availability and distribution of water, potentially undermining the intended benefits of the interlinking projects.



Note:

Disaster Management

Highlights

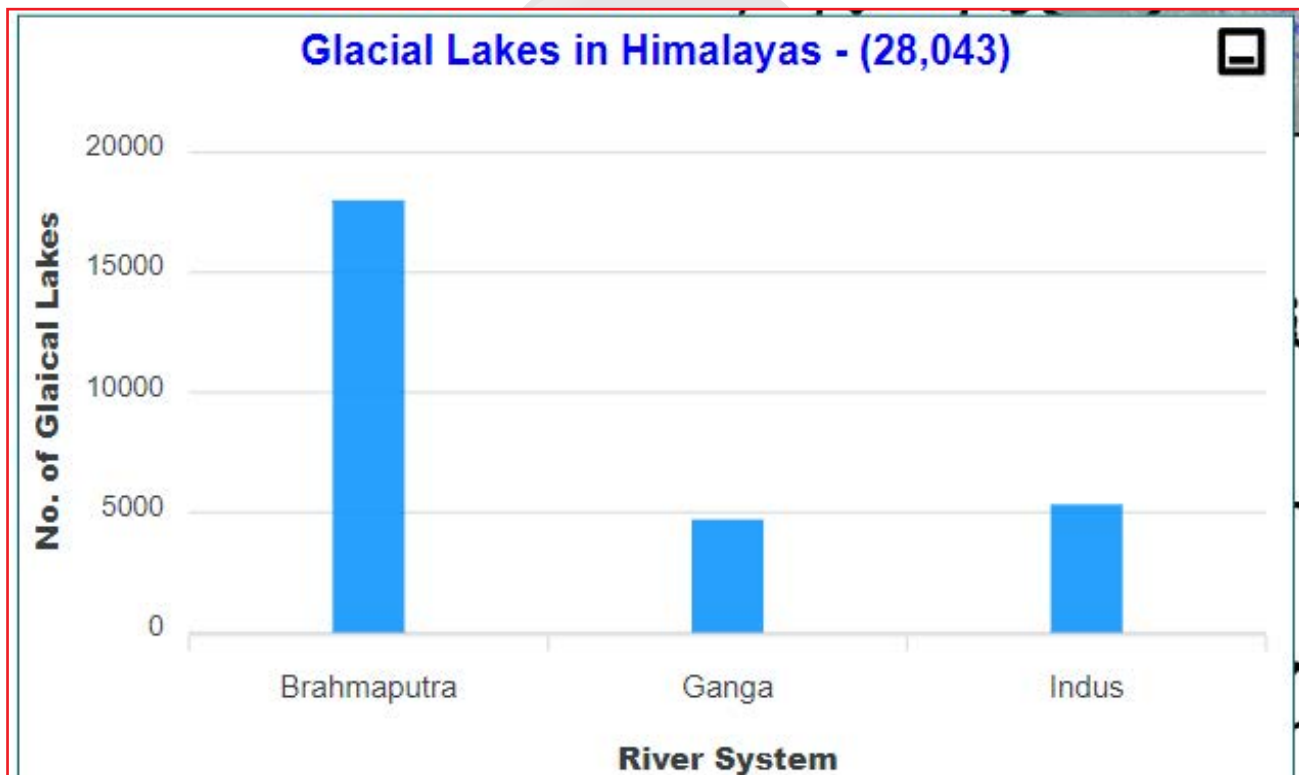
- National Glacial Lake Outburst Floods Risk Mitigation Programme
- Mass Wasting in Sedongpu Gully of Tibet

National Glacial Lake Outburst Floods Risk Mitigation Programme

Why in News?

The **National Disaster Management Authority (NDMA)** has taken up expeditions to glaciers at an altitude of **4500m and above** to map their vulnerability to **Glacial Lake Outburst Flood (GLOF)**.

- Of the nearly **7,500 glacial lakes** in the Indian Himalayas, NDMA has finalised **189 high-risk lakes** that require mitigation measures.

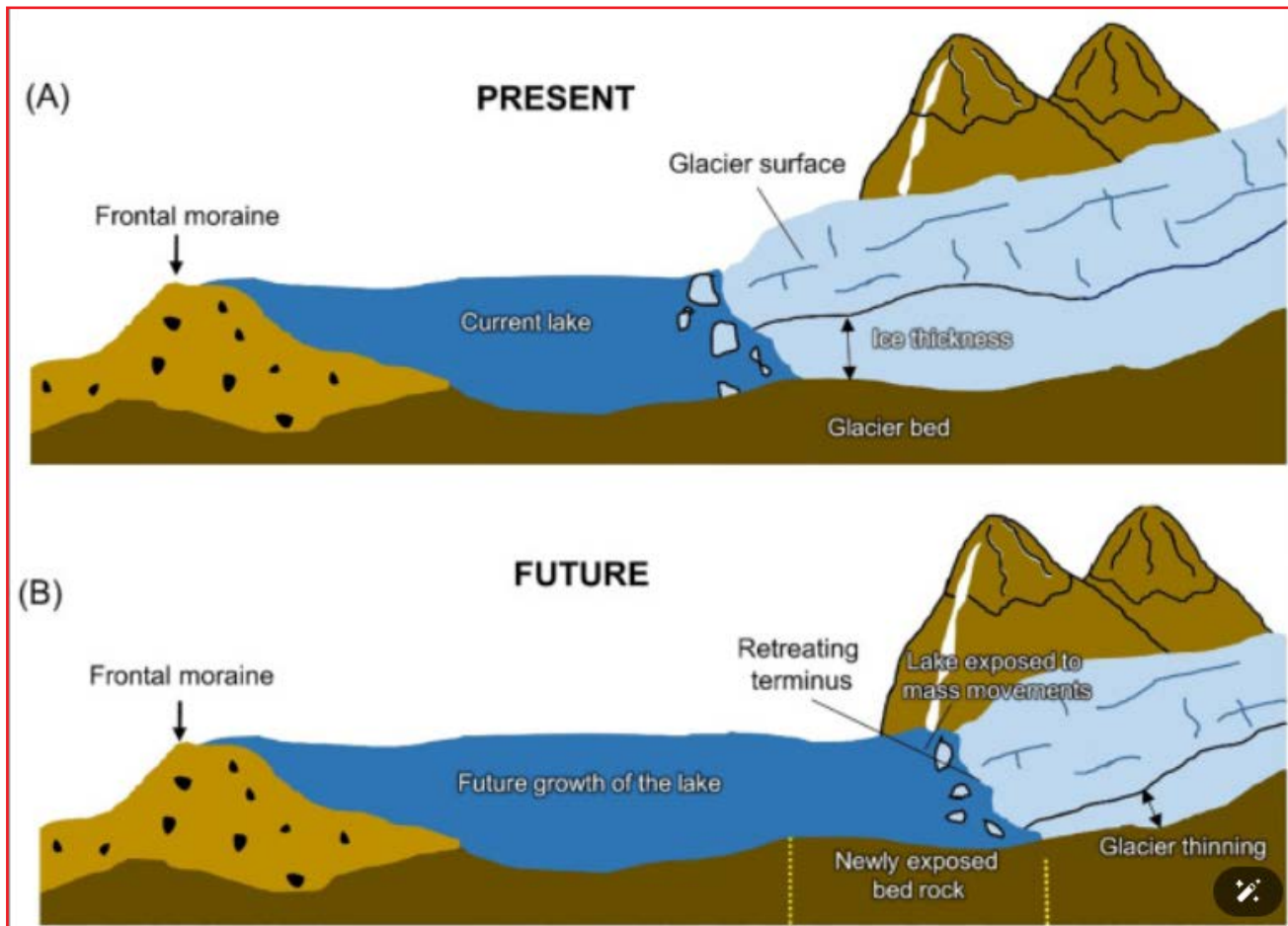


What is the National Glacial Lake Outburst Floods Risk Mitigation Programme (NGRMP)?

- **About:** It is an initiative launched by the Government of India to address the risks posed by GLOFs.
 - **16 teams went out for expedition** out of which 15 teams completed their expedition. Another **seven expeditions are underway**.
 - Of the 15 expeditions completed, **6 were in Sikkim, 6 in Ladakh, 1 in Himachal Pradesh, and 2 in Jammu and Kashmir**.

Note:

- Teams on expeditions assess the **structural stability** and **potential breach points** of glacial lakes, gathering relevant **hydrological and geological samples and data**, measuring water quality and flow rates, identifying risk zones and making downstream communities aware.



➤ **Objective:**

- To **assess hazards**, install automated monitoring and **early warning systems**, and implement **lake-lowering measures** to mitigate glacial lake outburst flood (GLOF) risks.
 - **Lake-lowering measures** are techniques used to **reduce the volume of water** in a glacial lake to mitigate the risk of a GLOF.
- NDMA is focussing on **ground-truthing** of selected 189 “high-risk” glacial lakes.
 - **Ground-truthing** is the process of **validating and verifying data** collected through **remote sensing** or other indirect methods by comparing it with **direct observations** made on-site.

➤ **Methodology to Prevent GLOF: Three activities** are planned to be executed **simultaneously**.

- Placement of **automated weather and water level monitoring stations** and early warning systems
- **Digital elevation modelling** and **bathymetry**.
- Assessing best means to **reduce the risk of that lake** including by **lake-lowering**.

➤ **Need of the Study:**

- **ICIMOD Findings:** As per the **International Centre for Integrated Mountain Development (ICIMOD)**, **Hindu Kush Himalayas** are experiencing rapid, **irreversible changes** due to climate change, increasing the risk of **floods and landslides**.

Note:



- **Climate Change:** Due to climate change, India faces **hazards like extreme altered FDI (frequency, duration and intensity) of precipitation and extreme heat**. It may lead to an increased number of **flash floods**.
- **Previous Incidents of GLOFs:**
 - **Nepal Incident:** Recently, flash floods struck Thame, a village in the **Khumbu region** of Nepal which was due to an outburst flood from **Thyanbo glacial lake**.
 - **Sikkim Flash Flood:** A catastrophic GLOF occurred in **South Lhonak Lake, Sikkim**, in October 2023.
 - **Uttarakhand Flash Floods:** A **glacier breach-induced flood** in February 2021 in Rishi Ganga valley resulted in over 200 deaths and significant damage to hydropower plants and **Raini village**.

GLOF

- A GLOF is a type of **flood** occurring when **water dammed** by a **glacier** or a **moraine** is **released** suddenly.
- When glaciers melt, the **water** in these glacial lakes **accumulates** behind loose naturally formed '**glacial/moraine dams**' made of ice, sand, pebbles and ice residue.
- Unlike earthen dams, the weak structure of the moraine dam leads to the **abrupt failure** of the moraine dam on top of the **glacial lake**, which holds a large volume of water.
- A catastrophic failure of the dam can release the water over periods of minutes to days causing **extreme downstream flooding**.

What are the Recent Developments in NGRMP?

- **About:** The **Arunachal Pradesh State Disaster Management Authority (APSDMA)** to carry out a survey of high-risk glacial lakes in the **Tawang** and **Dibang Valley** districts of Arunachal Pradesh.
 - It is part of the larger **National Glacial Lake Outburst Flood (GLOF) Mission** of the **NDMA** to map all glacial lakes in the country.
- High-Risk Glacial Lakes Identified in Arunachal Pradesh:
 - **Total High-Risk Lakes: 27 high-risk glacial lakes** have been identified across five districts in Arunachal Pradesh.
 - The lakes are located in **Tawang (6 lakes)**, Kurung Kumey (1), Shi Yomi (1), **Dibang Valley (16)**, and Anjaw (3).

- The current expedition teams will focus on **three high-risk lakes** in each of the Tawang and Dibang Valley districts.
- **Study Objectives:** The team will study the **accessibility, location, size, elevation, nearby habitations, and land use** of the lakes at risk of GLOF.
 - This will help the **Centre for Development of Advanced Computing (C-DAC)** and the **Indian Meteorological Department** install an **Automatic Early Warning System** and an **Automatic Weather Station**.
- **Significance of the Study:**
 - **Strategic Location:** Both Tawang and Dibang Valley districts share **borders with China**. It will be closely watched given its **strategic location**.
 - **Fragile Himalayan Ecosystem:** **Landslides** on the Chinese side, caused by China's interference with **Himalayan geology** and river systems, could also occur on the Indian side of the border.
 - **Threat of Floods:** In 2018, the Arunachal and Assam governments issued **flood** alerts after China reported a **landslide** blockage at the **Yarlung Zangbo River**.
 - **Heavy Infrastructure:** The **mega dam** being built by China on the Yarlung Tsangpo river in **Medog** near the international border has been a constant worry over fear of adverse impact right from Arunachal to Assam.

Mass Wasting in Sedongpu Gully of Tibet

Why in News?

A recent study in the *Journal of Rock Mechanics and Geotechnical Engineering* has raised concerns about the **increasing frequency of mass wasting events in Tibet's Sedongpu Gully** since 2017, with implications for India's northeastern states due to the region's proximity and river systems.

What are the Key Highlights of the Study?

- **Increased Frequency of Mass Wasting:** The study documents a significant rise in mass wasting events in the Sedongpu Gully since 2017.
 - **Using satellite data from 1969 to 2023**, the study identified 19 major mass-wasting events, categorised into **ice-rock avalanches**, **ice-moraine avalanches**, and **glacier debris flows**. Notably, 68.4% of these events occurred after 2017.

Note:

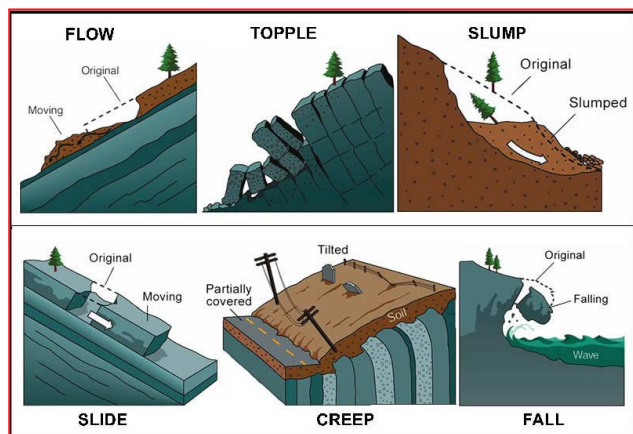
- Over 700 million cubic meters of debris have been mobilized in the Sedongpu Gully catchment since 2017. This substantial volume of debris has implications for downstream river systems.
- **Historical Context:** The earliest recorded mass wasting event in the Sedongpu Gully occurred between 1974 and 1975, with notable activity resuming in 1987.
- **Causes of Increased Activity:** The rise in mass wasting events is attributed to long-term **warming of the region and increased seismic activity.**
- Sedongpu basin consists mostly of **Proterozoic (2.5 billion to 541 million years ago) marble** and the conditions indicate its land surface temperature ranges from **-5° to -15° C**, rarely exceeding 0° C before 2012.
 - Recent data from the nearby weather stations revealed that the annual temperature in this **area increased at rates of 0.34° to 0.36° C** during 1981-2018, which is higher than the global average (since 1970 the global average temperature has been rising at a rate of 1.7°C per century).
- **Impact on Tsangpo River:** The debris from **mass wasting events** has temporarily blocked the **Tsangpo River and its tributaries**, leading to concerns about potential flash floods downstream, particularly in Arunachal Pradesh and Assam.
- Notably, such **blockages caused catastrophic flash floods** in Arunachal Pradesh and Assam in 2000.

Sedongpu Gully

- The Sedongpu Gully, located in the catchment area of the **Sedongpu Glacier in Tibet.**
 - A gully is a **landform created by erosion from running water, mass movement or both.**
- It drains into the **Yarlung Zangbo, or the Tsangpo River**, near where it takes a sharp turn called the **Great Bend**, while flowing around **Mt. Namcha Barwa** (altitude 7,782 metres) and **Mt. Gyala Peri** (7,294 metres) to create a **gorge** 505 km long and 6,009 metres deep. This is one of the **deepest gorges on the earth.**
- The Great Bend is close to **Tibet's border with Arunachal Pradesh**, where the Tsangpo flows as the **Siang River.**
 - In Assam further downstream, the **Siang meets the Dibang and Lohit to form the Brahmaputra**, which flows as the **Jamuna in Bangladesh.**

What is Mass Wasting?

- **Definition:** Mass wasting is the **downslope movement of rock, soil, and debris** under the influence of gravity. It includes various types of slope movements such as rock falls, slumps, and debris flows.
- **Key Triggers for Mass Wasting:** Heavy rainfall can saturate soil, increasing its weight and making it more prone to movement.
 - Quick melting of snow can add significant amounts of water to the soil, leading to instability.
 - **Earthquakes** (Seismic activity) can shake the ground and initiate **landslides.**
 - **Volcanic Eruption** can destabilise slopes through eruptions and associated seismic events.
 - **Erosion** by water bodies can undercut slopes and lead to mass wasting.
- **Types of Mass Wasting Events:**
 - **Rock Fall or Topple:** This involves the **falling, bouncing, and rolling of rock** debris down a slope. It can **occur suddenly and with significant impact.**
 - **Landslides and Rock Slides:** These events involve **large masses of soil** and rock sliding down a slope.
 - **Debris Flows:** A debris flow is a rapid downslope movement of **water-saturated rock debris and soil**, resembling wet cement. It moves quickly and can be very destructive.
 - **Avalanche:** An avalanche is a sudden mass movement of **rock or ice** under gravity. It can **occur in both mountainous and glacial regions.**
 - **Slope Creep:** This is a gradual, **slow movement of soil and rock down a slope**, often imperceptible over short periods but significant over longer timescales.



Note:

How does Mass Wasting in Tibet Affect India and Bangladesh?

