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# FOUNDATION COURSE GENERAL STUDIES

## PRELIMS CUM MAINS 2025, 2026 & 2027

Approach is to build fundamental concepts and analytical ability in students to enable them to answer questions of Preliminary as well as Mains Exam

- ▶ Includes comprehensive coverage of all the topics for all the four papers of GS Mains, GS Prelims & Essay
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Dear Students,

Memorisation and recollection of information in Current Affairs is as important as understanding the articles. In order to enhance the learning outcomes from the Monthly Current Affairs Magazine, we are introducing following additions:



A thematic based colors has been used in the document in the boxes, tables etc to enable easy identification and recollection of various concepts and topics.



Questions are an important tool to assess and retain information. To enable this we are adding a Smart Quiz at the end of each section in the document for practicing the questions.



A wide variety of infographics have been added to ensure smoother learning experience and enhanced retention of the information. This will also help in effective presentation of information in the answer writing as well.



Places and persons in news are being presented in an objective manner through Maps, Tables & Pictures. This will help in easier recollection of factual information.



# How to Approach Current Affairs?



Current affairs form the cornerstone of civil services exam preparation, permeating all its phases - Prelims, Mains, and the Interview. Exam questions are increasingly drawn from dynamic sources, intertwining directly with current occurrences or bridging static content with present events. In this context, staying updated with current affairs equips aspirants to navigate the evolving landscape of the civil services exam. Candidates can transform this vast section into a strong advantage with the right resources and a strategic approach.



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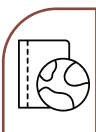
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“Remember, Current Affairs is not just about memorisation but understanding the broader implications and interlinkages of events. Approach it with curiosity; over time, it becomes less of a chore and more enlightening experience.

# 1. POLITY AND GOVERNANCE






## 1.1. TRIBUNAL SYSTEM IN INDIA

### Why in the News?

Recently, the Supreme Court (SC) ruled that **tribunals cannot direct the government to frame policy.**

### More about News

- **Context:** SC was deciding on whether the **Armed Forces Tribunal (AFT)** could have **directed the government** to make a policy to fill up the post of Judge Advocate General (Air).
  - **The AFT** was set up under the **AFT Act, of 2007.**
  - **AFT** provide for **adjudication or trial** of disputes and complaints to the **commission, appointments, enrolment and conditions of service** in respect of persons subject to the **Army Act, 1950, Navy Act, 1957, Air Force Act, 1950.**
    - ✓ It can further provide for **appeals arising out of orders, findings or sentences of**

Key developments in the Indian Tribunal System	
 1941	<ul style="list-style-type: none"> <li>○ <b>Income Tax Appellate Tribunal</b> was established as <b>first Tribunal</b> in India.</li> </ul>
 1976	<ul style="list-style-type: none"> <li>○ <b>Swaran Singh Committee (1976)</b> noted that <b>High Courts</b> were burdened with <b>service cases</b> by public servants and <b>42nd amendment</b> to the Constitution was passed (<b>Articles 323A and 323B inserted</b>).</li> </ul>
 Since 1980s	<ul style="list-style-type: none"> <li>○ Several tribunals were established under different Acts.</li> <li>○ These include <b>Central Administrative Tribunal</b> for administrative matters, <b>Securities Appellate Tribunal</b> to hear appeals against decisions of financial sector regulators, etc.</li> </ul>
 2017	<ul style="list-style-type: none"> <li>○ <b>Finance Act, 2017</b> reorganised the tribunal system by <b>merging tribunals based on functional similarity. The number of Tribunals was reduced</b> from 26 to 19.</li> <li>○ It <b>delegated powers</b> to the central government to make Rules to provide for the <b>qualifications, appointments, removal, and conditions of service</b> for chairpersons and members of these tribunals.</li> </ul>
 2021	<ul style="list-style-type: none"> <li>○ <b>Tribunal Reforms Act, 2021</b> was enacted.</li> <li>○ Act <b>abolished certain tribunals</b> (like Film Certification Appellate Tribunal, Intellectual Property Appellate Board etc.) and transferred their functions to existing judicial bodies (mainly High Courts).</li> <li>○ Act also proposed <b>changes in the process of appointment</b> of certain tribunals.</li> </ul>

**courts-martial** held under the said Acts and for matters connected therewith or incidental thereto.

- **Court Ruling:** SC held that a **tribunal subject to the High Court's jurisdiction under Article 226, cannot be permitted by law, to direct the framing of a policy** by the Government.
  - Also, SC said that **making policy is not in the domain of the Judiciary.**

### About Tribunals System

- **Nature:** Tribunals are **quasi-judicial bodies**. The objective may be to **reduce the caseload of the judiciary** or to **bring in subject expertise for technical matters**.
- **Constitutional Recognition:** In **1976**, Articles 323A and 323B were inserted in the Constitution of India through the **42<sup>nd</sup> Amendment**.
  - **Article 323A:** Empowered **Parliament to constitute administrative Tribunals** (both at central and state level) for adjudication of matters related to recruitment and conditions of service of public servants.
  - **Article 323B:** Specified certain subjects (**such as taxation and land reforms**) for which **Parliament or state legislatures** may constitute tribunals by enacting a law.
    - ✓ **In 2010, the Supreme Court clarified** that subject matters under **Article 323B** are not exclusive, and **legislatures are empowered** to create tribunals on any subject matter under their purview as specified in the **Seventh Schedule of the Constitution**.
- **Composition of Tribunals:** The presence of **expert members (technical members) along with judicial members** is a key feature of tribunals which distinguishes them from traditional courts.
- **Jurisdiction:** Each tribunal is given **specific jurisdiction** to hear and decide cases within its designated area of expertise.
  - **Some tribunals have appellate jurisdiction**, meaning they hear appeals from decisions made by lower authorities or government bodies.

- **Appeals:** Appeals from tribunals usually lie with the concerned **High Court**. However, some laws specify that appeals will be heard by the **Supreme Court**.
  - In **Chandra Kumar Case (1997)**, appeals against decisions of tribunals were allowed in the **division bench of High Courts**.
- Currently, tribunals have been **created both as substitutes to High Courts and as subordinate to High Courts**.

### Significance of Tribunals

- **Specialization:** This **specialization ensures** that cases are adjudicated by individuals with a deep understanding of the relevant legal and technical issues.
- **Speedy Resolution:** This is particularly important in areas where timely decisions are crucial, such as **service matters, tax disputes, and environmental issues**.
- **Reduced Case Load:** By handling specific types of cases, tribunals contribute to reducing the burden on traditional courts, **helping to address the issue of judicial backlog**.
- **Accessibility:** Tribunals are **geographically dispersed**, with benches located across the country.
- **Efficiency in Service Matters:** Administrative Tribunals, such as the **Central Administrative Tribunal (CAT)**, expedite the resolution of service-related matters for government employees.

### Concerns with Tribunals

- **Lack of Independence:** Critics argue that certain tribunals might not be entirely independent, as their members are often appointed by the government.
  - This raises **concerns about the potential for undue influence** or interference in decision-making.
  - In 2019, the SC reiterated that the **lack of judicial dominance in selection committees** of tribunals violates the **doctrine of separation of powers**.
- **Pendency of cases:** For example, in **2021**, the **AFT had 18,829 pending cases**.
  - **The lack of human resources** is observed to be one of the key reasons for the accumulation of pending cases in courts.
- **Term of office:** In 2019, SC stated that a **short tenure of members** along with provisions of **re-appointment** increases the influence and control of the Executive over the judiciary.
- **Lack of Uniformity in Procedures:** Procedures adopted by different tribunals can vary widely, leading to **inconsistency in the application of legal principles** and potential confusion for litigants.
- **Overlapping Jurisdictions:** There have been instances of overlapping jurisdictions between tribunals and regular courts, leading to confusion and potential conflicts.
- **Concerns Regarding Technical Members:** In certain tribunals, technical members may lack legal qualifications.

### Way Ahead

- **Enhance Independence:** Mechanism for appointment and removal of members in **tribunals**, and **tenure of their employment** should have **adequate protection from legislative and executive interference**.
- **Administration of Tribunals:** The **Standing Committee** on Personnel, Public Grievances, Law and Justice (2015) recommended the creation of an independent body called the **National Tribunals Commission (NTC)** for the administration of all tribunals in India.
  - In **2020**, **SC also emphasised creating NTC** to supervise appointments, as well as the functioning and administration of tribunals.
- **Timely Appointments:** Expedite the appointment process for tribunal members to prevent delays in the resolution of cases and reduce backlogs.
  - **A judicial impact assessment** would be helpful to determine the extra resources required to handle fresh cases resulting from the enactment of a new law.
- **Clear Jurisdictional Boundaries:** Clearly define and demarcate the jurisdiction of each tribunal to avoid overlapping and conflicting decisions with regular courts.
- **Training and Qualifications:** Ensure that technical members of tribunals possess adequate legal qualifications or receive training to understand legal principles, promoting a better understanding of the legal context.



## 1.2. FINANCES OF PANCHAYATI RAJ INSTITUTIONS (PRIS)







### Why in the news?

Recently, the Reserve Bank of India (RBI) released its report titled “Finances of Panchayati Raj Institutions”. The report discusses the fiscal position of PRIs for the years 2020-21 to 2022-23.

### About Panchayati Raj Institutions and their finances

- **73<sup>rd</sup> Constitutional Amendment Act 1992:** institutionalised the PRIs at three levels i.e.,
  - Mandate for setting up of Panchayats is **provided by Article 243 in Part IX** of the Constitution of India.
  - Panchayats, being **Local Government**, is a **State subject**.
- **Number of PRIs:** There are a **total of 2.62 lakh PRIs in India**, with 2.55 lakh Gram Panchayats, 6,707 Mandal Panchayats and 665 Zila Parishads as of October 2023.
- **Constitutional Provisions for Financial Empowerment of Panchayats**
  - **Article 243H:** Provides for **finance for the Panchayats** by securing authorization from State Legislatures for grants-in-aid to the Panchayats from the Consolidated Fund of the State.
    - ✓ It empowers **panchayats to impose, collect, and allocate taxes, duties, tolls, and fees.**
  - **Article 243-I:** Setting up a **Finance Commission (FC) every 5 years** to review the financial position of Panchayats and make recommendations to improve their financial position.
  - **Article 280(3)(bb):** Mandates **FCs to recommend measures needed to augment the Consolidated fund of the state and supplement panchayat resources** to the President.

### Importance of PRIs for Development

-  Creation of **Social Infrastructure**
-  Accelerates **Implementation of Government Schemes**
-  Localisation of **Sustainable Development Goals (SDGs)**
-  Enables **Rural Development**
-  Beacon of **Women Empowerment**
-  Primary and **credible source of information** for Health and Technologies developments

Sources of Finance for PRIs	
<b>Internal/Own sources of revenue</b>	<ul style="list-style-type: none"> <li>• <b>Tax Revenue</b> from Property tax on lands (other than Agriculture Land) or buildings or both; Taxes on Duties and Commodities; Service tax; Taxes on Profession Trades etc.</li> <li>• <b>Non tax revenue</b> from <b>market fees on persons exporting goods</b> for sale in Panchayat area; Fees on Registration of Cattle sold within the Panchayat area etc.</li> </ul>
<b>Transfer of Funds from Central Finance Commission (CFC) and State Finance Commission (SFC)</b>	<ul style="list-style-type: none"> <li>• <b>Tied Grants:</b> Earmarked for <b>specific purposes or sectors</b>, like sanitation, education etc.</li> <li>• <b>Untied Grants (General purpose grants):</b> These are <b>provided without specific conditions</b> or restrictions and <b>can be utilised for local needs and priorities.</b></li> <li>• <b>Performance-based Grants:</b> Additional funds granted to PRIs based on <b>recommendations of CFCs and specific performance criteria.</b></li> <li>• <b>Special Category Grants:</b> These grants are additional financial support designed to <b>address unique challenges or particular needs of PRIs in specific regions or contexts.</b></li> </ul>
<b>Other Sources</b>	<ul style="list-style-type: none"> <li>• <b>Transfer from Central Government and State Government under different schemes</b> like MGNREGA, PMAY (Rural), Sansad Adarsh Gram Yojana etc.</li> <li>• <b>Grants from international bodies</b> like World Bank, etc.</li> </ul>

### Challenges associated with the finance of PRIs

- **Structural challenges:** **Inadequate financial resources, heavy reliance on grants** from upper tiers of government; and **weak infrastructure** impede the functioning of PRIs.
  - Around **95 % of their revenues** come from grants by higher levels of government.
- **Inconsistency in data:** Assessment of the fiscal health of PRIs is difficult due to a **lack of data on their revenues and expenditures and a lack of skilled staff** to maintain data in standardised formats.
  - Audit reports have been generated for only 46% of Gram Panchayats for 2019-20.
- **Tax revenue:** Sources of revenue for PRIs are limited, mainly property taxes, fees, and fines.
  - They face challenges in raising tax revenue due to a **limited tax base, shortage of staff and adequate infrastructure along with a lack of clear guidelines** for introducing new taxes.
- **Corruption:** Instances of **misuse of funds for personal gain** have hindered the ability of PRIs to effectively carry out their roles and responsibilities.