- **Downstream Effects:** The sediment mobilized by these events can affect the **Tsangpo River and its tributaries**.
 - The river flows into India and joins the Brahmaputra, which is already one of the **most sediment-laden rivers in the world**.
 - **China plans to set up a 60-gigawatt project on the Tsangpo**, which will have thrice the capacity of China's **three Gorges project on the Yangtze**, the world's largest hydropower plant.
 - This seismically unstable region, which experienced the 8.6-magnitude 1950 **Assam-Tibet earthquake** and the 6.4-magnitude **2017 Nyingchi earthquake**, may see increased sedimentation in the **Tsangpo-Siang-Brahmaputra-Jamuna river system**, with serious implications for **India and Bangladesh**.
- **Flooding and Navigation Issues:** The **Brahmaputra carries over 800 tonnes of sediment at Pandu in Guwahati**, increasing to more than a billion tonnes at Bahadurabad in Bangladesh.
 - Increasing sedimentation may make the river **more intensely braided in the Assam plains, leading to more bank erosion**.
 - The sedimentation **can elevate the river beds, leading to flood hazards** and the channels may get choked with sand and silt in the lean season, making navigation difficult and affecting livelihoods related to fishing.



Note:

Security

Highlights

- NIA's Combat Against the Terror-Gangster Nexus 141

NIA's Combat Against the Terror-Gangster Nexus

Why in News?

The [National Investigation Agency \(NIA\)](#) recently convened its inaugural meeting with police officials from Punjab, Rajasthan, Haryana, and Delhi to tackle the growing concern of the **terror-gangster nexus**.

- This meeting comes in the wake of increasing reports of **organized crime linked to terror groups**, particularly those with **Pro-Khalistan Elements (PKEs)** and connections to Pakistan.

What are the Highlights of the NIA Meeting on the Terror-Gangster Nexus?

- **Mapping of Extortion Calls:** The meeting focused on mapping extortion calls made by gangsters, especially those linked to terror syndicates, PKEs, and **Pakistan-based networks**.
- **Cybercrime and Drug Smuggling:** The use of cyberspace by gangsters to evade arrest and their involvement in **drug smuggling** were key topics of discussion.
- **Central-State Coordination:** The meeting emphasised the need for collaborative action plans and the implementation of **uniform standard operating procedures (SOPs)** to strengthen centre-state coordination in combating organised crime and terrorism.
- **Strategic Significance:** The meeting aligns with the directive from Union Home Minister to establish a **model anti-terrorism structure under the NIA's purview**, aiming for a more unified approach to tackling the terror-gangster nexus.

What is the Terror-Gangster Nexus?

- **About:** The Terror-Gangster Nexus refers to the **collaboration between organised crime groups (gangsters) and terrorist organisations**.

- This alliance often involves sharing resources, networks, and operational tactics to further their respective goals.
- Terrorism and organised crime share a **sybiotic relationship**, where the **operations of one often benefit the other**.
- These nexuses often have international dimensions, with connections to foreign countries that support or harbour terrorist activities.
- Gangsters often provide financial support and logistical assistance to terrorist groups. This can include **money laundering**, drug trafficking, and **arms smuggling**.
- Terrorist **organisations may recruit members from criminal gangs**, leveraging their existing skills in violence and evasion of law enforcement.
- **Key Conflict Zones of Gangster-Terrorism Nexus in India:**
 - **Jammu and Kashmir (J&K):** Pakistan-based groups like **Lashkar-e-Taiba (LeT)**, **Jaish-e-Mohammad (JeM)**, and others operate in J&K, often funded through **Hawala**, money laundering, and **drug money**.
 - The **kidnapping of Rubiya Sayeed in 1989** and the hijacking of an **Indian Airlines flight in 1999** highlight the use of criminal activities to further terrorist agendas.
 - **Northeastern States:** Persistent insurgencies with groups like the **United Liberation Front of Assam (ULFA)** and **Naga insurgents**. Poor governance allows criminal-terrorist collaboration.
 - Collaboration with **criminal groups in Myanmar and Bangladesh** exacerbates the problem, leading to a well-established crime-terror nexus in this region.
 - **Western India (Maharashtra and Gujarat):** The infamous **'D-Company'**, led by **Dawood Ibrahim**, illustrates the overlap between organised crime and terrorism, particularly in the **1993 Mumbai bombings** and the **2008 Mumbai attacks**.

Note:

- Groups like the **Indian Mujahideen (IM)** and **Students Islamic Movement of India (SIMI)** have been involved in criminal activities to fund their operations.
- **Naxalites/Maoists (The 'Red Corridor')**: The **Naxalite movement**, which spans across several states in central and eastern India, has also **exhibited a strong nexus with organised crime**.
 - The Maoist groups **engage in extortion, illegal arms trade**, and running parallel governments in the areas under their control.
 - Their operations are **funded by criminal activities**, which in turn fuel their insurgency against the Indian state.
- **Punjab**: Punjab's history of terrorism, particularly during the **Khalistan movement**, was heavily financed by drug trafficking and smuggling operations. The **terror-drug nexus in the state continues to be a concern**.
- **Haryana and Delhi**: These regions have witnessed a **rise in gangster-related activities**, with connections to terror groups becoming increasingly evident.
 - The use of cyberspace by these **entities to coordinate and carry out operations has been a growing concern**.

What are the Key Facts About the National Investigation Agency?

- **About**: To combat the multifaceted threats of terrorism involving **inter-State and international linkages**, the Indian government established the **National Investigation Agency (NIA)** in 2008.
 - It was established in response to the 2008 Mumbai terror attacks. Formed under the National Investigation Agency Act, 2008.
 - It was initiated based on recommendations from various experts and committees, including the **Administrative Reforms Commission**.
- **Organisational Structure**: **Union Ministry of Home Affairs** (Parent Ministry), **New Delhi** (Headquarters).
- **Investigation Process**: State governments can refer cases to the NIA through the Central Government (Union Home Ministry). The NIA can also **take up cases suo motu or if directed by the Central Government**.
- The NIA can investigate scheduled offenses committed outside India if they fall under its jurisdiction.

- **Mandate and Jurisdiction**: Investigates and prosecutes offences affecting national security, sovereignty, and international relations.
 - **Jurisdiction**: Operates across states **without needing special permission**; can also investigate crimes committed **outside India under the NIA (Amendment) Act, 2019**.
 - **Scheduled Offences**: The NIA investigates various offenses under laws such as the **Explosive Substances Act 1908, Atomic Energy Act 1962, Unlawful Activities (Prevention) Act 1967, Anti-hijacking Act 2016** and others.
 - In September 2020, the **NIA's mandate was expanded to include offenses under the Narcotic Drugs and Psychotropic Substances Act** if connected to terrorism.
- **Special Courts**: Trials are conducted in special courts **designated by the Central Government, chosen in consultation** with the Chief Justice of the High Court of the respective State.
- **Operation Related to Terror-Gangster Nexus: Operation Dhvast.**

What are the Challenges in Combating the Terror-Gangster Nexus?

- **Legislation**: Despite the **Bharatiya Nyaya Sanhita (BNS), 2023** introducing provisions for organised crime, challenges persist in integrating this framework with existing state laws like the **Maharashtra Control of Organised Crime Act (MCOCA), 1999** particularly given the **inter-State and international nature of such offences**.
- **Complex Networks**: Both terrorist and gangster organisations operate through **intricate and decentralised networks**, making it difficult for law enforcement to track and dismantle them.
- **Resource Sharing**: These groups often share resources such as weapons, funds, and safe houses, which enhances their operational capabilities and resilience.
- **Legal and Jurisdictional Issues**: Different countries have **varying laws and levels of enforcement, creating gaps** that these groups exploit. International cooperation is often hindered by legal and bureaucratic hurdles.
 - Ensuring the safety of witnesses who provide critical information can be challenging.
- **Technological Advancements**: The use of advanced technology for **communication, encryption, and cybercrime** makes it harder for authorities to intercept and monitor their activities.

Note:

- **Corruption and Infiltration:** Corruption within law enforcement and government agencies can impede efforts to combat these networks. Additionally, these groups may **infiltrate state institutions to gain protection and insider information.**
- **Local Support and Influence:** These groups often have **strong local support (like sleeper cells) and influence, which can provide them with protection and resources, complicating efforts to root them out.**

LEFT WING EXTREMISM

ABOUT

- ⌚ **Originated:** 1967 uprising in Naxalbari, West Bengal
- ⌚ **Aim:** Societal and political change through revolutionary methods

IDEOLOGY

- ⌚ Overthrow central government through armed revolution (Violence and guerilla warfare)
- ⌚ Establishment of a communist state based on Maoist principles

FACTORS RESPONSIBLE

- ⌚ **Massive displacement of tribal population;** Due to development projects, mining operations
- ⌚ **Tribal dissatisfaction;** Forest (Conservation) Act 1980 prohibits tribes from harvesting forest resources
- ⌚ **Poverty and lack of sustainable means;** Driving factors for joining Naxalite movement
- ⌚ **Lack of effective governance;** Insufficient technical intelligence against Naxalism

STATES AFFECTED BY LWE

- ⌚ **Red Corridor:** Experiences severe Naxalism–Maoist insurgency
- ⌚ Chhattisgarh, Jharkhand, Odisha, Bihar, West Bengal, Andhra Pradesh, Telangana, Maharashtra, Madhya Pradesh and Kerala

GOVERNMENT INITIATIVES TO CURB LWE

- ⌚ National Policy and Action Plan to address Left Wing Extremism 2015
- ⌚ **SAMADHAN Doctrine**
 - ⊕ **S-** Smart Leadership
 - ⊕ **A-** Aggressive Strategy
 - ⊕ **M-** Motivation and Training
 - ⊕ **A-** Actionable Intelligence
 - ⊕ **D-** Dashboard Based KPIs (Key Performance Indicators) and KRAs (Key Result Areas)
 - ⊕ **H-** Harnessing Technology
 - ⊕ **A-** Action plan for each Theatre
 - ⊕ **N-** No access to Financing
- ⌚ **Special Central Assistance (SCA)** in Public Infrastructure and Services
- ⌚ **Operation Green Hunt**
 - ⌚ **Greyhounds** (Elite commando force in Andhra Pradesh)
 - ⌚ **Bastariya Battalion** (local recruits in Chhattisgarh who know the language and terrain that could generate intelligence and conduct operations)

A map of India's Maoist conflict

A crackdown on Maoist rebels has led to a rise in the number of casualties in the country's tribal areas. Here are the regions that are most affected.

Countering Naxalism - Bandyopadhyay Committee (2006)

- Highlighted the lack of governance, economic, socio-political and cultural discrimination against the tribals
- Recommended tribal-friendly land acquisition and rehabilitation

Drishti IAS

Note:

Ethics

Highlights

- *Passive Euthanasia*

Passive Euthanasia

Why in News?

Recently, the **Supreme Court of India** denied a petition from an elderly couple seeking “**passive euthanasia**” for their comatose (deeply unconscious) son, who has been bedridden for 11 years following a fall.

- This ruling has reignited discussions on the legal and ethical dimensions of euthanasia in India.

What is the Background of the Case?

- The Supreme Court ruled against the patient’s parents’ plea, stating that the **case did not qualify as passive euthanasia** since the patient was **not on any life support systems** and was **receiving nutrition through a feeding tube**.
- The court said that allowing him to die would **not constitute passive euthanasia** but rather **active euthanasia**, which **remains illegal in India**.

What is Passive Euthanasia?

- **About:**
 - **Euthanasia** is the practice of ending the life of a patient to limit the patient’s suffering.
- **Types of Euthanasia:**
 - **Active Euthanasia:**
 - Active euthanasia occurs when the **medical professionals, or another person, deliberately do something** that causes the patient to die, such as administering a **lethal injection**.
 - **Passive Euthanasia:**
 - Passive euthanasia is the act of **withholding or withdrawing medical treatment**, such as withholding or withdrawing life support, with the intention of allowing a person to die.
- **Euthanasia in India:**
 - The **Supreme Court of India** in a landmark judgement in **Common Cause vs Union of India**

(2018) 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**.

- It also laid down guidelines for ‘**living will**’ made by terminally ill patients who beforehand know about their chances of slipping into a permanent vegetative state.
- Previously in 2011, the SC recognised passive euthanasia in the **Aruna Shanbaug** case for the first time.
 - The court specifically stated that “**Dignity in the process of dying is as much a part of the right to life under Article 21**. To deprive an individual of dignity towards the end of life is to deprive the individual of a meaningful existence.”
- **Different Countries with Euthanasia:**
 - **Netherland, Luxembourg, Belgium** allows both types of euthanasia and assisted suicide for anyone who faces “unbearable suffering” that has no chance of improvement.
 - **Switzerland** bans euthanasia but allows assisted dying in the presence of a doctor or physician.
 - Since 1942, Switzerland has allowed assisted suicide, focusing on personal choice and control over the dying process. The law requires individuals to be of sound mind and their decision must not be driven by selfish motives.
 - **Australia** has also legalised both types of euthanasia, and applies to adults with full decision-making capacity who have a terminal illness with a prognosis of death within six or twelve months.
 - The **Netherlands** has a well-established legal framework for euthanasia, regulated by the “Termination of Life on Request and Assisted Suicide (Review Procedures) Act” of 2001.

Note:

What were the Recent Changes in Guidelines made by the Supreme Court on Passive Euthanasia?

- The **Supreme Court** in 2023 **modified the 2018 Euthanasia Guidelines** to ease the process of granting passive euthanasia to terminally ill patients.
 - In 2018 the Supreme Court recognised the **Right to die with dignity** as a **fundamental right** and prescribed **guidelines for terminally ill patients** to enforce the right.

THE CHANGES BROUGHT		
	NOW	EARLIER
Living will	An attestation by a notary or a Gazetted officer to be sufficient for a living will	It was necessary that a judicial magistrate attest or countersign a living will
Access to the living will	Living will a part of national health record which can be accessed by Indian hospitals	Living will was kept in the custody of the district court concerned
Primary board to examine patient's condition	Three doctors, including treating physician and two other doctors with five years of experience in the specialty, will comprise the primary board of doctors	Primary board of doctors needs at least four experts from general medicine, cardiology, neurology, nephrology, psychiatry or oncology with overall standing of at least 20 years
Time taken to decide	Primary/secondary board to decide within 48 hours on withdrawal of further treatment	The 2018 judgment did not specify any outer limit on withdrawal of treatment
Secondary board	Hospital must immediately constitute a secondary board of medical experts	The district collector had to constitute the second board of medical experts

- **Modifications in SC Guidelines:**
 - **Attestation of Living Will:** The Court removed the requirement for a judicial magistrate's attestation on a living will. Now, attestation by a notary or a gazetted officer suffices, simplifying the procedure for individuals to express their end-of-life choices.
 - **Integration with National Health Digital Record:** Previously, living wills were held by the district court. The revised guidelines mandate that these documents be part of the **National Health Digital Record**. This ensures easier access for hospitals and doctors nationwide, facilitating timely decision-making.

Note:



- **Appeal Process for Denial of Euthanasia:** If a hospital's medical board denies permission to withdraw life support, the patient's family can appeal to the relevant High Court. The Court will then form a new medical board to reassess the case, ensuring a thorough and just review.

What are the Ethical Considerations of Euthanasia?

➤ **Autonomy and Informed Consent:**

Euthanasia involves respecting individual autonomy, meaning people should have the right to decide about their own lives, especially to end suffering if they are mentally competent.

- It also requires **i n f o r m e d** consent, where the person must fully understand their condition, the euthanasia process, and its consequences to ensure they are not coerced or manipulated.

➤ **Quality of Life vs. Sanctity of Life:**

Euthanasia debates often centre on **quality of life**, which argues that ending suffering and preserving dignity in severe illness can be ethical, versus **sanctity of life**, which holds that life is intrinsically valuable and should not be ended prematurely, often reflecting religious or philosophical beliefs.

➤ **Legal and Social Implications:** Euthanasia's legal framework varies by jurisdiction, reflecting different cultural attitudes and ethical debates on end-of-life issues.

- The social impact involves questions about medical professionals' roles, societal responsibilities, and the need for equitable access to palliative care and psychological support to address the underlying reasons for seeking euthanasia.

EUTHANASIA

ABOUT

- The practice of an individual deliberately ending their life; to get relief from an incurable condition/intolerable pain

ARGUMENTS FOR

- Patient's freedom of choice
- Right to die with dignity
- More humane to end the suffering
- Shortens the grief of patient's loved ones

ARGUMENTS AGAINST

- Unacceptable from moral, religious perspectives
- Euthanasia cannot be properly regulated
- Guilt-ridden patients may feel bound to give consent

ACTIVE EUTHANASIA

- An active intervention to end a person's life with substances or external force, (e.g. - by a lethal injection)

PASSIVE EUTHANASIA (PE)

- Withdrawing essential life support/treatment keeping a terminally ill person alive

EUTHANASIA - LEGALITY IN INDIA

P RATHINAM V UNION OF INDIA (1994)

- SC challenged the constitutional validity of IPC Section 309 (penalty for attempt to suicide)

SMT. GIAN KAUR VS THE STATE OF PUNJAB (1996)

- SC overturned its 1994 judgement and held that Right to Life (Article 21) did not include the Right to Die (which must **not be mistaken with Right to Die with Dignity**)

ARUNA RAMCHANDRA SHANBAUG V UNION OF INDIA (2011)

- SC allowed PE for Aruna Shanbaug and made a distinction between 'active' and 'passive', and allowed the latter in "certain situations"

COMMON CAUSE V UNION OF INDIA & ANR. (2018)

- SC legalised Passive Euthanasia claiming it contingent upon the person having a **'living will'**
- If a person does not have a living will, his/her family members can make a plea before the HC to seek permission for PE

Recently, the SC has agreed to significantly ease the procedure for passive euthanasia by altering the existing guidelines for 'living wills' (laid down in 2018 case)



Note:

Miscellaneous

Highlights

- National Sports Day 2024 and RESET Programme
- Olympic Games
- National Film Awards 2022
- Independence Day Gallantry Awards 2024

National Sports Day 2024 and RESET Programme

Why in News?

Recently, **National Sports Day (NSD) 2024** was celebrated on **29th August 2024** on the birth anniversary of **Major Dhyan Chand** to promote **sports and physical fitness** in India through various events and activities.

- On NSD 2024, the government launched the **Retired Sportsperson Empowerment Training (RESET) Programme**.

What are the Key Facts About NSD and the RESET Programme?

- **About:** It is a special **occasion dedicated** to marking the **spirit of sports** in India.
 - It aims to inspire individuals of all ages to participate in **physical activities**, cultivate and promote a sports culture, and honour the achievements of athletes.
- **Significance of National Sports Day:** It recognises the achievements of Indian athletes, celebrating their contributions to the **nation's pride and international stature**.
 - The government uses this day as a **platform to launch various sports schemes**, such as the **Khelo India movement** in 2018.
 - The President of India presents prestigious sports awards, one of them being, the **Major Dhyan Chand Khel Ratna Award**.
- **About RESET Programme:**
 - **Aim:** To empower **retired sports persons** by empowering them with the necessary **knowledge and skills** and making them more **employable**.
 - **Eligibility:** **Retired athletes aged 20-50** who have won **international medals**, participated in international events, or achieved **national or state-level recognition**.

- **Structure:** It will be of two levels based on educational qualifications viz., **Class 12th and above** and **Class 11th and below**.
- **Lead Institute to Implement the Programme:** Lakshmi Bai National Institute of Physical Education (LNPIE), Gwalior.

What are the Key Facts About Major Dhyan Chand?

- Major Dhyan Chand was a prominent **hockey player** in **India's pre-independence period**.
- He is famously known as the **"Wizard of Hockey"** and **"The Magician"** due to his stick work and understanding of the game.
- He played a key role in India's first **hat-trick of Olympic gold medals**, winning at the **1928, 1932, and 1936 Summer Olympics**.
- Between **1926 and 1948**, he played **185 matches** for India scoring over **400 goals**.
- He retired as a **Major** in the **Punjab Regiment** of the **Indian Army** in 1956.
 - He fulfilled his regimental duties during the day, so he used to **practise** in the **moonlight** earning him the title of **Chand**.
- He received the **Padma Bhushan**, the third-highest civilian award in **1956**.
- In **2012**, the government of India decided to celebrate his birth anniversary as **National Sports Day** annually.
- To honour him, the Indian government renamed the **Rajiv Gandhi Khel Ratna Award** to the **Major Dhyan Chand Khel Ratna Award** in **2021**.

What are the Various Sports Awards Given in India?

- **Major Dhyan Chand Khel Ratna Award:** It is considered **India's highest sporting honour**. The award is given for **outstanding performances** in sports spanning over a period of **four years** and the winners receive a **medallion, certificate and a cash prize**.

Note:



- **Arjuna Award:** It is awarded for **consistently good performance** over a period of **four years**. The winners of the Arjuna Award receive a **statuette of Arjuna, a certificate and a cash prize**.
- **Dronacharya Award:** It is India's **highest sports honour for coaches**. It is awarded to individuals for **producing medal winners** at prestigious international events.
- **Major Dhyan Chand Award:** It is another award named after India's hockey magician Dhyan Chand. It represents India's highest honour for **lifetime achievements** in sports.
- **Maulana Abul Kalam Azad Trophy:** It is given to an **institution or university** for top performance in **inter-university tournaments** over the last one year.
- **Rashtriya Khel Protsahan Puraskar:** It is awarded to organisations or **corporates (both private and public) and individuals** for playing a role in the area of sports **promotion and development** over the last three years

What are Government Initiatives to Promote Sports Culture?

- [Fit India Movement](#)
- [Khelo India](#)
- [SAI Training Centers Scheme](#)
- [Sports Talent Search Portal](#)
- [National Sports Awards Scheme](#)
- [Target Olympic Podium](#)

Olympic Games

OLYMPICS

Ancient History

- Originated - Olympia, Greece (776 BC)
- Connected to Greek culture and religion
- Events - Running, wrestling, and chariot racing
- Abolished - 393 AD by Emperor Theodosius I

Modern History

- Revived - Late 19th century by Pierre de Coubertin (Founding member of IOC)
- First modern Olympics - Athens, Greece (1896)

Upcoming Events

- **Winter Olympics 2026:** Milan-Cortina d'Ampezzo, Italy
- **Summer Olympics 2028:** Los Angeles, USA
- **Summer Olympics 2032:** Brisbane, Australia
- India intends to host Olympic Games 2036

Logo and Motto

- **Logo:** 5 interlocking rings of blue, yellow, black, green, and red colors on a white background (**represents union of 5 continents and meeting of world athletes**)
- **Motto:** *Citius, Altius, Fortius – Communiter* (Faster, Higher, Stronger – Together) ('Communiter' was added in 2021)



International Olympic Committee (IOC)

- Estd - 1894
- Guardian of the Olympic Games
- HQ - Lausanne, Switzerland

5 new sports added in Tokyo 2020 Olympics:
Surfing, Skateboarding, Sport Climbing, Karate and Baseball/Softball

PARIS OLYMPICS 2024

India at 71st place in the medal tally; a decline from 48th place in Tokyo 2020)

Indian Sportspersons / Team	Medal	Event
Neeraj Chopra	Silver	Men's Javelin Throw
Manu Bhaker and Sarabjot Singh	Bronze	10m air pistol mixed team event
Swapnil Kusale	Bronze	Men's 50m rifle 3 positions
Indian Hockey team	Bronze	Men's hockey
Manu Bhaker	Bronze	Women's 10m air pistol event
Aman Sehrawat	Bronze	Wrestling Men's 57kg freestyle event

Indian Olympic Association (IOA)

- Founded - 1927
- Selects athletes to represent India at Olympics, Asian Games and CWG




Note:

National Film Awards 2022

Why in News?

Recently, the winners of the 70th National Film Awards for 2022 were announced by the Ministry of Information and Broadcasting.

What were the Key Awards Presented at the 70th National Film Awards?

- **Best Feature Film:** Aattam (The Play), directed by Anand Ekarshi.
- **Best Non-Feature Film:** Ayena (Mirror), directed by Siddhant Sarin.
- **Best Popular Film Providing Wholesome Entertainment:** Kantara.
- **Best Actor in a Leading Role:** Rishab Shetty for Kantara.
- **Best Actress in a Leading Role:** Nithya Menen for Thiruchitrabalam.
- **Best Supporting Actor:** Pavan Raj Malhotra.
- **Best Supporting Actress:** Neena Gupta.
- **Best Film in AVGC (Animation, Visual Effects Gaming & Comic):** BRAHMASTRA-PART 1: SHIVA.
- **Best Book on Cinema:** "Kishore Kumar: The Ultimate Biography", authored by Anirudha Bhattacharjee & Parthiv Dhar.

What are the National Film Awards?

- **About:** Established in 1954, it has been administered, along with the **International Film Festival of India and the Indian Panorama**, by the Indian government's Directorate of Film Festivals since 1973.
 - **Winners receive a Medallion**, a cash prize, and a certificate of merit.
 - **Six categories from Feature Films**, and two each from Non-Feature Films and Best Writing on Cinema are **eligible for the Swarna Kamal (Golden Lotus Award)**.
 - The remaining categories are **eligible for the Rajat Kamal (Silver Lotus Award)**.
- **Categories:**
 - **Feature Films:** Encourages the production of films with aesthetic and technical excellence.
 - Promotes understanding and appreciation of regional cultures and national unity.
 - Swarna Kamal Award receiving 6 Categories under this:

- Best Feature Film, Best Direction, Best Children's Film, Best Popular Film providing wholesome entertainment and Best Film in AVGC.
 - **Non-Feature Films:** Aims to produce films of social relevance and technical quality.
 - Swarna Kamal Award for **Best non-feature film and Best Debut film of a Director**.
 - Contributes to the appreciation of **diverse cultural representations**.
 - **Best Writing on Cinema:** Encourages study and critical appreciation of cinema as an art form.
 - Swarna Kamal Award for **Best Book on Cinema and Award for Best Film Critic**.
 - Promotes dissemination of information through books, articles, reviews, and studies.
- **Eligibility criteria:** Films **must be produced in India**, with the director and makers being Indian nationals. Co-productions with foreign entities must meet specific conditions.
 - Films should be **certified by the Central Board of Film Certification** between 1st January and 31st December each year.
 - Over 100 films from across the country are entered in each category (**Feature and Non-Feature**).
 - The juries, appointed by the Directorate of Film Festivals, have strict criteria for eligibility and are not influenced by the Government or Directorate.

What is Dadasaheb Phalke Award?

- **About:**
 - It is **part of the National Film Awards**, a highly coveted collection of honours in the film industry.
 - The Award is named after Dhundiraj Govind Phalke, the pioneering filmmaker who gave India its first film— 'Raja Harishchandra', in 1913.
 - It is awarded for "its outstanding contribution to the growth and development of Indian cinema.
- **Overview:**
 - The award was instituted by the government in 1969 and consists of a 'Swarna Kamal', a cash prize of Rs 10 lakh, a certificate, a silk roll, and a shawl.
 - The **President of India presents the award**.
 - The first recipient of the award was **Devika Rani Roerich in 1969**.

Read More: [National Film Awards](#), [Dadasaheb Phalke Award](#)

Note:

Independence Day Gallantry Awards 2024

Why in News?

As India celebrates its 78th Independence Day, **President of India** has conferred prestigious **gallantry awards** on **Armed Forces and Central Armed Police Forces personnel**.

- Additionally, 1,037 police medals were awarded to personnel from Police, Fire, Home Guard & Civil Defence, and Correctional Services for exceptional bravery and service.
- The Prime Minister has also unveiled ambitious goals to shape India's future, highlighting the nation's commitment to its security forces and development.

Note:

- India's Independence Day theme for the year 2024 is '**Viksit Bharat**', symbolising the **vision of becoming a developed nation by 2047**.

What are the Gallantry Awards Awarded on the 78th Independence Day?

- **Kirti Chakra:** Four Kirti Chakras including three posthumous were awarded.
 - The Kirti Chakra award for gallantry was first instituted in 1952 as **Ashoka Chakra class -II**, and was redesignated as **Kirti Chakra** in 1967.
 - The medal is **circular in shape, made of standard silver**. The obverse features an embossed replica of the **Ashoka Chakra surrounded by a lotus wreath**.
 - The ribbon is green, divided into three equal parts by two orange vertical lines.
 - The medal is awarded for conspicuous gallantry otherwise than in the face of the enemy and **may be awarded posthumously**.
- **Shaurya Chakra:** 18 Shaurya Chakras including four posthumous were awarded.
 - The Shaurya Chakra Instituted in **1952 as Ashoka Chakra Class-III** and renamed in 1967 as Shaurya Chakra and awarded for gallantry, otherwise than in the face of the enemy.
 - **Circular in shape and of bronze**. On the obverse of the medal shall have embossed a replica of Ashoka Chakra in the centre, surrounded by a lotus wreath.

- Green colour ribbon **divided into four equal parts by three vertical lines**.
- If any recipient of the Chakra again performs such an act of gallantry as makes him or her eligible to receive the Chakra, such further act of gallantry will be **recorded by a Bar to be attached to the riband by which the Chakra is suspended**.

- For every Bar awarded, a replica of the **Chakra in miniature shall be added to the riband** when worn alone.

- The **Chakra is awarded for gallantry otherwise than in the face of the enemy**. The decoration may be awarded posthumously.

- **Sena Medal (Gallantry):** One Bar to Sena Medal (Gallantry) and 63 Sena Medals (Gallantry) including two posthumous were awarded.

- The **Bar to Sena Medal (Gallantry) is an award** given to personnel of the Indian Army who have already received the **Sena Medal (Gallantry)** and have performed subsequent acts of bravery or exceptional service.

- **Nao Sena Medals:** 11 Nao Sena Medal (Gallantry) were awarded.

- **Nau Sena Medal is a gallantry award for Indian Navy** personnel, awarded for exceptional devotion to duty or courage.

- **Vayu Sena Medals:** 6 Vayu Sena Medals (Gallantry) were awarded.

- Vayu Sena Medal instituted in 1960 to recognise exceptional devotion to duty or acts of courage by **Air Force personnel**.

- The award is given for **individual acts of exceptional devotion to duty or courage** that have special significance for the Air Force. **VM (Gallantry) is awarded for acts of courage**, and VM (Devotion to Duty) is awarded for exceptional devotion to duty.

- A bar is given for each subsequent award, and the award may be made posthumously.

- **Mention-in-Despatches:** The President has also approved 39 Mention-in-Despatches, including to **Army Dog Kent (posthumous)** for their significant contributions in different military operations.

- The operations include **Operation Rakshak, Operation Snow Leopard, Operation Sahayata, Operation Hifazat, Operation Orchid and Operation Katchal**.

Note:

CIVILIAN AND GALLANTRY AWARDS

CIVILIAN AWARDS

Bharat Ratna

- India's **highest civilian award**; instituted in **1954**
- Awarded for exceptional service/performance of the highest order in any field of human endeavour
- Award includes certificate & medallion (no monetary grant)
- Recommended to President by the PM
- Can be given (max) thrice per year



Padma Awards

- Instituted in **1954**; announced annually on eve of Republic Day
- Recognises achievements in all fields/disciplines involving **public service**
- Categories: Padma Vibhushan > Padma Bhushan > Padma Shri
- Recommended by **Padma Awards Committee** (constituted by PM annually)
- **Suspended twice** - 1978-79 and 1993-97
- Max no. of awards per year - **120**



GALLANTRY AWARDS

- **Wartime Gallantry** instituted on **26th January 1950**
- **Peacetime Gallantry** instituted on **4th January 1952**
- **Announced twice** a year - Republic Day and Independence Day
- Order of Precedence - **Param Vir Chakra > Ashoka Chakra > Mahavir Chakra > Kirti Chakra > Vir Chakra > Shaurya Chakra**

- Eligibility -
 - » All officers of all ranks (**Army, Navy, IAF**), Reserve forces, **Territorial army**
 - » **People providing nursing services** under any of the above forces

Wartime Gallantry Awards



Peacetime Gallantry Awards



- Operation Rakshak is an ongoing counter-insurgency and **counter-terrorism operation conducted by the Indian Army in Jammu and Kashmir**. It began in June 1990 during the height of insurgency in the region.
- **Operation Snow Leopard** was launched by the Indian Army in response to the **standoff with Chinese forces** along the **Line of Actual Control (LAC)** in eastern Ladakh.
 - The operation began in 2020 after China failed to restore the status quo ante in the region.
- **Operation Sahayata** is an Indian operation that provides **humanitarian assistance and disaster relief (HADR) support**.
- **Operation Orchid** was a **counter-insurgency operation** conducted by the Indian Army in the **Naga Hills and Tuensang area of Nagaland**.

Note:

- **Operation Hifazat** is a counter-insurgency operation conducted by the **Indian Army in the Nagaland-Manipur-Arunachal Pradesh area.**
- The **Mention-in-Despatches** is awarded for distinguished and meritorious service in **operational areas and acts of gallantry** which are not of a sufficiently high order to warrant the grant of gallantry awards.
 - All **Army, Navy and Air Force personnel and other lawfully** constituted Armed Forces, members of the Nursing services and civilians working under or with the Armed forces are eligible.
- Names may be **included posthumously** and a person's name may be mentioned in more than one despatch. A certificate is issued to each individual where their name is mentioned in a despatch.

What are the Different Types of Police Medals Awarded?

- **President's Medal for Gallantry (PMG):** The highest **police decoration for bravery**, awarded for acts of conspicuous gallantry in saving life and property, preventing crime, or arresting criminals.
 - 1 PMG awarded to Shri Chaduvu Yadaiah, Head Constable of Telangana Police, for his extraordinary bravery during a violent confrontation with criminals involved in chain-snatching and arms dealing.
- **Medal for Gallantry (GM):** 213 GMs awarded for acts of gallantry, with categories including decorations for **firefighters and civil defence personnel.**
- **President's Medal for Distinguished Service (PSM):** 94 President's Medal for Distinguished Service (PSM) awarded for exceptional and distinguished service in police work.

- **Medal for Meritorious Service (MSM):** 729 Medal for Meritorious Service (MSM) were awarded for valuable service characterized by **resourcefulness and devotion to duty.**

What are the Ambitious Goals Highlighted by the PM on India's 78th Independence Day?

- **Ease of Living:** Enhance urban quality of life through improved infrastructure and services.
- **Revival of Nalanda Spirit:** The PM sought to revive the **ancient Nalanda University spirit**, positioning India as a global education hub by promoting higher learning and research, building on the **inauguration of Nalanda University in 2024.**
- **Semiconductor Production:** Reduce import dependency and lead in **semiconductor** manufacturing.
- **Skill India:** Referring to **Budget 2024**, the PM highlighted landmark initiatives to train **India's youth and make it the skill capital of the world.**
- **Industrial Manufacturing:** Establish India as a major global manufacturing hub.
- **Design in India:** Create products for both domestic and international markets.
- **Green Jobs and Hydrogen:** Reiterated India's commitment to **becoming a global leader in green hydrogen and creating sustainable jobs** in environmental conservation and renewable energy.
- **Climate Change Targets:** Reiterated India's ambitious goal of **500 GW of renewable energy by 2030**, noting that **India has been the only country among the G20 nations to meet its Paris Accord goals.**
- **Youth in Politics:** Bring 100,000 new youth into politics to fight nepotism and casteism.



Note:

Rapid Fire Current Affairs

Highlights

- Anubhav Awards
- INS Arighat
- Shilp Didi Mahotsav
- Orcas
- Guru Padmasambhava
- Return of Guru Granth Sahib Copies to India
- New Chairman of ICC
- Sensor for Parkinson's Disease Management
- Master Clock System of Indian Railways
- Electricity Supply to Neighboring Countries
- Productivity of Houses of Parliament
- Humanoid Skull for Gaganyaan Mission
- Legal Right to Disconnect from Work
- Japan's SLIM Moon Mission
- Civic Police Volunteers
- Indigenous Zn-ion Battery Technologies
- Approval of Vigyan Dhara Scheme
- 8th Dharma Dhamma Conference 2024
- Muthamizh Murugan International Conference 2024
- Classical Language Centres Demand Autonomy
- Inaugural Session of NCGG Advanced Leadership Development Program
- ADB Aid for Improving Healthcare in Maharashtra
- JUICE Probe's Double Slingshot Manoeuvre
- Vaccine-Derived Polio Detected
- Californium
- RBI Governor Secures "A+" Global Rating
- RBI Intensifies Scrutiny on P2P Lending Platforms
- Shiveluch Volcano of Russia
- Maharaja Bir Bikram Kishore Manikya Bahadur
- Decline in Outward Remittances Under LRS
- National Geoscience Awards 2023
- World Sanskrit Day
- Landslide Damages Teesta-V Hydropower Station
- Denial of Service (DoS) Attack
- Uttarakhand Launches India's First Gross Environment Product
- RBI Issues Framework for SROs in Financial Markets
- Catastrophe Bonds
- BHAVISHYA
- New Parliamentary Committees Formed for 2024-25
- Former PM Shri Atal Bihari Vajpayee's Punya Tithi
- Emerging Covid Strains Spark Renewed Concerns
- WHO Declares Mpox a PHEIC
- National Pest Surveillance System (NPSS)
- Navroz
- 10th Edition of Exercise MITRA SHAKTI
- Tarang Shakti to be Made a Biennial Event
- Jiyo Parsi Scheme Portal
- No Legal Right on Child for Sperm/Egg Donors
- Civil Registration System (CRS) Portal
- Perseid Meteor Shower
- PM-PRANAM

Anubhav Awards

Recently, the **Department of Pension and Pensioners' Welfare (DoPPW)** organised the **7th Anubhav Awards** ceremony to recognise the contribution made by Central Government employees while in service.