- For example, Rs 1.58 crore was diverted from the gram panchayat account without prior permission from the panchayat body and higher officials in Vijayawada.
- **State Finance Commissions (SFC):** As per rural development and Panchayati raj report, only 9 states have been constituting SFCs regularly, and out of them, only two are active.

#### Initiatives taken to improve financial ecosystem of PRIs.

- **e-Gram Swaraj:** It assist in **enhancing the credibility of Panchayats** which would induce greater devolution of funds to PRIs as well as provide a platform for effective monitoring by higher authorities.
- **Gram Panchayat Development Plan (GDP):** It is an annual exercise carried out **by Ministry of Panchayati Raj (MoPR) in all Gram panchayats and other local self-governance bodies** where GP development plans are prepared in a participatory manner under people's Plan Campaign.
- **Capacity Building- Panchayat Sashaktikaran Abhiyan (CB-PSA):** It had provided **assistance to the States/ UTs for capacity building and training of Panchayat Elected Representatives** to enable them to perform their functions, including planning and implementation of development programmes, effectively and efficiently.
- **Rashtriya Gram Swaraj Abhiyan (RGSA):** It aims to **strengthen capacities of institutions for rural local governance** to become more responsive towards local development needs, and efficiently utilise available resources for realizing sustainable solutions to local problems linked to SDGs.

#### Way forward

- **Budgetary support:** Increase budgetary allocations from higher levels of government to **ensure PRIs have sufficient resources** to fulfil their responsibilities. Also, steps should be taken to diverse funding sources of the PRIs.
- **Skilling:** Training and capacity-building of PRI members to **enhance their financial management skills, ensuring effective and transparent handling** of funds.
- **Accountability:** Enforce strict financial accountability measures, **regular and independent audits, and transparent reporting mechanisms to prevent misuse of funds** and corruption.
- **Strengthening SFC:** SFCs should be **constituted timely every 5 years** and reports should be tabled in state legislatures regularly. It can **fortify the financial position of PRIs** and help them in better delivery of their responsibilities.
- **Awareness:** Raise citizen's awareness about the functions and significance of PRIs by encouraging their **increased participation in local governance processes**.

### 1.3. STREET VENDORS (PROTECTION OF LIVELIHOOD AND REGULATION OF STREET VENDING) ACT, 2014

#### Why in the news?

Recently, the **Minister of Housing and Urban Affairs** highlighted the slow pace of implementation of the provisions of the **Street Vendors (Protection of Livelihood and Regulation of Street Vending) Act, 2014**.

#### More about the news

- A revamped **PAiSA Portal Dashboard** and the **PM SVANidhi Mission Monitoring Portal** were also launched at the event.
  - Portal for Affordable credit and Interest Subvention Access (PAiSA) is a portal designed to provide a centralized platform for Processing of Interest Subsidy to eligible beneficiaries under PM Svanidhi, Self-Employment Program etc.

#### Key features of the Street Vendors Act, 2014

- **Rights of street vendors:** Every street vendor shall have the right to carry on the business of street vending activities as per the terms and conditions mentioned in the certificate of vending.
- **Duties of Street Vendors:**
  - **Remove his goods and wares every day** at the end of the time-sharing period allowed to him.
  - **Maintain cleanliness and public hygiene** in vending zones and adjoining areas.
  - **Maintain civic amenities and public property** in the vending zone in good condition.
  - **Payment of maintenance charges** for the civic amenities and facilities as determined by local authorities.
- **Town Vending Committees (TVCs):** They are to be established in each Local Authority. These committees are in charge of enumerating, identifying, and allocating vending zones in a city.

- TVCs are to be heterogeneously constituted with at least **40%** of its elected members being street vendors, of which one-third are to be women.
- **Survey of the Street Vendors:** At least once **every five years** for the issuance of a Certificate of Vending (CoV) to the vendors identified.
- **Ceiling limit on the number of vendors:** It is set at **2.5%** of the population of the ward or zone or town or city for accommodating the vendors in the respective vending zones.
- **Grievance redressal Committees:** They are to be set up by the States under the **chairmanship of a retired judicial officer** to maintain impartiality towards grievances of street vendors.
- **Period for the release of seized goods:** For **non-perishable goods**, the goods are to be **released within two working days** and in the case of **perishable goods**, the goods shall be **released the same day** of claim.



#### Challenges associated with the functioning of the act

- **Lopsided implementation:** Despite a decade since enactment **only 17 States** have constituted **Grievance redressal Committees** for the welfare of the street vendors.
  - The **TVCs are yet to be formed** in many Urban local bodies and existing TVCs also **lack proper representation** in many states.
- **Ceiling on Number of Vendors:** The act has **set the limit of street vendors to 2.5%** of the total population of the ward/city, which is inadequate for a major metropolis like Delhi, Mumbai etc.
- **Exclusion of Railways land and its premises:** The act does not apply to **any land, premises and trains owned and controlled by the Railways**, which is a huge business area for the vendors.
- **Lack of uniformity:** Currently, **street vending is regulated under municipal laws** enacted by state legislatures and this leads to a lack of uniformity in its implementation.
  - For example, **Brihanmumbai Municipal Corporation** issued a **Certificate of Vending** based on domicile certificates till 2022, despite domicile not being a criterion under the 2014 act.

#### Way forward

##### For better implementation of the Act

- **Revision of the ceiling on the number of vendors:** It can be **increased in consonance with the nature of the city** and as per the latest survey of street vendors.
- **Ensuring adequate representation:** Street vendors and TVCs as stakeholders while deciding any policy framework that impacts their livelihood.
- **Creation of Vending Zones near Railway Stations:** This will provide more opportunities for the vendors and ensure more consistent implementation of the Act.
- **Integration with the Smart City mission:** Including members from the **Street vendor's community** in deliberations and formulation of the **Smart City projects**.
- **Establishment of Model Vending zones** as "**Light House Projects**" by the Ministry of Housing and Urban Affairs, to be replicated in states.

##### For the Welfare of Street Vendors

- **Issuance of Smartcards** which integrate the details of Vendor ID cards and Certificate of Vending.
- **Sensitize police force and local body officials** by including the Street Vendors Act in their training curriculum to avoid excessive actions over street vendors.
- **Publish Street vendors charter** by every TVC specifying the time within which a CoV shall be issued, renewed and other activities to be performed.