- The Anubhav Awards, initiated by the DoPPW, is designed to recognize and document the experiences of retiring and retired Central Government employees.
 - Launched in **March 2015** on the direction of the Prime Minister of India, the objective is to create a culture of sharing experiences, fostering good governance and administrative reforms through the Anubhav Portal.
- **Eligibility:** Retiring Central Government employees/pensioners are eligible. Write-ups published on the Anubhav Portal, during the time frame notified by DoPPW, are considered for the awards.

Note:



- **Submission Window:** Write-ups can be submitted up to 8 months prior to retirement and up to 1 year after retirement.
 - Submissions are published after assessment by relevant Ministries/Departments.
- 7th Anubhav awards ceremony conferred 5 Anubhav Awards and 10 Jury Certificates to personnel from 9 different ministries/departments.

Read more: [Unified Pension Scheme](#)

INS Arighat

Recently, India commissioned its second **nuclear-powered ballistic missile submarine (SSBN)**, INS Arighat (S-3) built under the Advanced Technology Vessel (ATV) project.

- INS Arighat will now join its forerunner, **INS Arihant**, which became fully operational in 2018, to strengthen the country's '**nuclear triad**'- the capability to fire nuclear weapons from the land, air and sea.
 - INS Arighat, despite matching INS Arihant in size and displacement, can carry more **K-15 missiles**.
 - **Power:** 83 MW **pressurised light-water reactors**, developed with Russian assistance.
 - **Arighat** has four large vertical launch system (VLS) tubes that carry the **Sagarika SLBMs (K-15)** - a hybrid propulsion, two-stage, solid-propellant missile with a range of more than 700 km
- **Future developments:** Third submarine INS Aridhaman, a 7,000 tonne vessel, capable of carrying **K-4 missiles** with a range of 3,500 km will be commissioned next year.
- **SSBN** stands for "Ship, Submersible, Ballistic, Nuclear" and refers to a type of submarine that carries nuclear-tipped ballistic missiles.
 - SSBNs are crucial for deterrence because they are difficult to detect and can escape a surprise first strike by an enemy to launch retaliatory strikes.

Read More: [INS Vagir](#), [INS Karanj](#), [Defence Research and Development Organisation \(DRDO\)](#)

Shilp Didi Mahotsav

Recently, the Union Minister of Textiles visited the '**Shilp Didi Mahotsav**' at Dilli Haat, New Delhi, showcasing the government's dedication to empowering **female artisans (known as Shilp Didi)** through the **Shilp Didi Programme**.

- The office of **Development Commissioner (Handicrafts)** under the aegis of **Ministry of Textiles** has launched the '**Shilp Didi Programme**' on a pilot basis for 100 days.
 - A baseline survey identified 100 women artisans, known as Shilp Didis, representing 72 districts across 23 states, covering a total of 30 different crafts.
 - The primary objective of the Programme is to foster economic empowerment and financial independence among female artisans throughout India.
 - The initiatives commenced with e-training from June 2024 and includes components of **E-commerce on-boarding, Entrepreneurship Development, Regulatory and social media On-boarding, Marketing Opportunities**, etc.
- **Initiatives for the Upliftment of Artisans:** **PM Vishwakarma Scheme, Ambedkar Hastshilp Vikas Yojana, Mega Cluster Scheme, National Handicraft Development Programme, Comprehensive Handicrafts Cluster Development Scheme**, and **One District One Product**.

Read more: [PM Vishwakarma Scheme](#)

Orcas

Recently, a **group of Orcas** had attacked a **sailboat** off the coast of **Spain**. Since 2020, over 700 interactions between orcas and boats near the **Strait of Gibraltar** have been recorded.

- Theories Behind Orca Behavior:
 - **Playful Behaviour:** Some scientists believe orcas may be targeting boats as a **form of play**, where young orcas **learn and repeat** new behaviours.
 - **Traumatic Response:** Some scientists theorise that a traumatic event, like getting **tangled** in fishing lines, might have triggered aggressive behaviour in orcas.
 - Some scientists suspect that a **female orca (White Gladis)**, went through a similar traumatising experience, which **altered her behaviour**.
- **About Orcas:** **Orcas, or killer whales**, are the largest member of the **dolphin** family.
 - They use **echolocation** to communicate and hunt.
 - Echolocation is a technique used by **bats, dolphins and other animals** to determine the location of objects using reflected **sound**.

Note:

- Each Orcas group (pod) has **distinctive noises** that its members will recognise even at a distance.
- They are **apex predators** with diverse diets, consuming **fish, penguins, seals, sea lions**, and even whales, using four-inch-long teeth.

Read More: [Project Dolphin](#)

Guru Padmasambhava

A two-day conference on the **Life and Living Legacy of Guru Padmasambhava** was held in Nalanda, Bihar, organised by the International Buddhist Confederation (IBC) and Nava Nalanda Mahavihara.

- The event will focus on Guru Padmasambhava's adaptation of Buddhist teachings to local cultures and traditions.
- Guru Padmasambhava, also known as **Guru Rinpoche**, was an 8th-century sage whose teachings significantly shaped the **dissemination of Buddha Dhamma** across the Himalayan region and is regarded as the **second Buddha**.



- Guru Padmasambhava, one of the founding fathers of **Tibetan Buddhism**, appeared in Tibet in 749 A.D. The other two founders were **Acharya Shanta Rakshita and prevalent king Thisong Deotsen**.
 - Tibetan Buddhism is the **Vajrayana (Tantric)** form of Mahayana Buddhism from India.
- The **Nyingma Sect's teachings** are based on Padmasambhava. The teachings are classified into **nine yanas, with Dzogchen (Great Perfection) being the most important**.

- Dzogchen focuses on pure awareness through meditation, and the **Vajrayana tradition involves ritual, symbols, and tantric practices to achieve nirvana**.

- The IBC is a **Buddhist umbrella body based in New Delhi** that serves as a common platform for Buddhists worldwide. It currently has a membership of more than 320 organisations in 39 countries.

Read more: [Buddhism in India](#)

Return of Guru Granth Sahib Copies to India

Recently, two **saroops (copies)** of the **Guru Granth Sahib** were returned to the Indian embassy in Doha, Qatar.

- In December 2023, Qatari authorities **confiscated** two Sikh holy books from individuals accused of operating a **religious establishment** without approval.
- **About Saroop:** Saroop is a **physical copy** of Sri Guru Granth Sahib, also called **Bir** in Punjabi.
 - Every Bir has **1,430 pages**, which are referred to as **Ang**.
 - The Sikhs consider the saroop of Guru Granth Sahib a **living guru** and treat it with utmost respect.
 - **Guru Arjan Dev (5th Sikh guru)** compiled the **first Bir** of the Guru Granth Sahib in **1604**, and installed it at the **Golden Temple** in Amritsar.
 - Later, **Guru Gobind Singh (10th Sikh guru)** added verses penned by **Guru Tegh Bahadur (9th Sikh guru)** and compiled the **Bir** for the **second and last time**.
- **About Guru Granth Sahib:** It is a compendium of **hymns** written by **six Sikh gurus, 15 saints**, including **Bhagat Kabir, Bhagat Ravidas**, Sheikh Farid and Bhagat Namdev, 11 Bhattas (balladeers) and four Sikhs.
 - The verses are composed in **31 ragas**.
 - In **1708**, Guru Gobind Singh declared the Guru Granth Sahib the **living Guru** of the Sikhs.

Read More: [Sikhism](#)

New Chairman of ICC

Recently, **Jay Shah** has been elected as the new chairman of the **International Cricket Council (ICC)**, becoming the **youngest** ever to reach this position.

Note:



- He currently holds the position of **Board of Control for Cricket in India (BCCI)** secretary and will take over the charge at ICC from **1st December, 2024**, succeeding Greg Barclay of New Zealand as ICC chairman
 - He became the **fifth Indian** to become ICC chairman after Jagmohan Dalmiya, Sharad Pawar, N Srinivasan and Shashank Manohar.
 - **About ICC:**
 - **Establishment:** Imperial Cricket Conference (as the ICC was originally called) was founded in **1909**. It became the International Cricket Council in **1989**.
 - **Function:** The ICC is the **global governing body** for cricket. It organises major international tournaments, including the **ICC Cricket World Cup**, **ICC T20 World Cup**, and ICC Champions Trophy.
 - **Membership:** The ICC has **108 members** as of 2024, consisting of **12 Full Members** who play Test matches and **96 Associate Members**.
 - **Headquarters:** Dubai, UAE
- Read More:** [Pay Parity in Cricket](#)

Sensor for Parkinson's Disease Management

Recently, the Scientists at the **Institute of Advanced Study in Science and Technology (IASST)**, an autonomous institute of the **Department of Science and Technology** have developed an affordable, portable **smartphone-based fluorescence turn-on sensor system to enhance Parkinson's disease management** by accurately monitoring L-dopa levels.

- Parkinson's disease is characterised by a **continuous decrease in neuron cells**, leading to a reduction in **dopamine (neurotransmitter) levels** in our body
 - **L-dopa is a chemical that converts to dopamine**, acts as an anti-Parkinson's drug, helping compensate for the dopamine deficiency.
 - However, the progressive nature of Parkinson's requires increasing L-dopa dosage, **which can cause serious side effects**, while **insufficient dosage leads to the return of symptoms**.
- The sensor is made by coating a **layer of silk-fibroin protein**, from silk cocoons, onto reduced **graphene oxide nanoparticles**.
 - This combination helps the sensor glow when it detects L-dopa in blood, sweat, or urine.

- The researchers have designed a smartphone-based electronic device that connects to a 365nm **Light Emitting Diodes (LED)** via a 5V smartphone charger and is housed in a dark chamber to block external light.
 - By shining the LED on the sensor and taking pictures with a smartphone, the **device captures color changes**.
- The RGB (red, green and blue) values from the images are used to **evaluate L-dopa concentration** using a mobile app, making it ideal for quick testing in remote areas.

Read more: [Parkinson's Disease](#)

Master Clock System of Indian Railways

Indian Railways is set to develop a **master clock system to synchronise time across its operations**, addressing challenges in safety and accident investigations.

- Currently, timekeeping is manual, leading to discrepancies across zonal railways. This inconsistency complicates investigations into rail accidents, where accurate timelines are essential.
 - **Key Features of Master Clock:**
 - These digital clocks will have **GPS synchronisation** for precise timekeeping through GPS, uniform design across stations, and suitability for both platforms and office areas.
 - They include **GPS receivers, NTP synchronization, LED illumination**, and **can send alarms** for monitoring.
 - NTP synchronization involves using the **Network Time Protocol (NTP)** to align clocks across devices over a network with a standard time source, **usually Coordinated Universal Time (UTC)**, ensuring accurate timekeeping.
 - **Need for a Master Clock System:**
 - **Safety:** Accurate time records are crucial for analysing accidents and understanding event sequences.
 - **Operational Efficiency:** A unified system will enhance train operations and management.
 - **Technological Advancements:** Modern technology demands reliable timekeeping solutions.
 - The system will utilise time data from **Navigation with Indian Constellation (NAVIC)** or the **National Physical Laboratories (NPL)**.
- Read More:** [Evolution of Timekeeping Devices, Atomic Clock.](#)

Note:

Electricity Supply to Neighboring Countries

Recently, the Ministry of Power has modified the guidelines for the [Import/export \(cross-border\) of Electricity, 2018](#).

- It allows power plants that export electricity to neighbouring countries to **sell** their output **back in India**.
- It also allows sale of power to the **local grid** if there is a **delay** in **payments** from neighbouring countries.
 - Rules were amended in the wake of [ongoing unrest in Bangladesh](#).
- Indian Electricity Suppliers to Bangladesh:
 - **Adani Power's** 1600 MW [Godda power plant](#) in Jharkhand sells electricity exclusively to **Bangladesh** since 2023.
 - An exclusive **power purchase agreement** between **Adani Power** and the **Bangladesh Power Development Board** was signed in 2017.
 - [National Thermal Power Corporation Limited \(NTPC\)](#) also has an agreement to supply **500 MW** of power to Bangladesh.
 - The [Damodar Valley Corporation \(DVC\)](#) secured a contract to sell **300 MW** to Bangladesh in 2018.

Read More: [India-Bangladesh Relations](#)

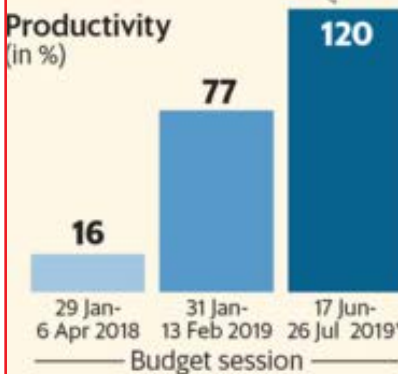
Productivity of Houses of Parliament

Recently, both Houses of [Parliament](#) (Lok Sabha and Rajya Sabha) were [adjourned sine die](#) after the [Budget session](#).

Minimum disruption, maximum productivity

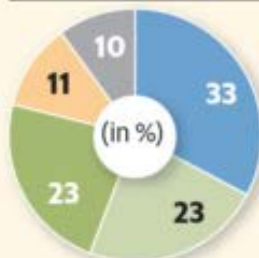
The ongoing budget session has seen 120% productivity in the 17th Lok Sabha in the backdrop of NDA winning a majority in the elections to the Lower House.

Working days till 16 July: **20**
 Days with no lunch break: **8**
 Number of adjournments: **0**
 Adjournments post 11pm: **3**



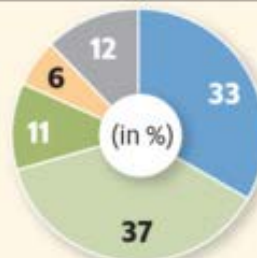
Breakup of business

Financial Non-legislative Legislative Questions Others



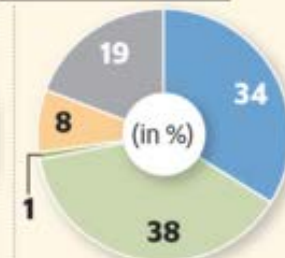
Budget session (17 June-26 July 2019)*

Bills introduced: 20
 Bills passed: 8



Budget session (31 Jan-13 Feb 2019)

Bills introduced: 9
 Bills passed: 4



Budget session (29 Jan-6 April 2018)

Bills introduced: 5
 Bills passed: 4

*Data till 16 July Source: PRS Legislative Research

- **Adjournment sine die** refers to the termination of a parliamentary session for an indefinite period, without a scheduled date for reconvening.
- The Lok Sabha held **15 sittings, totaling 115 hours**, with a **productivity rate of 136%**. Meanwhile, the Rajya Sabha functioned for **90 hours and 35 minutes**, achieving a productivity rate of **118%**.

Note:

- During the session, over 27 hours in the Lok Sabha were dedicated to Budget discussions.

Productivity of the Houses of Parliament:

- It refers to the **amount of legislative work accomplished** during a session. This includes the number of bills passed, questions answered, and debates held.
- Factors Affecting the Productivity:
 - **The number of sittings:** More sittings allow the House more time to execute its work.
 - **The Length of Each Sitting:** Longer sittings allow for more debate and discussion.
 - **The Number of Members Present:** A larger number of members present means that there are more people to participate in debates and votes.
 - **The Level of Disruption:** Disruptions, such as protests and walkouts, can waste valuable time and prevent the Houses from doing their work.

Read More: [Productivity of Lok Sabha and Implications](#)

Humanoid Skull for Gaganyaan Mission

Recently, the [Indian Space Research Organisation's \(ISRO\)](#) Thiruvananthapuram unit has finalised the design of the **skull** for the humanoid on the [Gaganyaan mission](#).

- It weighs **800 grams** and measures **200 mm x 220 mm**. It is made from a **high-strength aluminium alloy that can** endure pressure and vibration.
- Before launching astronauts for the Gaganyaan mission in 2025, ISRO will send a humanoid robot, [Vyommitra](#), into space to test **spacecraft safety**.
- Vyommitra will resemble the **upper human body**, featuring **movable arms, face, and neck** equipped with sensors to perform human-like functions and assess the impacts of space travel.

Gaganyaan Mission: It will carry **three Indian astronauts** into space, **about 400 km** from the Earth's surface, for **three days**.

- Indian Air Force pilots **Prasanth Balakrishnan Nair, Ajit Krishnan, Angad Pratap and Shubhanshu Shukla** have been selected for the Gaganyaan mission.
- **Shubhanshu Shukla** has been shortlisted for a joint **ISRO-NASA space flight** in 2025 which will take him to the [International Space Station](#).

Read More: [Gaganyaan](#)

Legal Right to Disconnect from Work

Recently, in a significant labour reform, Australia granted the **legal right to "disconnect" from work** outside of their designated hours.