## 1.4. REVAMPED SCHEME FOR ADMINISTRATIVE REFORMS

### Why in the News?

The government has approved funds for the revamped Scheme for Administrative Reforms of the **Department of Administrative Reforms and Public Grievances (DARPG)**.

### About the revamped Scheme for Administrative Reforms

- **Ministry:** Ministry of Personnel, Public Grievances & Pensions.
- **Period:** The scheme is to be implemented in the next two years (2024-25 and 2025-26) of the 15th Finance Commission Cycle.
- **2 Verticals:** Comprehensive System for Redressal of Public Grievances and Administrative Reforms.
  - **Scheme for Comprehensive System for Redressal of Public Grievances:**
    - ✓ **Quality of grievance redressal:** Taking forward the 10-Step CPGRAMS reforms (refer to table) aimed at improving the quality of grievance redressal.
    - ✓ **AI-Assisted Redressal:** Reducing timelines by developing an AI-assisted **Public Grievance Redressal System (CPGRAMS)**.
    - ✓ **Unified Grievance Redressal:** The project will **integrate all other grievance portals**, thus making CPGRAMS the single largest interface for public grievances.
    - ✓ **Capacity building:** Deeper technology adoption, capacity building of **grievance redressal officers**, etc.
  - **Scheme for Administrative Reforms:**
    - ✓ **Strategic Allocation:** The scheme seeks to utilize resources for **International Exchange and Cooperation activities, the National e-Governance Awards Scheme** etc.

### About Centralised Public Grievance Redress and Monitoring System (CPGRAMS)

- DARPG has put in place **CPGRAMS** since **2007**.
- It 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 is a **single portal** connected to all Ministries/Departments of **Government of India and States**.
- **Issues that are not taken for redress:**
  - RTI Matters.
  - Court related matters.
  - Religious matters, etc.
- In **2022**, Government implemented the **10-step reforms of CPGRAMS**.

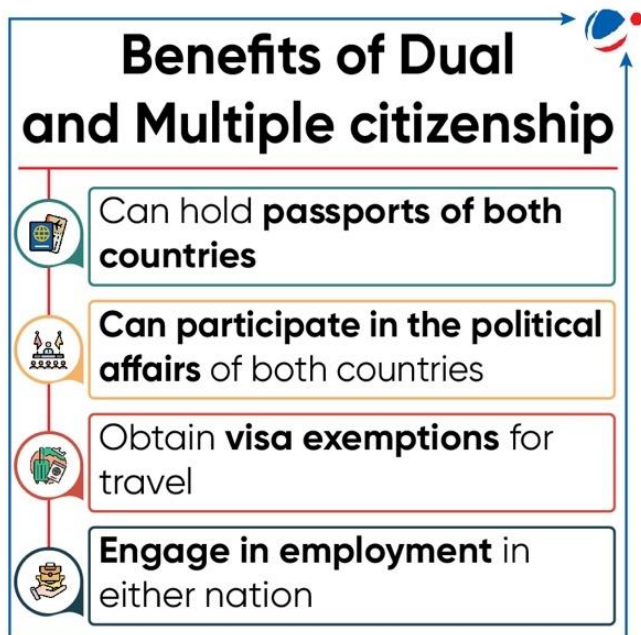
### 10-step reforms of CPGRAMS

- **Universalisation of CPGRAMS 7.0:** Auto-routing of grievances to the last mile
- **Technological Enhancements:** Automatic flagging of urgent grievances leveraging AI/ML
- **Language Translation:** Portal in 22 scheduled languages along with English
- **Grievance Redressal Index:** Ranking of Ministries/ Departments on their performance
- **Feedback Call Centre:** 50 seater call center to collect feedback directly from citizens
- **One Nation–One Portal:** Integration of State Portal and other Gol portals with CPGRAMS
- **Inclusivity and Outreach:** Empowering the remotest citizen to file grievances
- **Training and Capacity building:** Conducted via ISTM and SEVOTTAM scheme enabling effective grievance resolution
- **Monitoring Process:** Monthly Reports for both the Central Ministries/ Departments and States UTS
- **Data Strategy Unit:** Established at DARPG for insightful data analytics

## 1.5. NEWS IN SHORTS

### 1.5.1. DUAL CITIZENSHIP

- Recently the **Union External Affairs Minister** remarked that **dual citizenship is a challenge in India.**
- **Dual or Multiple Citizenship:** It grants an individual **legal status** as a citizen of two or more countries simultaneously.
- **Countries offering dual citizenship:** United States, Finland, Albania, Israel, and Pakistan, etc.
- **The Indian Constitution prohibits** dual citizenship for nationals.
- **Alternative to dual citizens in India**
  - India offers the **Overseas Citizenship of India (OCI) program to Persons of Indian Origin (PIO)**, excluding those who migrated to Pakistan and Bangladesh.
- **Benefits for OCI cardholders**
  - **Multi-purpose, multiple entry, lifelong visa** for visiting India.
  - **Exemption from registration with local police authority** for any length of stay in India.
  - **Parity with NRIs** in respect of economic, financial, and education fields **except in matters relating to the acquisition of agricultural/plantation properties.**
- **Foreign national eligible to apply for OCI**
  - Who was **eligible to become a citizen of India** on 26.01.1950.
  - Was a **citizen of India on or at any time** after 26.01.1950.
  - Who is a **child or a grandchild or a great-grandchild** of such a citizen given above.



### 1.5.2. SUPREME COURT LEGAL SERVICES COMMITTEE (SCLSC)

- Recently, a Supreme Court judge has been nominated as the Chairman of the SCLSC.
- **About SCLSC**
  - It is a **statutory body.**
    - ✓ Constituted under section **3A of Legal Services Authorities Act, 1987** by National Legal Service Authority.
  - **Objective:** Providing free legal services to **poor, under-privileged and those marginalized in society.**
  - **Chief Justice of India** in Patron-in-Chief of Committee.
- **Members:** Chairman (sitting Judge of SC) and 9 members (nominated by the Chief Justice of India).

### 1.5.3. SC ANNULS REMISSION IN BILKIS BANO CASE

- Supreme Court sets aside remission of 11 convicts in Bilkis Bano's case given by Gujarat government
- SC held that **Gujarat is not appropriate government to decide on remission petition** as the trial was conducted in Maharashtra. Thus, **remission orders** were held to be **invalid.**
- Remission refers to **reduction in period of sentence** that has been imposed on a person, **without affecting the nature of sentence.**
  - **State may release convicts early under its remission policy.**
- **Constitutional provisions related to Remission**
  - **Article 72 empowers President of India** to grant **pardons, reprieves, respites, suspend, remit, or commute** the sentence of a person convicted of any offense where sentence is
    - ✓ by a **court Martial;**
    - ✓ for an offence **against any law relating to a matter to which executive power of Union extends;**
    - ✓ a **sentence of death.**
  - Under **Article 161**, Governor's power is **similar to that of President, but limited to a matter to which executive power of state extends.**
- **Legal basis of Remission**
  - Section 432 of **Criminal Procedure Code (CrPC) 1973** grants government power to suspend or remit sentences.
  - Section 433A mandates **remission only after 14 years of imprisonment.**

#### Supreme Court verdict on Remission

- **Laxman Naskar versus Union of India (2000):** SC laid down **five grounds** on which remission is to be considered.
  - **offence affects society at large;**
  - **probability of crime being repeated;**
  - **potential of convict to commit crimes in future;**
  - **if any purpose is being served** by keeping convict in prison; and
  - **socio-economic condition** of convict's family.
- **State of Haryana vs. Rajkumar (2021):** Court held that **Section 433-A of CrPC cannot and does not in any way affect the constitutional power conferred on President/Governor** under Articles 72/161 of Constitution.

#### 1.5.4. PANEL FOR EQUITABLE DISTRIBUTION OF BENEFITS AMONGST SCS

- Centre forms committee for the equitable distribution of benefits amongst Scheduled Castes (SCs) across the country
- Committee **under Cabinet Secretary** will formulate a methodology to **ensure the fair distribution of benefits** and initiatives among over **1,200 Scheduled Castes nationwide that have been crowded out by relatively forward ones.**
- Although the committee **cannot delve into questions of reservation**, its constitution holds significance owing to the **demand for sub-categorisation of SCs.**
  - A 7 judge Constitution bench of **Supreme Court (SC) is set to hear** if states have power to subcategorise SCs.
- **Legal Precedents on Sub categorisation of SCs**
  - In **E.V. Chinnaiah v State of Andhra Pradesh** the SC held that the subcategorisation of SCs by State is **violative of the right to equality** as well as **Article 341** of the Constitution.
    - ✓ **Article 341** gives the President the power to create a list of SC communities for reservation.
  - In **State of Punjab v. Davinder Singh (2020)** SC held that deciding on the **quantum of benefits** in the lists of **SCs/STs already notified would not amount to “tinkering”** with it and States could do it.
  - **‘Jarnail Singh v Lachhmi Narain Gupta 2018** the SC upheld the concept of “creamy layer” within SCs too (for reservation in promotion).
  - **Experts also believe that Article 16(4)** of the Constitution already provided for States to create **special laws for any backward classes** it felt were under-represented.

#### 1.5.5. MPLADS E-SAKSHI MOBILE APPLICATION

- MPLADS (Member of Parliament Local Area Development Scheme (MPLADS) e-SAKSHI Mobile Application was launched by **Ministry of Statistics and Programme Implementation (MoSPI)** that allows MPs to **propose, track, and oversee projects** under MPLAD Scheme.
- **About MPLADS**
  - Central Sector Scheme under MoSPI.
  - MPLADS funds used for **creation of durable community assets in areas of drinking water, primary education, etc.**
  - **At least 15 percent of MPLADS entitlement** allocated for **areas inhabited by Scheduled Caste population** and 7.5 percent for areas inhabited by ST population.
  - **Funds are non-lapsable** i.e. if money is not utilised, it gets carried to next year.
  - District authority **must inspect at least 10% of all work under implementation** every year.

#### 1.5.6. SOCIAL AUDIT ADVISORY BODY (SAAB)

- First meeting of the Social Audit Advisory Body (SAAB) held
- **SAAB** is a **first of its kind** advisory body in India.
  - It is set up in the **National Institute of Social Defence (NISD).**
    - ✓ NISD function under the **Department of Social Justice & Empowerment (DoSJE), Ministry of Social Justice and Empowerment.**
  - It will guide **the Ministry in institutionalizing social audits for its various schemes.**
    - ✓ It will promote capacity building of the members of Social Justice Cell of the Social Audit Units.
- **About Social Audit:**
  - SA is a process of **examination and assessment** of a programme/scheme.
    - ✓ It is conducted with **the active involvement of people and comparing official records with actual ground realities.**
  - **Key guiding principles of SA: Access to information (Jaankari); Participation (Bhagidari); Protection of citizens (Suraksha); etc.**
- **Implementation of SA:**
  - Union Government has introduced the provision of **SA in many flagship programmes**, like Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA), etc.

- DoSJE has established the **National Resource Cell for Social Audit (NRCSA)** to ensure SA through dedicated **Social Audit Units** at the state level.
- **Meghalaya** is the first state to operationalise a social audit law.
- **Significance:** Promote **transparency** and **accountability**, strengthen institutions at the **grassroots level** etc.
- **Challenges:** Lack of awareness among stakeholders, apathetic attitude of implementing agency etc.

## Steps for Social Audit



**Orientation and Sensitization:** By implementing agency.



**Presentation:** Formation of social audit team.



**Verification:** With beneficiaries, inmates, stakeholders, staffs of the institutions etc.



**Validation:** Presentation of primary report.



**Presentation and Action:** A district level in the presence of all stakeholders.



**SMART QUIZ**

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# फाउंडेशन कोर्स सामान्य अध्ययन प्रारंभिक एवं मुख्य परीक्षा 2025

इनोवेटिव क्लासरूम प्रोग्राम

- प्रारंभिक परीक्षा, मुख्य परीक्षा और निबंध के लिए महत्वपूर्ण सभी टॉपिक का विस्तृत कवरेज
- मौलिक अवधारणाओं की समझ के विकास एवं विश्लेषणात्मक क्षमता निर्माण पर विशेष ध्यान
- एनीमेशन, पॉवर प्वाइंट, वीडियो जैसी तकनीकी सुविधाओं का प्रयोग
- अंतर - विषयक समझ विकसित करने का प्रयास
- योजनाबद्ध तैयारी हेतु करेंट ओरिएंटेड अप्रोच
- नियमित क्लास टेस्ट एवं व्यक्तिगत मूल्यांकन
- सीसेट कक्षाएं
- PT 365 कक्षाएं
- MAINS 365 कक्षाएं
- PT टेस्ट सीरीज
- मुख्य परीक्षा टेस्ट सीरीज
- निबंध टेस्ट सीरीज
- सीसेट टेस्ट सीरीज
- निबंध लेखन - शैली की कक्षाएं
- करेंट अफेयर्स मैगजीन