- This reform allows Workers to **refuse to monitor, read, or respond to work-related communications outside their official hours** unless such refusal is deemed unreasonable.
 - The determination of what constitutes an "unreasonable" refusal will be based on various factors, including the **nature of the employee's role and compensation for extra hours**.
- Australia's legislation is in line with similar laws in **European and Latin American countries**, reflecting a global movement against the **"always on" work culture**.
 - France introduced a similar right to disconnect in 2017, aiming to combat the constant connectivity facilitated by smartphones and other digital devices.
- **Industry Concerns:** Australian industry leaders have expressed concerns, labelling the law as rushed, confusing, and potentially disruptive to business operations.
 - Employers are worried about the practical implications, such as the uncertainty of whether they can contact employees after hours for tasks like offering extra shifts.
- India has also explored similar protections with the **Right to Disconnect Bill of 2018**. However, this bill has yet to gain significant legislative traction.

Read more: [India's Labour Reforms](#)

Japan's SLIM Moon Mission

Recently, **Japan's space agency, JAXA**, has concluded operations of its **Moon lander, the Smart Lander for Investigating Moon (SLIM)**, also known as the **"Moon Sniper"**, after losing communication with it.

- This operation was halted after the failure of multiple attempts to establish connection with the SLIM spacecraft.
- **About SLIM:**
 - SLIM is a **small-scale lunar lander** designed for **precise landings, reduced equipment size and weight, and investigating the Moon's origins**.

Note:

- It was an uncrewed spacecraft that also aimed to **test low-gravity exploration technology** essential for future solar system exploration.
- It is nicknamed the **“Moon Sniper”** because of its **ability to land very precisely on the Moon’s surface**.
- It made a soft landing on the Moon in January 2024, making Japan the **5th nation** to achieve this feat.
 - Other countries that have **successfully achieved a soft lunar landing** are India, Russia, the United States, and China.
- **ISRO’s Chandrayaan 3 Mission** successfully soft-landed a lander on the moon, in the natural satellite’s south pole region.

CHANDRAYAAN 3

India's 3rd lunar mission; a successful attempt at achieving a soft landing on lunar south

BRIEF HISTORY

Lunar Mission	Aim	Launch Vehicle	Success
● Chandrayaan 1 (2008)	Create a 3D atlas of moon & Mineralogical mapping	PSLV – C11	Detection of water and hydroxyl on lunar surface
● Chandrayaan 2 (2019)	Exploring lunar south pole	GSLV MkIII-M1	Lander and rover crashed but orbiter successfully collected data

COMPONENTS

- Lander - **Vikram**; Rover - **Pragyan** (same as Chandrayaan 2)
 - ▶ Both designed to last for 14 days; not supposed to come back to the earth
- Spectro-polarimetry of Habitable Planet Earth (**SHAPE**)
 - ▶ An experimental payload in propulsion module
 - ▶ Study spectro-polarimetric signatures of Earth (near-infrared wavelength range)

ASPECTS TO STUDY

- Lunar quakes
- Thermal properties of lunar surface
- Changes in plasma near the surface
- Accurately measuring distance b/w Earth and the moon

MISSION LIFE

- 1 lunar day (~14 Earth days)

LAUNCH VEHICLE

- LVM3 - M4



India became the 1st country to successfully land on Lunar south pole and 4th to achieve soft-landing on Lunar surface (after US, Russia and China)

Why Chandrayaan 3 Succeeded?

- A **“failure-based design”**, unlike the “success-based design” of Chandrayaan-2
 - ▶ Even if all the sensors failed and engines stopped, **Vikram was sure to make the landing**
 - ▶ Provision of **multiple attempts** for landing if attempt 1 failed
- Developed accordingly to **rule out the scenario of crash landing**
 - ▶ Expanded landing area for more flexibility to land safely
 - ▶ Equipped with more fuel to enable longer-distance travel

Importance of Lunar South Pole

- Vastly different, more **challenging terrain** compared to lunar equatorial region
- Potential repositories of valuable **information about early Solar System**
- Impact **future deep space exploration** significantly
- **Water may be concentrated** in the moon's southern hemisphere



Drishti IAS

Read More: [Chandrayaan-3: India’s Imperatives for Space Leadership](#)

Note:

Civic Police Volunteers

The rape and murder of a doctor at Kolkata's R.G. Kar Medical College has sparked widespread protests across India. The accused, a **civic police volunteer (CPV)** with access to sensitive areas of the hospital, has highlighted serious concerns about the **oversight and roles of these volunteers**.

- CPV, or village police volunteers as they are known in rural areas, are **contractual workers** engaged by the police for assistance, particularly in traffic management and other minor duties that do not require police personnel.
 - They are **not trained for formal law enforcement tasks**, such as conducting investigations or making arrests.
 - In West Bengal, to qualify as a CPV, individuals must be local residents, at least 20 years old, have passed Class VIII (initially Class X), and have no criminal record.
- **Legal and Judicial Concerns:** In *Chandra Kanta Ganguli vs The State of West Bengal and Others, 2016*, the Calcutta High Court has raised concerns about the recruitment and legal validity of CPVs, noting issues with the **vetting process (background check)**.
 - The High Court and police administration have stated that **CPVs have been involved in law enforcement duties** despite orders restricting them from such roles, leading to further legal concerns.
- **Criticisms:** There have been multiple reports of CPVs overstepping their roles and involvement in criminal activities.
 - Critics argue that CPVs are sometimes appointed based on political loyalty rather than merit, leading to concerns about the politicization of the police force and potential conflicts of interest.

Read more: [Community Policing](#)

Indigenous Zn-ion Battery Technologies

Jawaharlal Nehru Centre for Advanced Scientific Research (JNCASR), an autonomous institute of the Department of Science and Technology (DST) has signed a MoU with **Hindustan Zinc Limited (HZL)**.

- The MoU aims to develop **new variants of zinc materials** and propel the **commercialization of zinc-based batteries**.
- **Zinc-Ion Battery:** A Zinc-Ion Battery is a type of **rechargeable battery** that uses **zinc ions** as the **charge carrier** instead of lithium and sodium ions.
- Zinc is a **blue-grey, metallic element**, and a **good conductor of electricity**.
 - **Sphalerite, Smithsonite, Willemite** etc are ores of Zinc.
 - The most common alloy is **brass**, which is a mixture of **zinc and copper**.
- **Importance of Zinc-Ion Batteries:**
 - **Cost Efficiency:** It is a **low-cost alternative** to expensive lithium-ion batteries.
 - **Abundant Materials:** It is **abundantly** available on Earth.
 - **Safety and Performance:** Zinc-ion batteries are considered **safer** and offer **stable** performance across temperature ranges.
- **Modifications Required for Commercialization of Zinc:** Zinc is **thermodynamically unstable** with water-based solutions and therefore requires suitable modifications at the **electrode, electrolyte and interfaces**.
- **Expected Outcomes:** Researchers will explore developing new **Zinc alloys** for use as anodes in Zn-ion batteries and electrolytes for their application in rechargeable batteries.
- Production and uses of **Zinc-Ion Batteries** are aligned with **Sustainable Development Goals (SDGs)** like **SDG7 and SDG13**.

Read More: [Lithium-ion Technology](#), [Minerals](#)

Approval of Vigyan Dhara Scheme

The **Union Cabinet** approved the continuation and merger of various schemes of the **Department of Science and Technology (DST)** into **three major components** under a unified central sector scheme named '**Vigyan Dhara**'.

- **Components:** It has three broad components.
 - Science and Technology (S&T) Institutional and Human **Capacity Building**
 - Research and Development
 - Innovation, Technology **Development and Deployment**.

Note:

- Existing schemes like the [INSPIRE programme](#) would fall under one of these three components.
- **Duration:** The scheme has been proposed for the **15th Finance Commission** period from 2021-22 to 2025-26.
- **Primary Objective:** To promote S&T capacity building, research, innovation, and technology development, thereby strengthening the [Science, Technology, and Innovation \(STI\) ecosystem](#) in India.
- **Gender Parity:** The scheme includes focused interventions to increase women's participation in Science and Technology (S&T), with the ultimate goal of achieving [gender parity](#) in Science, Technology, and Innovation (STI).
- **Viksit Bharat 2047:** All programs under 'Vigyan Dhara' will be aligned with DST's 5-year goals toward realising the vision of [Viksit Bharat 2047](#).
- **Research and Development:** The R&D component of the scheme will align with the [Anusandhan National Research Foundation \(ANRF\)](#), adhering to global standards while addressing national priorities.

Read More: [Science Technology and Innovation Policy](#)

8th Dharma Dhamma Conference 2024

Recently, the [8th Dharma Dhamma conference](#) was organised by the **India Foundation** in collaboration with **Gujarat University** in Ahmedabad.

- Vice-President **Jagdeep Dhankhar** was the **chief guest** for the event.
- The theme for the 2024 conference is ["Cosmology in Dharma and Dhamma."](#)
- **Dharmic cosmology**, unique to Indian traditions, **frees people** from the **fear of death**. It highlights the perspective that **life is brief** and **may not have a definitive meaning**.
 - The roots of Dharmic cosmology are found in the [Vedas](#) and further developed in texts like the [Itihasa-Purana](#) and [Brahmanas](#), as well as the Buddhist [Nikayas](#) and [Sutras](#), and [Jain Karikas](#) and [Sutras](#).
- The conference is an initiative of **India Foundation**, aiming to highlight the essential identity between the Dharma (Hindu) and Dhamma (Buddhist) viewpoints.
 - India Foundation is an **independent research centre** focussed on the issues, challenges and opportunities of the Indian polity

- The conference seeks to facilitate the exchange of ideas and foster **harmony** between [Hindu and Buddhist civilisations](#), emphasising their relevance over millennia.

Read More: [Buddhism in India](#)

Muthamizh Murugan International Conference 2024

Recently, the **Muthamizh Murugan International Conference** in Palani showcased Tamil culture and spirituality, drawing over one lakh devotees from around the world.

- The conference's objectives include **spreading the core principles of Murugan worship**, making his philosophical doctrines accessible, uniting global devotees, and propagating teachings from Puranas and Thirumurai.
- Lord Murugan, also known as **Kartikeya, Skanda, or Subrahmanya**, is a Hindu deity. He is the son of Lord Shiva and Goddess Parvati, depicted with six faces and a peacock as his mount.
- Murugan is the primary Hindu god in Tamil Nadu, and he is also revered in other parts of India, Malaysia, Singapore, Mauritius, Reunion Island, and Sri Lanka.

Classical Language Centres Demand Autonomy

Recently, concerns over the **autonomy of Special Centres for Classical Languages** have intensified, with demands for independent functioning to effectively promote Telugu, Kannada, Malayalam, and Odia.

- India recognizes **six classical languages**: Tamil, Sanskrit, Telugu, Kannada, Malayalam, and Odia, with dedicated centres for each, though only the **Tamil centre enjoys autonomy**.
- Centres for Telugu, Kannada, Malayalam, and Odia operate under the **Central Institute of Indian Languages (CIIL)** in Mysuru, facing challenges in event organization and staffing due to financial dependencies on CIIL.
 - Project Directors from these centres sought autonomy and submitted reports, but have received no further guidance from the Union Education Ministry.

Note:



- **Tamil and Sanskrit receive significant financial support**, with Tamil being autonomous and **Sanskrit having dedicated universities**, while the other classical languages struggle with limited funding and vacant positions.
 - For example, the Telugu centre in Nellore and the Odia centre in Bhubaneswar are severely understaffed, with limited financial resources impacting their operations.
- The Government of India established the status of “Classical Language in India” in 2004, recognizing languages with significant historical and cultural value.

Sl. No.	Languages	Year of Declaration
1.	Tamil	2004
2.	Sanskrit	2005
3.	Telugu	2008
4.	Kannada	2008
5.	Malayalam	2013
6.	Odia	2014

Read more: [Classical Languages](#)

Inaugural Session of NCGG Advanced Leadership Development Program

The **National Centre for Good Governance (NCGG)** has recently held the inaugural session of the **Advanced Leadership Development Program on Public Policy and Governance for Civil Servants of FIPIC/IOA countries** in August 2024.

- It was attended by 40 civil servants from 11 countries, including Seychelles, Somalia, and South Africa, reinforcing India’s commitment to **global governance** improvement and collaboration in **public policy**.
- It discussed themes such as **geopolitical potential, cyber security, and public-private partnerships**.

National Centre for Good Governance (NCGG):

- It is an **autonomous institute** under the **Department of Administrative Reforms and Public Grievances**, Government of India.
- NCGG promotes good governance by conducting **national and international training**, carrying out **governance-related studies, organizing workshops and consultations**, and undertaking **initiatives focused on citizen-centric governance**.
- It has its head office in **New Delhi** and a registered office in Mussoorie.
- It was established in 2014 by upgrading the **National Institute of Administrative Research (NIAR)**, which was part of the **Lal Bahadur Shastri National Academy of Administration (LBSNAA)**, the IAS training academy in Mussoorie.

Read more: [Capacity Building Programme](#)

ADB Aid for Improving Healthcare in Maharashtra

The **Asian Development Bank (ADB)** committed a loan package of USD 500 million to improve access to quality and affordable **tertiary health care** and medical education in Maharashtra.

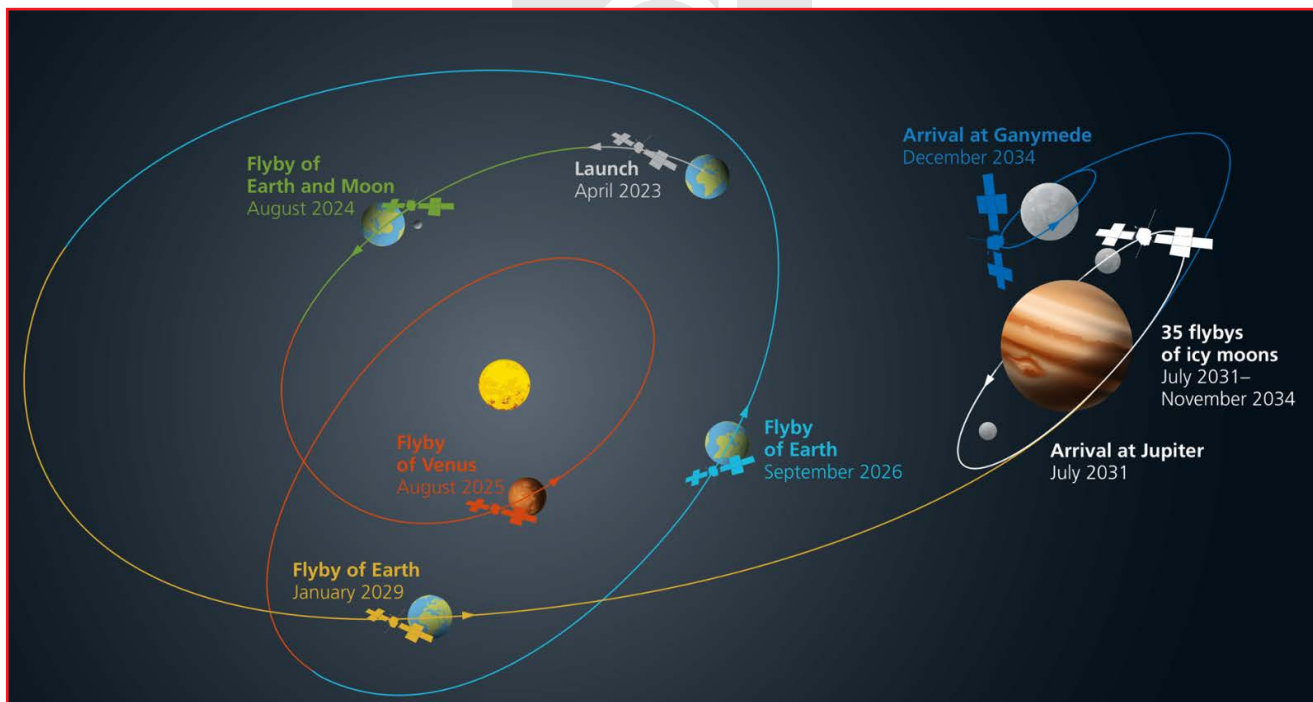
Note:

- It will help establish **four medical colleges** incorporating **climate and disaster-resilient, gender-responsive, and socially inclusive** features in under-served districts.
- It will reduce **out-of-pocket expenses**, and create policy actions for recruiting and retaining **quality medical staff**.
 - It envisages hiring at least **500 new doctors** for four new governmental medical colleges.
 - It will help establish **India's first** state led health care and medical education **centres of excellence (CoE)**.
- **About ADB:**
 - The ADB is a **multilateral development bank** focused on reducing poverty and improving quality of life in its developing member countries.
 - It was established in 1966, with 31 members.
 - Currently, ADB has 68 members of which **49** are from within **Asia and the Pacific** and **19 outside**.
 - It is headquartered in **Manila, Philippines**.
 - **India** is a **founding** member of ADB and its **fourth largest** shareholder after the US, China and Japan.

Read More: [ADB's Commitment to India's Development](#)

JUICE Probe's Double Slingshot Manoeuvre

Recently, the European Space Agency's (ESA) **Jupiter Icy Moons Explorer (JUICE) Probe** performed a double **slingshot manoeuvre**, using the gravitational forces of both the Moon and Earth in quick succession.



- JUICE first flew **434 miles** from the **Moon's surface**, then **4,229 miles** from **Earth's surface**. The Moon's gravity slightly altered JUICE's path, allowing a significant gravity assist from Earth.
 - This is called the **"gravity assist" method** which saves **propellant** by using the gravitational pull of **celestial bodies** to alter the spacecraft's speed and trajectory.
 - Successful execution of the slingshot put JUICE on course to reach **Jupiter** by 2031 with the help of three further single gravity assists: Venus in 2025, and then the earth again in 2026 and 2029.

Note:



➤ **JUICE Probe:**

- It was launched in **April 2023** and aims to explore **Jupiter** and its three large icy moons viz. **Callisto, Europa, and Ganymede**.
- It will perform fly-bys of its three large icy moons and finally orbit **Ganymede** to study the potential to support life.
- Following up on NASA's 1990s **Galileo mission** to Jupiter, the ESA-led JUICE mission will orbit Jupiter.
 - Other important missions to study Jupiter are **Juno Mission (NASA)**, **Cassini-Huygens (NASA and ESA)** and **Galileo (NASA)**.

Vaccine-Derived Polio Detected

Recently, a child from Meghalaya was diagnosed with **vaccine-derived polio (VDP)**.