नोट: ऑनलाइन छात्र हमारे पाठ्यक्रम की लाइव वीडियो कक्षाएं अपने घर पर ऑनलाइन प्लेटफॉर्म पर देख सकते हैं। छात्र लाइव चैट विकल्प के माध्यम से कक्षा के दौरान अपने संदेह और विषय संबंधी प्रश्न पूछ सकते हैं। वे अपने संदेह और प्रश्न नोट भी कर सकते हैं और दिल्ली केंद्र में हमारे कक्षा सलाहकार को बता सकते हैं और हम फोन/मेल के माध्यम से प्रश्नों का उत्तर देंगे।

**DELHI: 20 फरवरी, 1 PM**

**BHOPAL: 21 फरवरी**

**LUCKNOW: 21 फरवरी**

**JODHPUR: 21 फरवरी**

**JAIPUR: 21 फरवरी**



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# Government Schemes Quarterly Revision



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It transforms the process of learning from an isolated activity into a seamless, ongoing journey. As a result, you're not just preparing for an exam; you're **nurturing a deep understanding of government schemes, policies, and their implications**.



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## Key Features of the Government Schemes Quarterly Revision



### 1. Schemes in News: Stay Updated, Stay Ahead!

This section **keeps you abreast of the latest developments**, ensuring that your preparation is not only comprehensive but also relevant to the recent quarter. This real-time integration of information empowers you to confidently approach the exam, armed with the latest knowledge.

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The Government of India's 'Flagship Schemes' are at **the core of the Civil Services Examination** syllabus. Our document delves deep into these pivotal initiatives, providing you with a **nuanced understanding** of the Government policies. By focusing on these flagship schemes, we guide you towards mastering the key aspects that examiners seek in successful candidates.



### 3. Test Your Learning: Reinforce, Assess, Retain!

Understanding the material is one thing; retaining key facts is another. To bridge this gap, we've incorporated a 'Test Your Learning' section. **Twenty carefully crafted Multiple Choice Questions (MCQs)** span the document, serving as **checkpoints to reinforce your understanding**. These assessments not only help gauge your progress but also contribute to the effective retention of crucial information.

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## 2. INTERNATIONAL RELATIONS

### 2.1. NON-ALIGNED MOVEMENT (NAM)

#### Why in the news?

Recently, **19th Summit of the Non-Aligned Movement (NAM)** was held in Kampala, Uganda.

#### More on News

- **Theme of the summit:** 'Deepening Cooperation for Shared Global Affluence'
- **Kampala declaration** was adopted at the summit. Under it, member countries,
  - commit to **strengthen the UN** as the primary multilateral organization
  - agreed to **make joint efforts to realize the 2030 Agenda for Sustainable Development and the Addis Ababa Action Agenda (AAAA)**
    - ✓ **AAAA** provides a **global framework for financing sustainable development** by aligning all financing flows and policies with economic, social and environmental priorities.
  - **strongly condemned the illegal Israeli military aggression on the Gaza Strip** and called for an immediate and durable humanitarian ceasefire.
- **South Sudan became the new member(121<sup>st</sup>) of NAM.**

#### About Non-Aligned Movement (NAM)

- **Genesis:** Asia-Africa Conference held in Bandung, Indonesia in 1955.
- **About:** NAM was **created during the independence struggles** of Africa, Asia, Latin America and other regions of the world at the height of the **Cold War**.
  - A **key role** was played in this process by the then Heads of State of Egypt, Ghana, India, Indonesia and Yugoslavia, who later became the founding fathers of the movement.
  - The idea was **to declare themselves as "nonaligned"** from either of the two nascent military blocks (NATO and the Warsaw Pact).
- **Principles:** "**Ten Principles of Bandung**" proclaimed during Bandung Conference were later adopted as the main goals/principles of NAM. (*Refer Image*)
- **NAM's first conference** - The Belgrade Conference in 1961.
- **Membership:** It has **121 members (including India)** comprising 53 countries from Africa, 39 from Asia, 26 from Latin America and the Caribbean and 2 from Europe.
  - **18 countries** and **10 international organizations** are **observers** at NAM.
- **Other Key information:**
  - The policy of NAM was **based on the 5 principles of Panchsheel** (principles for the conduct of international relations, signed between India and China in 1954).
  - The NAM **does not have a formal founding charter or treaty**, nor does it have a **permanent secretariat**.

#### Key principles of NAM

- **Respect for UN Charter and international law**
- **Sovereignty, equality, and territorial integrity** of all states
- **Peaceful resolution** of international conflicts per UN Charter
- Respect for **self-defense rights** under UN Charter
- **Non-interference** in internal affairs of states
- Promotion of **multilateralism and cooperation through dialogue**

#### Do you know?

- > The term "non-alignment" was **coined by V K Menon**, in his speech at the United Nations in 1953, which was later popularised by the First Indian Prime Minister.

#### Challenges faced by NAM

- **Change in world order** from bipolar to a more complex and multipolar global system.
- **Evolving alliances** in the form of plurilateral partnerships such as QUAD, I2U2, etc.
- **Many NAM members** support ideas of socialism and state control; and **are dependent on the US**.
- **Regional organizations** such as ASEAN, SCO and BRICS address specific regional challenges more effectively.
- **Emerging global issues** such as climate change, cyber security, and pandemics.
- **Lack of leadership**, internal disagreements, and a failure to take clear positions on global issues.
- **Approach of multi-alignment** presents a more pragmatic approach for contemporary geopolitical landscape.

## Current Relevance of NAM

- **Reform and democratization of UNO:** NAM advocates for expediting **reform of the United Nations Security Council** to make it a more democratic, transparent and representative organ of the United Nations.
- **Protecting Sovereignty:** NAM countries support the principles of self-determination, respect for territorial integrity, non-aggression, and safeguarding the independence and autonomy of member states.
- **An integral part of foreign policy:** Many developing countries like India still follow the NAM policy, as '**independence of action**' in foreign policy is enshrined in NAM.
- **Unifying force:** NAM is still applicable as a strict measure to prevent colonization and imperialism of small and developing countries.
- **Platform for South-South Cooperation:** It provides a platform for developing countries to come together and discuss common challenges and interests and exert influence in global affairs.
- **Promoting Multilateralism and Global Peace:** NAM upholds the principles of multilateralism, diplomacy, and peaceful coexistence;
  - **NAM's** advocating for democratising UN and condemning Israel's war is a testament to this.
- **Rising importance of the concept of Active Non-Alignment (ANA):** It embodies a pro-active attitude (instead of passive neutrality) which is aimed at solving problems and generating the much-needed solutions for the troubled world.