- VDP occurs when the **weakened (attenuated)** strain of poliovirus used in the **oral polio vaccine (OPV)** mutates and **regains** the ability to cause **paralysis**.

What is polio

■ **Poliomyelitis (polio) is a highly infectious viral disease, mainly affecting children**

■ **According to WHO, the virus is transmitted from person-to-person, mainly through the faecal-oral route**

STRAINS

■ **There are three types of polio virus strains — P1, P2 and P3**

■ **P2 was eradicated globally in 1999**

■ **India attained a polio free status in 2014 after successfully eliminating the wild P1 and P3 strains**



VACCINATION SCHEDULE

OPV: At 6 weeks, 10 weeks and 14 weeks

IPV: At 6 weeks and 14 weeks

OPV booster: Between 16 and 24 months

- VDP typically occurs in areas with **low immunisation coverage**, poor sanitation, or among **immunocompromised** individuals.
- More than **90%** of VDP outbreaks are due to the **Wild poliovirus type 2 (WPV2)** present in OPV.
- The Indian government does not count **vaccine-associated paralytic poliomyelitis (VAPP)** as polio since these cases are **sporadic** and pose little or **no threat** to others.

Note:



drishti

- The WHO declared **India polio-free in 2014**. This case does not jeopardise India's **polio-free status**.
- **Types of Poliovirus: WPV1, WPV2, and WPV3** are three types of wild polioviruses (naturally occurring), with identical symptoms but **different genetic structures**.
 - **WPV2** and **WPV3** were eradicated in **2015** and **2019** respectively with ongoing global **efforts to eradicate WPV1**.
 - Currently, wild poliovirus is **endemic** in **Pakistan** and **Afghanistan**.
- **Inactivated Polio Vaccine (IPV)** was developed by **Jonas Salk** using an **inactivated virus** while **Oral Polio Vaccine (OPV)** was developed by **Albert Sabin**, containing a **live, attenuated virus**.

Read More: [Polio Eradication](#)

Californium

Recently, police in Bihar's Gopalganj seized **50 grams** of the highly **radioactive metal Californium**, estimated to be worth **Rs 850 crore**.

- **Californium** is a **silvery-white metal** that tarnishes gradually when exposed to air at room temperature.
- It is so **soft and malleable** that it can be sliced with a razor blade and its **spectral lines** have been detected in **supernova**.
- **Chemical symbol** of Californium is **Cf** and the **atomic number** is **98**.
- Created in 1950 at Berkeley, it is a **powerful neutron emitter**.
- It is utilized in **portable metal detectors** to identify gold and silver ores, **locate water and oil layers in wells**, and **detect metal fatigue and stress** in airplanes.
- Neutrons from **Californium (Cf-252)** are utilised to serve the **treatment of brain and cervical cancers** when radiation therapy proves futile.
- Highly radioactive and extremely costly, Californium is priced at approximately **Rs 17 crore per gram** in the international market (one of the most expensive substances in the world).

Read more: [Illegal Sale of Uranium](#)

RBI Governor Secures "A+" Global Rating

Prime Minister of India recently congratulated **Reserve Bank of India (RBI) Governor** Shaktikanta Das

for receiving an **'A+' rating in the Global Finance Central Banker Report Cards 2024**, marking his second consecutive achievement of this high honour.

- Shaktikanta Das is **one of only three central bankers globally** to receive an "A+" rating, alongside **Denmark's Christian Kettel Thomsen** and **Switzerland's Thomas Jordan**.
- The rating, assessed by **Global Finance magazine**, evaluates **central bank governors** of almost 100 important nations based on their performance in key areas such as **inflation control**, **economic growth**, **currency stability**, and **interest rate management**, with grades ranging from "A+" to "F."
- Global Finance's Central Banker Report Cards, initiated in 1994, serve as a key indicator of a **central bank's effectiveness in managing economic challenges**.
- The recognition underscores the RBI's success in balancing inflation control with economic growth, especially in a volatile global economic environment.

Read more: [Reserve Bank of India](#)

RBI Intensifies Scrutiny on P2P Lending Platforms

The **Reserve Bank of India (RBI)** has intensified its regulatory scrutiny on **Non-Banking Financial Company–Peer to Peer Lending Platform (P2P) lending platforms** following the discovery of multiple **regulatory violations**, including high levels of **non-performing assets (NPAs)**.

- RBI identified violations, including unauthorised deposit acceptance and **unusually high balances in escrow accounts** raised concerns during RBI's review.
- Some P2P platforms **allowed lenders to recall funds prematurely**, replacing them with new lenders who were **unaware of the loans they were taking over**, mimicking **Ponzi schemes**.
 - A Ponzi scheme is an investment fraud that pays existing investors with funds collected from new investors.
 - The Ponzi scheme is named after **Charles Ponzi**, who in 1919 in Boston, United States ran a fraudulent investment scheme promising to double investment in 90 days.
- P2P lending platforms **enable individuals to lend directly to borrowers** via RBI-regulated NBFCs, facilitating quick loan disbursements for short-term needs.

Note:

- RBI's guidelines state that NBFC-P2P entities should only act as **intermediaries without assuming any credit risk**, a norm that was found to be violated.
 - P2P platforms cannot promote peer-to-peer lending as an **investment product** with features like assured minimum returns or liquidity options.

Read more: [Fintechs Leading India's Start-up Ecosystem](#)

Shiveluch Volcano of Russia

Recently, the **Shiveluch volcano** in Russia erupted after a 7.0 magnitude **earthquake** struck the eastern coast of the country.

- Additionally, the **Ebeko volcano** on the **Kuril Islands** also released ash in the atmosphere.
- Shiveluch volcano is a large and **active volcano** in **Kamchatka peninsula**, Russia.
 - The summit has a broad **caldera** (a large crater) that was formed during a past eruption.
- In **November 1952**, a devastating 9.0 magnitude earthquake in **Kamchatka** caused significant damage and triggered a **tsunami** in **Hawaii**.

Kamchatka Peninsula:

- It is located in the **Russian Far East** and extends into the **Pacific Ocean**, separating the **Sea of Okhotsk** from the **Bering Sea** portion of the ocean.
- It is a part of the **Pacific Ring of Fire** and contains both active and dormant volcanoes.
- It is a **UNESCO World Heritage Site**.
- **Tata Power** won a contract in **2017** to mine coal from **Krutogorovskoye Coal Deposit** in Kamchatka peninsula.



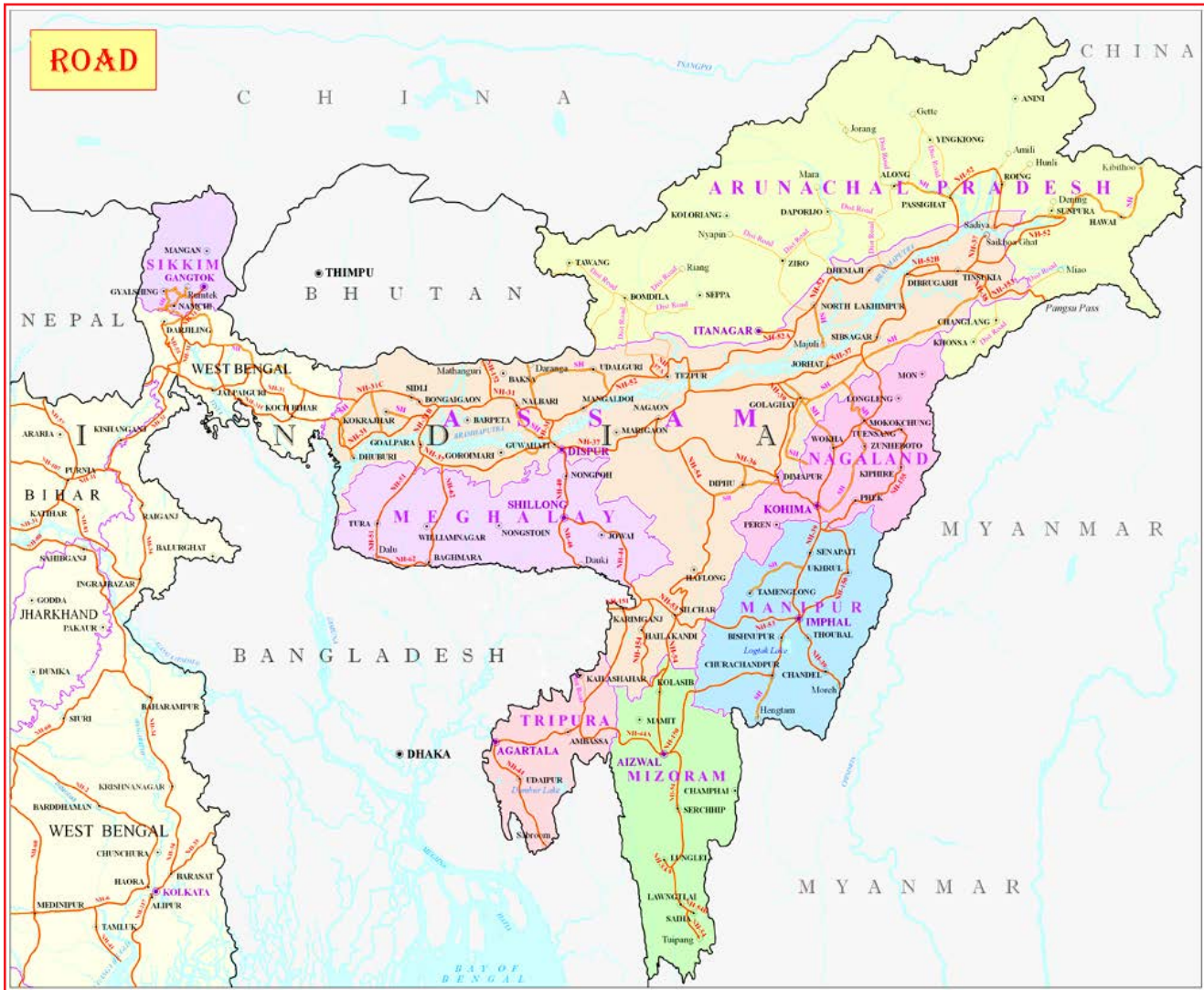
Read more: [22nd India-Russia Annual Summit](#)

Maharaja Bir Bikram Kishore Manikya Bahadur

Recently, the **Prime Minister (PM)** paid homage to Maharaja Bir Bikram Kishore Manikya Bahadur on his **birth anniversary**.

Note:

- PM highlighted his significant contributions to **Tripura's development** and his dedication to empowering the poor and tribal communities.



Maharaja Bir Bikram Kishore Manikya Bahadur:

- He was born on **19th August 1908** in Tripura, also known as the **“Modern Architect of Tripura”**.
- He established the **first higher educational institution**, advocated for **land reforms**, and reserved land for the **indigenous** people, leading to the formation of the **Tripura Tribal Areas Autonomous District Council (TTAADC)**.
- He was the **first ruler of Tripura to visit Europe and America** (1931-1939).
- He passed away at the young age of 39 in 1947 untimely death impacted the development of Tripura.
- **Agartala airport**, earlier known as **Singerbhil Airport**, was renamed after **Maharaja Bir Bikram Kishore Manikya Bahadur** in July 2018.
 - The land for this was donated by him and was used as a technical base for the Royal Air Force during **World War II**.

Tripura:

- Tripura is the **2nd most populous in the northeast region (after Assam)**, sharing borders with **Bangladesh, Mizoram and Assam**.

Note:

- **Wildlife Sanctuaries:** Gumti Wildlife Sanctuary, Rowa Wildlife Sanctuary, Sepahijala Wildlife Sanctuary and Trishna Wildlife Sanctuary
 - National Parks: Bison (Rajbari) NP and Clouded Leopard NP.
- Read More: [Maharaja Bir Bikram Airport: Tripura. Greater Tipraland, Demand of Tripura.](#)

Decline in Outward Remittances Under LRS

The recent data from the [Reserve Bank of India \(RBI\)](#) highlights a significant **drop in outward remittances** under the [Liberalised Remittance Scheme \(LRS\)](#), reflecting the impact of global economic uncertainties and domestic policy changes.

- Outward remittances decreased by 43.93% to USD 2.181 billion in June 2024 from USD 3.890 billion in June 2023.
- The introduction of [Tax Collection at Source \(TCS\) at 20%](#) on overseas tour packages has **disincentivized remittances**, except for education and medical treatment.
 - Travel accounted for over 50% of total outflows, with amounts falling from USD 1.482 billion in June 2023 to USD 1.275 billion in June 2024.
- Global and domestic economic fluctuations and [inflation](#) have led individuals to reduce non-essential transfers, causing a decline in outward remittances.
- Outward remittance means the transfer of money from India to another country or region. LRS is governed by the [Foreign Exchange Management Act, 1999](#) and regulated by RBI.
 - LRS allows resident individuals, including minors, to remit up to **USD 250,000 per financial year** for permissible current or capital account transactions such as travel, medical treatment, education, gifts, donations, maintenance of relatives, and investment in shares, debt instruments, and immovable properties overseas.
- **TCS is an tax collected by sellers on specific transactions**, including foreign remittances under the LRS. When individuals send money abroad, travel, TCS is collected by the authorised dealer, typically a bank, and deposited with the government. This ensures **tax compliance on overseas financial activities**.

- TCS is not applicable on international credit card spending.

Read more: [International Credit Card Spending Outside India under LRS](#)

National Geoscience Awards 2023

Recently, the [President](#) of India conferred the [National Geoscience Awards \(NGA\) 2023](#) to 21 geoscientists.

- **Prof. Dhiraj Mohan Banerjee** received the **Lifetime Achievement Award** for his pioneering work in **phosphorites and Precambrian geology**.
- **Dr Ashutosh Pandey** was honoured as the **National Young Geoscientist** for his research on the **Eastern Dharwar Craton**.

National Geoscience Awards:

- **About:** It is one of the **oldest and most prestigious honours** in the field, established by the **Ministry of Mines** in **1966**.
 - Prior to **2009**, these awards were known as the **National Mineral Awards**.
- **Objective:** The purpose of these awards is to **recognise individuals and teams for exceptional achievements and significant contributions in various geoscience fields**, including mineral discovery and exploration, mining technology and mineral beneficiation, and both fundamental and applied geosciences.
- **Eligibility:** Any Indian citizen who has made notable contributions to these areas is eligible for the award.
- **Categories:** It is given under 3 categories:
 - Lifetime Achievement
 - **National Geoscience Awards**
 - National Young Geoscientist Award.
- **Geoscience**, also known as Earth science, is the **study of the Earth**, including its processes, surface, natural resources, and water and ecosystems. It includes disciplines like **Geology** (examines the **Earth's composition**, structure, and history) and **Geophysics** (applied mathematics and physics to study the Earth's internal structure).

Read More: [National GeoScience Award](#)

Note:

World Sanskrit Day

Recently, the **Prime Minister (PM)** issued warm greetings in celebration of **World Sanskrit Day**.

- **About World Sanskrit Day:**
 - The first World Sanskrit Day was celebrated in **1969**.
 - It is celebrated every year on **Shraavana Poornima**, which is the **(Full Moon)** day in the month of Shraavana in the Hindu calendar. It also coincides with **Raksha Bandhan**.
 - This day is celebrated to **show gratitude and respect towards the Sanskrit language**.
- **Sanskrit Language:**
 - Sanskrit is an ancient **Indo-Aryan language** and is considered the **mother of many Indian languages** also referred as **Dev Vani** (language of the deities).
 - Sanskrit is divided into **Vedic Sanskrit** and **Classical Sanskrit**.
 - **Vedic Sanskrit:** The older, more archaic form found in texts like the **Rig Veda, Upanishads, and Puranas**.
 - **Classical Sanskrit:** A later, standardized form based on **Panini's** grammar, used in literature, philosophy, science, and art.
 - It is one of the **22 official languages** in the **Eighth Schedule of the Indian Constitution**.
 - It is recognized as one of the **6 Classical languages** of India, alongside **Tamil, Telugu, Kannada, Malayalam, and Odia**.

Read More: [Sanskrit Today: Bridging Past and Present](#)

Landslide Damages Teesta-V Hydropower Station

A **landslide** in East Sikkim caused significant damage to the **National Hydroelectric Power Corporation's (NHPC) Teesta-V hydropower station site**.

- This incident adds to the challenges faced by the project already affected by a **glacial lake outburst flood (GLOF)-induced flash flood** in October 2023.
 - A landslide is the **downward movement of rock, debris, or earth** under the influence of gravity, encompassing five slope movement modes: falls, topples, slides, spreads, and flows.

- Teesta-V Power Station (510 MW) commissioned in 2008 is a **run of the river** scheme to harness the **hydro power potential of river Teesta**. The Power Station beneficiary states include Bihar, Sikkim, West Bengal, Orissa, and Jharkhand.
- The Teesta River is a **tributary of the Brahmaputra River (known as Jamuna in Bangladesh)**, flowing through India and Bangladesh. It originates from the **Chhombu Chhu glacial lake, Chunthang Sikkim**.
 - It flows through West Bengal, India, before entering Bangladesh. Originally, it flowed directly into the Padma River (in Bangladesh, the Ganga River is known as the Padma River), **but around 1787, it changed course to join the Jamuna River**.
 - **The Teesta Barrage** dam provides irrigation for the plains between the upper Padma and the Jamuna.

Read more: [Sikkim Dam Disaster Raises Concerns for India's Bhutan Hydropower Projects](#)

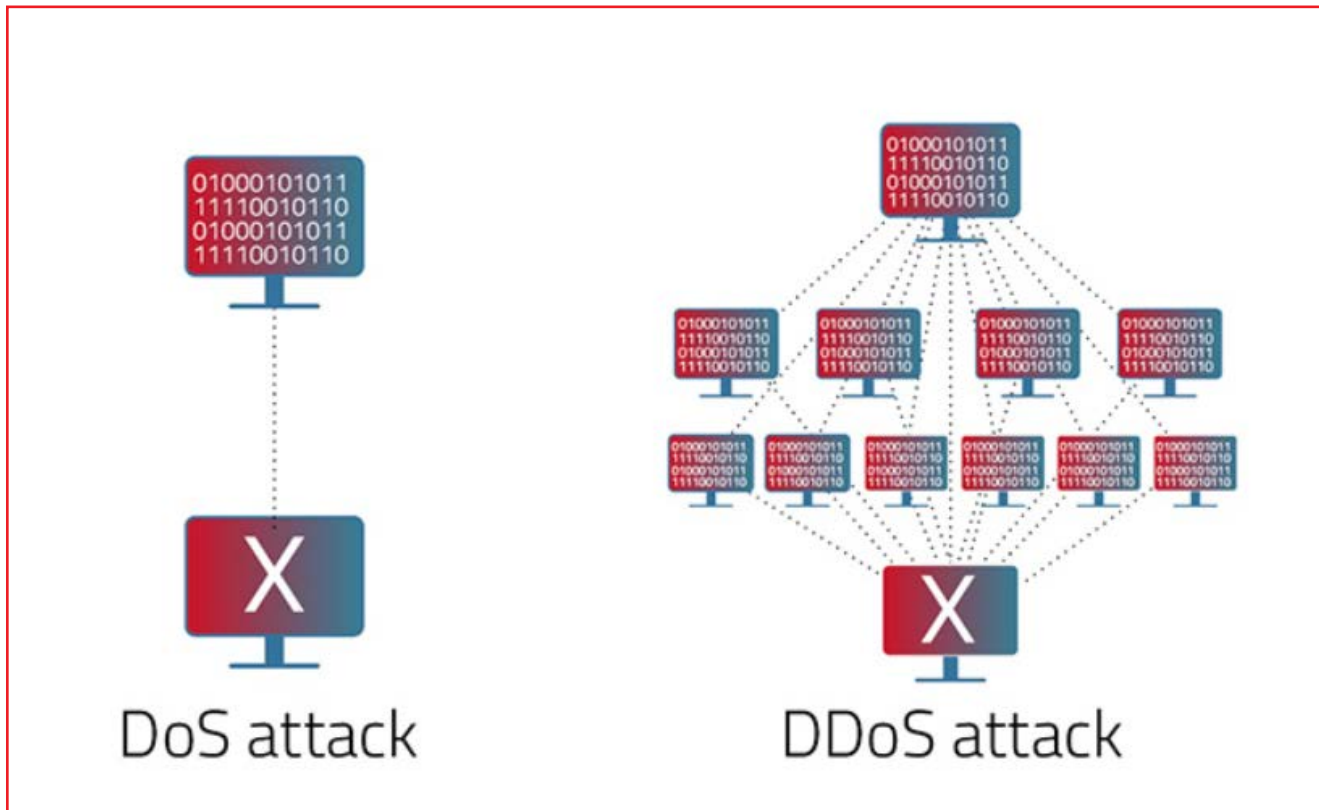
Denial of Service (DoS) Attack

Recently, Tesla CEO Elon Musk's interview with former US President Donald Trump on X (previously Twitter) was disrupted by a cyber attack called **Denial of Service (DoS)**.

- A **DoS attack** means that a website cannot be accessed because it has been targeted by **directing a large number of users against a particular online server** at the same time.
 - **Bots** can be used to **overwhelm the network**, resulting in slow loading times or a total pause in internet services.
- **Types of DoS Attacks:**
 - **Smurf Attack:** Attackers use a **fake IP address** which actually belongs to the target machine. As the target machines respond, they end up **flooding their own servers**, resulting in a DoS attack.
 - **SYN Flood Attack:** The attacker **sends a request** to connect to the target server but does **not complete the connection**. **Multiple targeted incomplete connections** again result in a load for the server, making it difficult to complete legitimate connections smoothly.
- **Example of DDoS:** Before the **Paris Olympics 2024**, hackers named "**Anonymous Sudan**" had launched a **Distributed Denial of Service (DDoS)** attack on French government network infrastructure.

Note:

- The principal **difference** between a **DoS attack** and a **DDoS attack** is that DoS is a **system-on-system attack**, while the DDoS involves **several systems attacking a single system**.



Read More: [Cyber Security](#)

Uttarakhand Launches India's First Gross Environment Product

Recently, Uttarakhand became the **1st state** in the country to assign **monetary values** to its natural resources, including **air, water, forest, and soil** and termed it as the **Gross Environment Product (GEP)**.

About GEP:

- It is a component of **Green GDP** and is considered as the product and service value that the ecosystem provides for human welfare and economic and social sustainable development, including **provisioning, regulating and cultural ecosystem services**.
 - Green GDP is an economic growth indicator that factors in environmental aspects like biodiversity losses and climate change costs along with the standard GDP.
 - In GEP index, man-made conservation (e.g., **amrit sarovars**) accounted separately from natural processes like rain.
- The GEP Index reflects comparative data from 2020-2022 and shows a **0.9% increase** in environmental products created.

Read more: [Mission Amrit Sarovar](#), [Green GDP](#), [Gross Environment Product \(GEP\)](#)

RBI Issues Framework for SROs in Financial Markets

The **Reserve Bank of India (RBI)** issued a framework for **recognition of self-regulatory organizations (SROs)** in the **financial markets** to strengthen compliance culture and provide a consultative platform for policy making.

Note:

- The proposed SROs can play a vital role in developing industry standards and best practices and ensuring member adherence.
- Under the new framework SROs must be **not-for-profit companies (registered under Section 8 of the Companies Act, 2013) with a minimum net worth of Rs 10 crore**, shareholding must be diversified, with no single entity holding 10% or more of the paid-up share capital.
- SROs regulate their respective industries or sectors, often in collaboration with government regulators.
 - The **SRO will act as a bridge between its members and the regulator**. It will ensure better compliance with regulatory guidelines, development of early warning signals, protection of stakeholder interests, and foster innovation.

Read more: [Omnibus SRO Framework](#)

Catastrophe Bonds

Catastrophe bonds, which have delivered substantial returns for investors, are now under scrutiny due to concerns that their risk-reward dynamics might unfairly disadvantage issuers, particularly in the Caribbean.

- Catastrophe bonds or **CAT bonds** are financial instruments that **pay high returns to investors in exchange for bearing the risk of significant disasters**. These bonds are typically issued by insurers, or governments to obtain additional coverage for catastrophic events like **hurricanes, earthquakes, or floods**.
 - Catastrophe bonds allow **investors to receive periodic interest payments**, but if a predefined catastrophic event occurs, the **bond's principal is used to cover the issuer's losses**.
 - Payout conditions are **based on triggers** defined in the bond contract, which can be **parametric** (e.g. wind speed, seismic activity) or **indemnity** (e.g. actual loss figures reported by insurers).
- Recently, in Jamaica Catastrophe bonds have delivered double-digit returns, averaging around 15%, while **issuers face significantly increased costs**.
 - The bond issued by Jamaica was **not triggered despite the island being declared a disaster area after Hurricane Beryl**, raising questions about the bond's terms.

- Caribbean heads of government are seeking an examination of catastrophe bonds and insurance-linked securities to assess their fairness and market selection.

Read more: [Catastrophe Bonds](#)

BHAVISHYA

Recently, **to address delays, clerical errors, and financial loss in pension processing**, the DOPPW (Department of Pension & Pensioners' Welfare) introduced '**Bhavishya**,' a centralised **pension processing software** for all central government Ministries/Departments.

- "Bhavishya" became **mandatory for all central ministries** and at present 99 ministries/departments are on board.
 - It ranked 3rd in [NeSDA\(National e-Governance Service Delivery Assessment\)](#), 2021.
- **Best Practices of Bhavishya:**
 - **Automatic registration of retirees with pre-filled data**, self-registration for stakeholders, and auto-calculation of retirement benefits.
 - Enforces strict **timelines for pension processing**, ensuring transparency, accountability, and easy identification of delays.
 - Provides real-time updates via email/SMS; integrated with [PFMS \(Public Financial Management System\)](#) for electronic PPOs, making the process paperless.
 - Integrated with banks for post-retirement services; ePPOs (**Pension Payment Orders**) are stored in [Digilocker](#) for easy access.
 - Issue of **Pensioners' Identity cards** through Bhavishya.

Read More: [Integration of e-PPO with Digi Locker, Old Pension Scheme, National Pension System and Atal Pension Yojana, System for Pension Administration Raksha \(SPARSH\)](#)

New Parliamentary Committees Formed for 2024-25

The recent constitution of **six new Parliamentary Committees** by [Lok Sabha Speaker](#) marks a strategic move in overseeing government functions.

- These committees include the [Public Accounts Committee \(PAC\)](#) (overseeing government expenditure),

Note:



Estimates Committee (examining government spending and ensuring efficiency), **Public Undertakings Committee** (focusing on the performance of public sector enterprises), and committees focused on the welfare of **Other Backward Classes (OBCs)**, **Scheduled Castes (SCs)**, and **Scheduled Tribes (STs)**.

- The newly constituted committees have a tenure of one year and include members from both the Lok Sabha and the Rajya Sabha.
 - Unlike the previous Lok Sabha, where **committee formation often involved elections**, the committees in the 18th Lok Sabha have been primarily formed through **consensus**.
- Parliamentary committees, originating from the **British Parliament**, in India derive their authority from the **Indian Constitution under Article 105 (powers and privileges) and Article 118 (regulation of business)**.
- Parliamentary Committees in India are of **two kinds: Standing committees and Ad hoc committees**.
 - **Standing committees** are **permanent committees** that are constituted by the Parliament to deal with specific areas of public policy or administration.
 - Ad Hoc Committees are temporary Committees formed for specific tasks or to review particular bills. Dissolved after completing their objectives.

Read more: [Parliamentary Committee System](#)

Former PM Shri Atal Bihari Vajpayee's Punya Tithi

Recently, PM Narendra Modi paid tributes to former PM Atal Bihari Vajpayee on his punya tithi at 'Sadaiv Atal' memorial.

- **Atal Bihari Vajpayee:** born on 25th December, 1924 in the erstwhile princely state of Gwalior (now a part of Madhya Pradesh).
 - He entered in national politics during the **Quit India Movement of 1942** which hastened the end of British colonial rule.
- In 1947, Vajpayee started working as a journalist for newspapers of **Deendayal Upadhyaya — Rashtradharma (a Hindi monthly)**, **Panchjanya (a Hindi weekly)** and the dailies **Swadesh** and **Veer Arjun**.

- Later, influenced by **Syama Prasad Mookerjee**, Vajpayee joined the Bharatiya Jana Sangh in 1951.

- He was the **former Prime Minister of India** and was elected to the position twice in 1996 and 1999.
- As a parliamentarian, Vajpayee was awarded with the **Pandit Govind Ballabh Pant Award** for Best Parliamentarian in 1994, which defines him as **“a role model par excellence for all legislators.”**
- He was conferred with the country's highest civilian honour, the **Bharat Ratna** in 2015 and second-highest civilian honour, the **Padma Vibhushan** in 1994.
- A revered former Prime Minister, he passed away on 16th August 2018.

Read More: [Atal Bihari Vajpayee Passes Away](#),

Emerging Covid Strains Spark Renewed Concerns

Recently, the central government has attributed the recent surge in **Covid-19** cases in India to two strains, **KP.1** and **KP.2**.

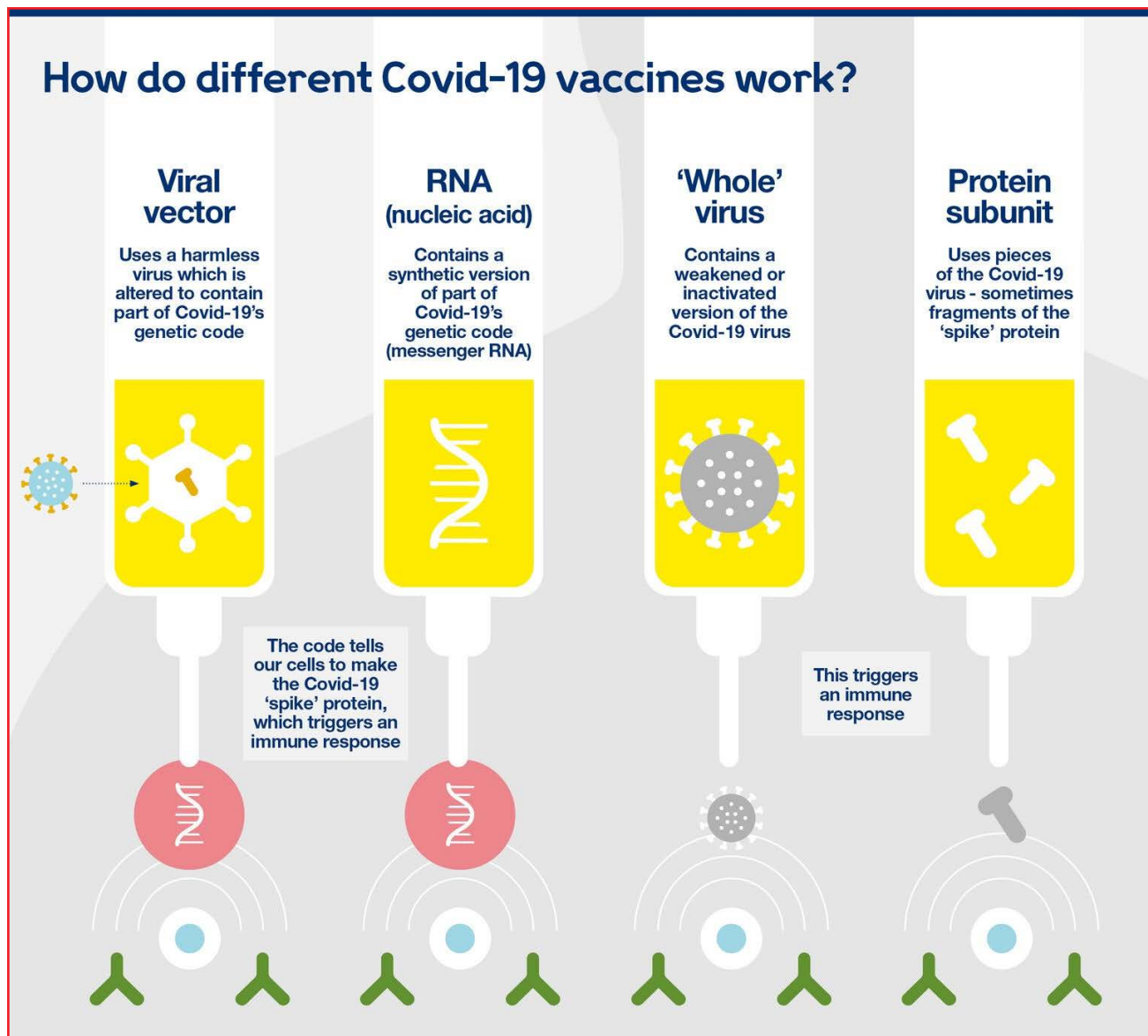
- These strains are categorised under the **“FLIRT” group** and have evolved from the **JN1 Omicron** variant.
- These are **highly transmissible**, causing **mild symptoms** such as fever, cold, cough, sore throat, body ache, and fatigue.
- KP.2 was classified by the **World Health Organization (WHO)** as a **Variant Under Monitoring**.
- **Covid-19** is an infectious disease caused by the **SARS-CoV-2 virus**.
 - **COVISHIELD, Covaxin** and **AstraZeneca** were among the recommended vaccines for Covid-19 in India.

Government Measures to Monitor the Spread of New Strains:

- The **Integrated Disease Surveillance Program (IDSP)** under the **National Centre for Disease Control (NCDC)** has been implemented in all 36 States/UTs and sanctioning Viral Research and Diagnostic Laboratories across India to improve virus detection and research.
- **Pradhan Mantri-Ayushman Bharat Health Infrastructure Mission (PM-A BHIM)**

Note:

How do different Covid-19 vaccines work?



Read More: [WHO Designates JN.1 as Variant of Interest as Covid-19 Cases Rise](#)

WHO Declares Mpox a PHEIC

The [World Health Organization \(WHO\)](#) has declared [mpox \(monkeypox\)](#), a [Public Health Emergency of International Concern \(PHEIC\)](#) due to a significant upsurge in cases, particularly in the [Democratic Republic of Congo \(DRC\)](#) and neighbouring African countries.

- The disease has been detected in 10 African nations this year, with over 96% of cases located in the DRC. The emergence of a **new virus strain, clade 1b, spreading mainly through sexual contact, is particularly concerning.**
 - The risk assessment of another clade (1a), which is spreading **mostly in children** through multiple modes of transmission, has also been considered to be high.
- The PHEIC designation is the **highest level of alarm under International Health Regulations (IHR, 2005)**, reflecting the disease's **potential to spread beyond Africa.**

Note:

- This is the **second time in two years that mpox** has been declared a global emergency.
 - Mpox is a viral illness caused by the monkeypox virus, a species of the genus **Orthopoxvirus**. Two different **clades exist: clade I and clade II**.
 - **Symptoms:** Skin rash or mucosal lesions which can last 2–4 weeks accompanied by fever, headache, muscle aches, back pain, low energy, and swollen lymph nodes.
 - **Transmission:** It can be **transmitted to humans through physical contact** with someone who is infectious, with contaminated materials, or with infected animals.
 - **Prevention:** Mpox can be prevented by avoiding physical contact with someone who has mpox. Vaccination, including the **JYNNEOS® vaccine**, can help protect those at risk.
 - **Treatment:** Persons with mpox should be isolated. **Several antivirals, such as tecovirimat**, have been used to treat mpox, and further studies are underway
- Read more: [Mpox Virus](#)

National Pest Surveillance System (NPSS)

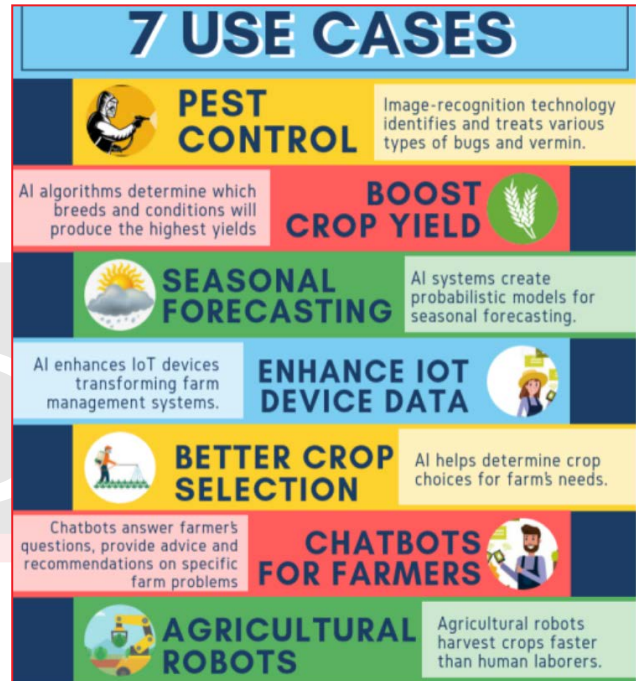
Recently, the union government has launched the **National Pest Surveillance System (NPSS)**, an **Artificial Intelligence (AI)-based platform** aimed at **connecting farmers with agricultural scientists** and experts to enhance pest control measures.