### Non-alignment vs Neutrality

- Non-alignment is a **political concept**; neutrality is a **legal concept**.
- Non-alignment is not **written into a state's constitution**; neutrality can be a **permanent feature of state policy**.
- Non-alignment emphasizes an active role in world affairs, promotes friendship and cooperation with all countries, hence it is a **positive concept**.
  - Neutrality implies non-involvement, does not necessarily involve such positive relationships.

## Conclusion

NAM needs to **redefine itself** and reinvent its objectives in the contemporary world system. NAM continues to be relevant so long as there is exploitation, war, hunger, poverty and disease on the earth.

## 2.2. INFORMATION FUSION CENTRE FOR INDIAN OCEAN REGION (IFC-IOR)

### Why in the News?

Recently, IFC-IOR played a crucial role in tackling the hijacking incident of the Malta-flagged vessel (Merchant Vessel) m.v. Ruen.


**To know more about Maritimes Trade Routes, kindly refer to article "4.3. Securing Maritime Trade Routes" of December 2023 edition of the Monthly Current Affairs Magazine.**

### About IFC-IOR


- **Genesis:** IFC-IOR was **established in 2018, based at IMAC**, and hosted by the **Indian Navy**.
  - Soon after 26/11, India brought together countries of the Indian Ocean rim to form **the Information Management and Analysis Centre (IMAC)** in 2014 in Gurugram.
  - IMAC is jointly administered by the **Indian Navy and Indian Coast Guard**.
- **Aim: Strengthening maritime security** in the region by building a common coherent maritime situation picture using **White Shipping Agreements**.
  - White Shipping Agreements deal with the sharing of information regarding commercial non-military merchant vessels.
- **Region covered:** Indian Ocean Region and adjoining Seas.
  - **67 linkages in 25 countries** have been established to secure the global commons for a peaceful, stable and prosperous region towards the well-being of all.
  - Also, IFC-IOR hosts 12 International Liaison Officers (ILOs) from 12 partner nations viz. Australia, France, Italy, Japan, Maldives, Mauritius, Myanmar, Seychelles, Singapore, Sri Lanka, the UK and the USA.

- **Four sectors:** Gulf of Guinea, Gulf of Aden, Arabian Sea, and the Bay of Bengal & South East Asia.
- **The Maritime Information Sharing Workshop (MISW):** It is the flagship platform of IFC-IOR that conducts training programs and is attended by delegates from a large number of countries.


## Significance of IFC-IOR




**Enhance maritime security** in IOR in line with India's vision of **Security and Growth for All in the Region (SAGAR)**.




**Checking Piracy & Armed Robbery,** Contraband Smuggling, IUU Fishing, Irregular Human Migration etc.



**Reduce logistical and bureaucratic processes** in the dissemination of information.



**Capability building,** coordination of **disaster relief,** and share **submarine safety information.**



**Monthly weather forecasts** and weather warnings are also hosted.

### How does IFC-IOR strengthen India's foreign relations?

- **Strategic Partnership:** A small group of India's strategic partners such as the USA, France, etc. have positioned their ILOs at the Gurgaon-based facility.
- **Strengthening Neighbourhood relations:** through the information-sharing framework. For example, Sri Lankan coastal surveillance radars being integrated into the IFC-IOR.
- **Regional Cooperation:** The IFC-IOR promotes regional cooperation by facilitating information exchange related to maritime security.
  - India is **developing 32 coastal surveillance radar stations** in Sri Lanka, Mauritius, Seychelles and Maldives, all of which will feed data to the IFC-IOR.

### Implementation challenges faced by IFC-IOR

- **Challenges in information sharing** such as issues with standardization, duplicative efforts, and differing organizational formats. This hinders the creation of a unified operational picture.
- **Data Fusion and Analysis:** Information sense-making poses a formidable challenge with member countries grappling with overcoming extra-regional influences and addressing domestic political motivations.
- **Trust and coordination Issues:** Multilateral collaborations often encounter challenges arising from restricted coordination scope or unwillingness to share data equitably.

### Way forward

- **Reciprocal Deployments:** India should also deploy its ILOs in other nations' centres.
- **Enabling coordination and standardization:** Efforts at the global level can be made to standardize information-sharing patterns and create collaborative arrangements to reduce duplication of effort.
- **Continued Expansion:** It should expand its information-sharing with more countries in and beyond the Indian Ocean Region, to give the initiative a more global character.

- **Enhanced Maritime Surveillance:** Augment MDA to cover grey shipping (military) and dark shipping (identity-hidden vessels) at the surface level.

## 2.3. INDIA-NEPAL RELATIONS

### Why in the news?

India and Nepal ink agreements during the 7th India-Nepal Joint Commission meeting held in Kathmandu.

### More about the news

- The commission was **established in 1987** and acts as a platform for both foreign ministers to review the bilateral partnership.
- **Key Agreements signed** between India-Nepal include:
  - Cooperation in Renewable Energy Development.
  - Export 10,000 MW of electricity over the next decade.
  - ISRO to launch Nepal’s Munal satellite on Polar Satellite Launch Vehicle (PSLV).

**India-Nepal Treaty of Peace and Friendship of 1950** forms the basis of relations between two countries, characterized by an **open border and deep-rooted people-to-people contacts** of kinship and culture.

### Areas of Cooperation between India and Nepal

Trade and Development	<ul style="list-style-type: none"> <li>• <b>Trade and Investment:</b> India has been a key development partner of Nepal. India is the <b>largest trading partner of Nepal</b> and the <b>highest source of FDI</b>.               <ul style="list-style-type: none"> <li>○ Bilateral trade crossed <b>US\$ 7 billion</b> in FY 2019-20 with a trade deficit in favour of India.</li> </ul> </li> <li>• <b>Connectivity and Development Partnership:</b> India actively supports Nepal’s infrastructure development, including border infrastructure and cross-border rail links.               <ul style="list-style-type: none"> <li>○ <b>Line of credit of \$680 million by India</b> to fund three major transmission corridors in Nepal- Bheri Corridor, Nijgadh-Inaruwa Corridor and Gandak-Nepalgunj Corridor.</li> <li>○ <b>Twin Integrated Check Posts (ICPs)</b> in Rupaidiha in India and Nepalgunj in Nepal in 2023.</li> <li>○ <b>Revised treaty of transit</b> that would provide Nepal access to inland waterways of India.</li> </ul> </li> </ul>
Political and Security	<ul style="list-style-type: none"> <li>• <b>Political cooperation:</b> Regular high-level visits between two countries. Nepal is a <b>priority partner</b> of India under its ‘Neighbourhood First’ policy.</li> <li>• <b>Defence Cooperation:</b> <ul style="list-style-type: none"> <li>○ Recruitment of <b>Nepalese soldiers in Gorkha regiments</b> of the Indian Army.</li> <li>○ <b>Surya Kiran</b>- annual Joint military exercise conducted alternatively in the two countries.</li> </ul> </li> <li>• <b>Multilateral Cooperation</b> as part of <b>BBIN</b> (Bangladesh, Bhutan, India, and Nepal), <b>BIMSTEC</b> (Bay of Bengal Initiative for Multi-Sectoral Technical and Economic Cooperation), Non-Aligned Movement, and <b>SAARC</b>. Nepal also joined India-led <b>International Solar Alliance (ISA)</b>.</li> </ul>
Energy	<ul style="list-style-type: none"> <li>• <b>Power:</b> India and Nepal have had a <b>Power Exchange Agreement since 1971</b> for meeting the power requirements in the border areas.               <ul style="list-style-type: none"> <li>○ <b>In 2023</b>, India agreed to the <b>first trilateral power trade</b> from Nepal to Bangladesh through India for up to 40 megawatts of power.</li> </ul> </li> <li>• <b>Hydropower cooperation:</b> India and Nepal have had long-standing and fruitful hydropower cooperation (refer below article for the same).</li> </ul>
Other areas	<ul style="list-style-type: none"> <li>• <b>Culture:</b> <ul style="list-style-type: none"> <li>○ <b>Prevalence of deep people-to-people connect</b> especially along the border region of both countries.</li> <li>○ The Swadesh Darshan scheme has <b>Buddhist and Ramayana circuits</b> which connect the religious cities of Lumbini and Janakpur with that of India.</li> </ul> </li> <li>• <b>Disaster Management:</b> <ul style="list-style-type: none"> <li>○ Following the 2015 earthquake in Nepal, New Delhi was the first responder as it carried out <b>Operation Maitri</b> in the region.</li> <li>○ India supplied Covishield to Nepal under its <b>Vaccine Maitri</b> Initiative.</li> </ul> </li> </ul>

### Major Issues in India-Nepal Relations

- **Border Dispute:** The ties between the two countries came under severe strain after Kathmandu published a new political map in 2020 that showed three Indian territories - **Limpiyadhura, Kalapani and Lipulekh** - as part of Nepal.

- **China's influence:** China has increased its economic engagement with Nepal through projects under its Belt and Road Initiative (BRI).
  - Also, there are concerns over Chinese interference in Nepal's politics.
- **Trust Gap:** Due to India's slow pace of project implementation and the alleged perception of India's interference in Nepal's politics.
- **Security issues:** Porous border facilitates arms smuggling, terrorist activities and flow of counterfeit Indian currency, all of which pose serious security risks to India.
- **Gurkha issues:** Relations came under strain when Nepal government blocked recruitment of Nepalese Gorkhas for the Indian Army's Gorkha Regiment claiming that the Agnipath Scheme violated the 1947 Tripartite Agreement signed between the two countries and the UK.
- **Treaty of Peace and Friendship, 1950:** The Treaty of Peace and Friendship has been at the center of the troubled history of Nepal-India relations which Nepal has declared "not in tune with time."

### Way Forward

- **Bilateral mechanisms** are needed to discuss contentious issues such as **border disputes**.
  - Boundary dispute resolution between India and Bangladesh can serve as a model.
- **Multilateral platforms** such as BBIN, BIMSTEC, and SAARC can be utilised to serve common interests such as climate change, disaster management, and regional security.
- **Enhancement of air connectivity** between the countries which is crucial for Nepal's economy.
- **Revisiting the Friendship treaty** as recommended by the Eminent Persons Group set up jointly by the two countries.
- **Hydropower Cooperation:** Further explore and implement joint hydropower projects to harness Nepal's hydroelectric potential for mutual benefit.

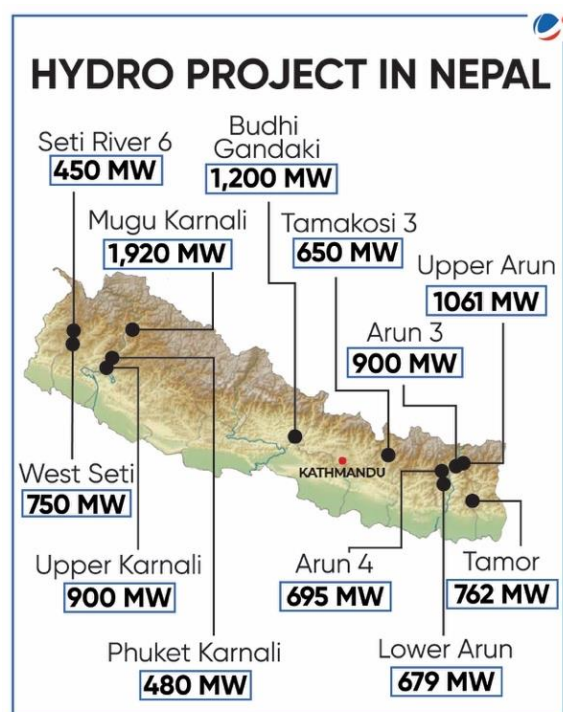
### 2.3.1. INDIA-NEPAL HYDROPOWER COOPERATION

#### Why in the news?

Nepal and India have inked an agreement setting the target to reach **10,000 megawatts of electricity export to India in the coming decade.**

#### Indian Hydropower projects in Nepal

- **West Seti and Seti River (SR6) projects** (1,200 MW).
- **Sapta Kosi high dam project** on Kosi river.
- **Mahakali Treaty** (6,480 MW), the **Upper Karnali Project** (900 MW) and the **Arun - III projects** (900 MW).
- **Phukot Karnali Hydroelectric Project**
  - Through agreements between NHPC and VUCL (Vidyut Utpadan Company Ltd), Nepal.
- **Lower Arun Hydroelectric Project**
  - Through an agreement between SJVN (India) and the Investment Board of Nepal.



Significance of cooperation for India	Significance of cooperation for Nepal
<ul style="list-style-type: none"> <li>• <b>Bilateral cooperation:</b> Hydro-power cooperation is a solid pillar in India-Nepal relations.</li> <li>• <b>Energy demand:</b> Nepal's enormous water wealth and huge hydropower potential can cater to India's increasing energy requirement.</li> <li>• <b>China Factor:</b> It will help India <b>minimise the geopolitical influence of China and firm India's presence in Nepal.</b></li> </ul>	<ul style="list-style-type: none"> <li>• <b>