- This initiative is part of a broader strategy to **reduce farmers' reliance on pesticide retailers** and promote a scientific approach to pest management.

Features of NPSS Platform:

- **AI-Driven Analysis:** The system utilises **Artificial Intelligence (AI)** to analyse real-time data on pest infestations, allowing for timely interventions.
- **Direct Communication:** Farmers can easily **communicate with experts by uploading images of affected crops** or pests via their mobile phones, facilitating rapid diagnosis and treatment recommendations.
- **Reduction of Pesticide Dependence:** By providing **accurate pest management advice**, NPSS aims to decrease the overuse of pesticides, thereby promoting sustainable agricultural practices.

- **Widespread Reach:** The platform is **expected to assist approximately 140 million farmers across India**, enhancing accessibility to expert advice.
 - The app will help farmers avoid unnecessary pesticide purchases by providing accurate advice on pest management.
- **Integration with Local Outreach:** The technology will be disseminated through state-level outreach programs, ensuring that farmers receive support tailored to their regional agricultural challenges.



Read More: [Adoption of Modern Technology in Agriculture](#)

Navroz

The Prime Minister of India conveyed his greetings on the occasion of **Navroz, the Parsi New Year**, celebrated with great enthusiasm, particularly in Maharashtra and Gujarat.

- This year, Navroz, will be celebrated on 16th August 2024. While globally observed in **March**, in India, the celebration occurs in **July or August based on the Shahenshahi or Fasli calendar**, which does not consider the leap year.
- Navroz meaning “new day”, is deeply rooted in **Zoroastrianism**, one of the oldest monotheistic religions, founded by **Prophet Zoroaster in ancient Persia (modern-day Iran)**.

Note:

- The festival, named Jamshedi Navroz after the Persian King Jamshed.
- Parsi New Year celebration dates back 3000 years and was brought to India by Zoroastrians who migrated to Gujarat in the 7th century.
- **UNESCO** inscribed Navroz on the **Representative List of the Intangible Cultural Heritage of Humanity** in 2016, following an initial inscription in 2009.



Read more: [New Year Festivals Across India](#)

10th Edition of Exercise MITRA SHAKTI

Recently, the 10th edition of the India-Sri Lanka Joint Military Exercise MITRA SHAKTI began.

- **MITRA SHAKTI** is an annual exercise based on **counter insurgency** and **counter terrorism operations** in semi urban terrain.
 - It is the **largest bilateral exercise** being undertaken by the Sri Lankan Army and it forms a major part of India and Sri Lanka's growing defence partnership.

- It is designed for incorporating the current dynamics of **UN' peacekeeping** operations through tactical exercises and practical discussions.
- India's other exercise with Sri Lanka - **SLINEX (Navy)**
- Sri Lanka is an island country in South Asia located in the **Indian Ocean**, southwest of the Bay of Bengal and southeast of the Arabian Sea.
 - It is separated from the Indian subcontinent by the **Gulf of Mannar** and the **Palk Strait**, and shares a maritime border with India and the **Maldives**.
 - **India** is **Sri Lanka's 3rd-largest export destination** (after US and UK) with over 60% of Sri Lankan exports benefiting from the India-Sri Lanka FTA.
 - Both India and Sri Lanka are part of regional groups like **BIMSTEC** and **SAARC**.

Country	Exercise
Australia	Ex AUSTRAL HINDBAH
Bangladesh	Ex SAMPRITI
China	Ex HAND IN HAND
France	Ex SHAKTI
Indonesia	Ex GARUDA SHAKTI
Kazakhstan	Ex PRABAL DOSTYKK
Kyrgyzstan	Ex KHANJAR
Maldives	Ex EKVURIN
Mongolia	Ex NOMADIC ELEPHANT
Myanmar	IMBEX
Nepal	Ex SURYA KIRAN
Oman	AL NAGAH
Russia	Ex INDRA
Seychelles	Ex LAMITIYE
Sri Lanka	Ex MITRA SHAKTI
Thailand	Ex MAITREE
UK	Ex AJEYA WARRIOR
USA	Ex YUDHABHAYAS
USA	Ex VAJRA PRAHAR

Read More: [Major Military Exercises of India](#)

Tarang Shakti to be Made a Biennial Event

Recently, the **Indian Air Force (IAF)** chief Air Chief

Note:



Marshal (ACM) V. R. Chaudhari has announced plans to make the largest multilateral air exercise hosted by the Indian Air Force (IAF), a **biennial event**.

- **Phase one** of the exercise was **concluded at Sullur in Tamil Nadu** from the 6th-14th August and four countries including France, Germany, Spain and the United Kingdom participated with their assets.
 - The **Light Combat Aircraft (LCA)**, **Light Combat Helicopter (LCH)**, **Light Utility Helicopter (LUH)**, **trainer HTT-40**, and the **aerobatic helicopter team, Sarang**, took to the skies over Sullur Air Force station in an air display.
- **Phase two will be held at Jodhpur in Rajasthan** from 1st-14th September and it will see participation from Australia, Bangladesh, Greece, Singapore, the United Arab Emirates (UAE), the US, and 18 observer countries.

Read More: [India's 5G Fighter Aircraft and LCA Tejas](#), [Major Military Exercises of India](#)

Jiyo Parsi Scheme Portal

Recently, the **Minister for Minority Affairs** launched the **Jiyo Parsi Scheme** portal to facilitate Parsi couples in applying for the Jiyo Parsi Scheme.

Jiyo Parsi Scheme:

- It is a **Central Sector Scheme** implemented to **address the declining population of the Parsi community in India by using scientific protocol and structured interventions**.
- It will **provide financial assistance to Parsi couples** for medical treatment under standard medical protocol, as well as support for **childcare and assistance to dependent elderly**.
 - The beneficiaries and applicants will be able to check the status of their application and will be able to receive financial assistance online through the **Direct Benefit Transfer** mode.
- Since its inception in 2013-14, the scheme has **supported more than 400 Parsi children**.

Read More: [Welfare Schemes for the Minority Communities](#)

No Legal Right on Child for Sperm/Egg Donors

Recently, The **Bombay High Court** ruled that a **sperm or egg donor** does not have **legal rights** over a child and cannot claim to be the biological parent.

Understanding Surrogacy and its Regulation

SURROGACY

■ Having another woman bear a child for a couple (or single women or men) to raise.

■ The surrogate offers to carry a baby through pregnancy and then return the baby to the intended parent(s) once it is born.

■ Surrogacy is an option to fulfill the desire to have a child of a couple for whom it is physically or medically impossible or undesirable to carry a baby to term on their own.

■ There are two types of surrogacy – traditional surrogacy and gestational surrogacy.

■ In Traditional Surrogacy, a surrogate mother is artificially inseminated, either by the intended father or an anonymous donor. The surrogate mother provides the egg and is thus genetically related to the child.

■ In Gestational Surrogacy, an embryo is created using an egg and sperm produced by the intended couple and is transferred into the surrogate's uterus. The surrogate has no genetic link to the child. Her eggs cannot be used to conceive the child.

■ The Surrogacy (Regulation) Bill seeks to allow and regulate Gestational Surrogacy.

■ Surrogacy can be altruistic or commercial. In altruistic surrogacy, the surrogate is not paid for her services, except for medical expenses and insurance. In commercial surrogacy, the surrogate is paid over and above these expenses.

■ The Surrogacy (Regulation) Bill seeks to ban commercial surrogacy but protect the altruistic surrogate through enhanced, prescribed payments (for medical expenses, food and care, longer-duration insurance).

INDICATIONS FOR SURROGACY

■ Opting for surrogacy is often a choice made when women are unable to carry children on their own.

■ This can be for a number of reasons, including an abnormal uterus or a complete absence of a uterus either

congenitally or post-hysterectomy.

■ Women may have a hysterectomy due to complications in childbirth, medical diseases such as cervical cancer or endometrial cancer, or heart and renal conditions, etc

WHAT DO OTHER COUNTRIES DO?

■ Russia, Georgia, Ukraine, Columbia, Iran, and some states of the US allow commercial surrogacy

■ France, Finland, Italy, Japan, Spain, Sweden, Switzerland, Hungary, Ireland, etc. have banned all forms of surrogacy.

■ India seeks a middle path between these extremes, by banning

commercial surrogacy (including for foreigners) while allowing and regulating altruistic surrogacy for all persons of Indian origin.

■ Australia, Canada, Israel, Netherlands, New Zealand, South Africa, UK, Vietnam, Thailand, Cambodia, Nepal, Mexico have similar surrogacy practices as India seeks to establish.

Note:

- Surrogacy is an **arrangement in which a woman (the surrogate)** agrees to carry and give birth to a child on behalf of another person or couple (the intended parent/s).
 - A surrogate, **sometimes also called a gestational carrier**, is a woman who conceives, carries and gives birth to a child for another person or couple (intended parent/s).
- Under **the Surrogacy (Regulation) Act, 2021** a **widow or divorcee aged 35-45 or a legally married couple can avail of surrogacy** if they have a medical condition necessitating this option.
 - The intended **couple shall be legally married for at least 5 years**. Indian **man** aged **26-55 years** and a **woman aged 25-50 years**, who have no previous biological, adopted, or surrogate child.
- It also bans commercial surrogacy, which is punishable with a **jail term of 10 years and a fine of up to Rs 10 lakhs**.
- The **law permits only altruistic surrogacy**, where no money is exchanged, and the **surrogate mother must be genetically related to the intended parents**.
- Upon birth, the **child is legally recognised as the biological child of the intended couple**.

Read more: [Assisted Reproductive Technology](#)

Civil Registration System (CRS) Portal

The centralised **Civil Registration System (CRS) portal**, responsible for registering births and deaths across India, has been facing significant technical issues, leading to widespread disruptions in the issuance of certificates.

- According to the **2023 Registration of Births and Deaths (Amendment) Act**, all births and deaths in India from **1st October 2023** will be digitally registered through the CRS portal.
 - The digital birth certificates will serve as proof of date of birth for various services.
 - The centralised database will update the **National Population Register (NPR)**, **ration cards**, property registration and **electoral rolls**.

- The NPR, collected in 2010 and updated in 2015, has a database of 119 crore residents.
- So far, 23 States and six union territories have migrated to the new portal. States such as **Tamil Nadu which have their own portals** send the data compulsorily to the Centre in a real-time basis as mandated by the 2023 amendment.

- States have flagged issues in the CRS portal, such as slow performance, frequent error messages, and data syncing problems. These issues have caused delays in issuing certificates.

Read more: [India's Civil Registration System Report](#)

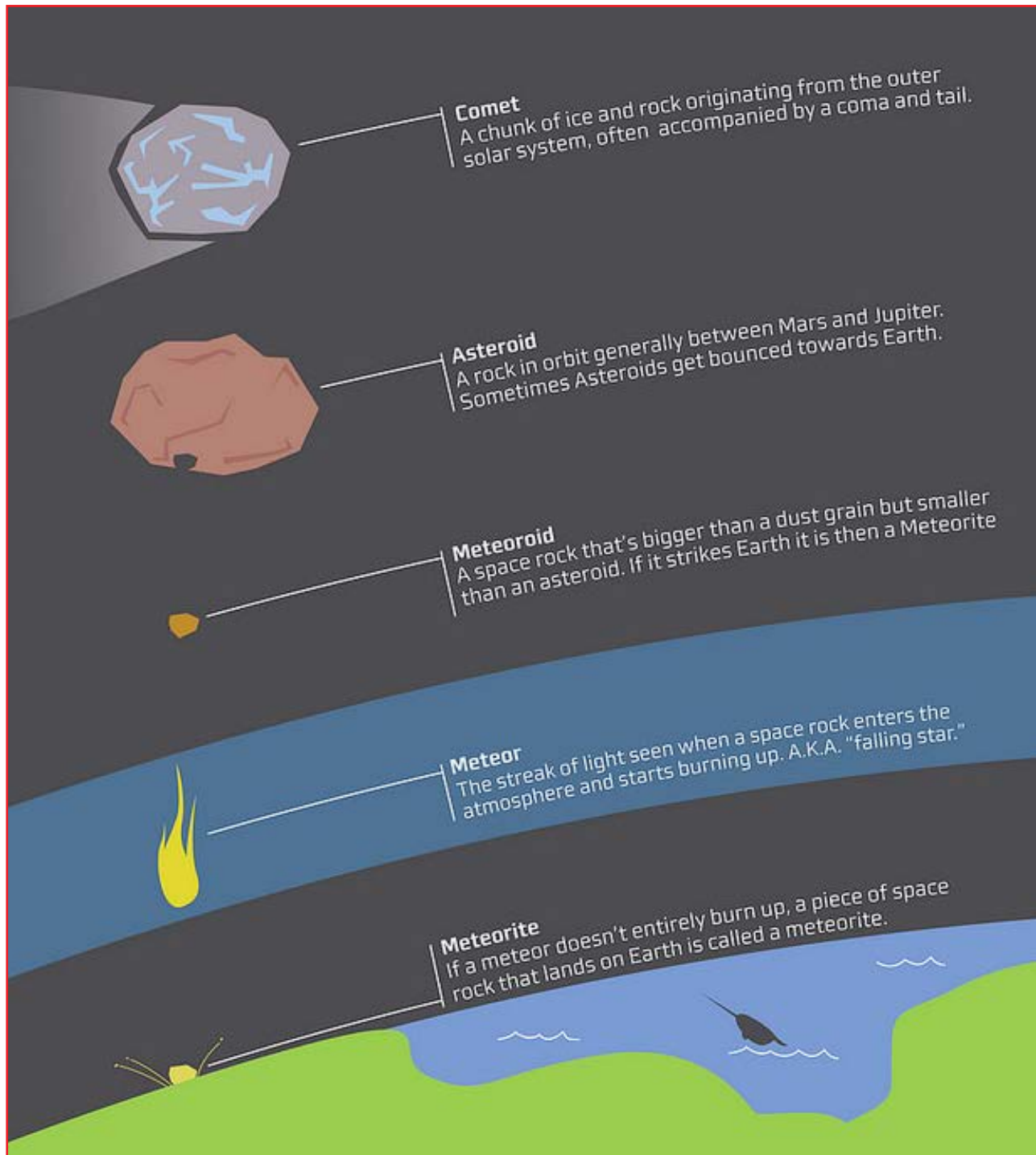
Perseid Meteor Shower

In 2024, the **Perseid meteor shower** began around July and will last until late August with peak activity occurring from 11th to 13th August, 2024. The meteor shower might be visible to the naked eye in many places between midnight and dawn, especially in the **northern hemisphere**.

- The Perseid meteors are debris left behind by the **comet Swift-Tuttle**, which orbits the Sun in an **elliptical path** that takes 133 years to complete once.
 - The name Perseid is believed to be derived from the **Perseus constellation**.
 - Comets are **frozen leftovers** from the formation of the **solar system** composed of **dust, rock, and ices**.
- When the **earth** moves through the **cloud of debris** intersecting its path around the Sun, **Earth's gravity** pulls the debris towards itself, producing the **meteor shower**.
- A meteor shower is a **raining-down of meteors (small pieces of rock in space)** over the earth from space at a particular time of year.
 - Most meteors **burn up** in the **atmosphere**.
 - Some that take a more **tangential path** through the air produce **small fireballs**.
- Meteors are better known as **"shooting stars"**. The light phenomenon in the **atmosphere** is called a **"meteor"**, while the **dust particle** is called a **"meteoroid"**.

Note:





Read More: [Sky Canvas: Artificial Meteor Showers](#)

PM-PRANAM

The Union Minister of State for Chemicals and Fertilisers in reply to a question in the Lok Sabha provided information regarding the PM-PRANAM initiative of the government.

Note:



drishti

PM-PRANAM

PM Programme for **Restoration, Awareness Generation, Nourishment** and **Amelioration** of Mother-Earth



Objective

To protect the health of “Mother Earth” by Incentivising the States/UTs with **reduced use of chemical fertilizers and promoting organic/ natural farming** and use of alternate fertilizers.

Methodology

Incentives to the states for **promoting alternate fertilizers and balanced chemical fertilizer** use to promote natural farming.



No separate financial support required

- **PM-PRANAM** stands for **PM Programme for Restoration, Awareness Generation, Nourishment, and Amelioration of Mother-Earth**.
 - It was announced in the **2023-24 Budget** by the Union government.
- **Aim:** To **complement state/UT** efforts to promote:
 - Sustainable and **balanced use of fertilisers**.
 - Encourage the **adoption of alternative fertilisers**.
 - Promote **organic and natural farming** practices.
- **Financial Mechanism:** States and UTs that **reduce their chemical fertiliser consumption** compared to the **past 3 years' average** will receive **50% of the savings** from the fertiliser subsidy.

Note:



- This grant can be used for the benefit of the local population, including farmers.
- **Fertiliser Types Covered:** Urea, [DAP \(Diammonium Phosphate\)](#), [NPK \(Nitrogen, Phosphorus, Potassium\)](#), and [MOP \(Muriate of Potash\)](#).
- **Scope:** All States and UTs in India.
- **Cabinet Committee on Economic Affairs (CCEA):**
 - It is chaired by the **Prime Minister**, and **sets priorities for public sector investments**.
 - It continuously **reviews economic trends** to develop an integrated economic policy framework and oversees policies and activities in the economic field, including foreign investment, requiring high-level decisions.

Read More: [PM-PRANAM Scheme and Increased FRP](#)



Note: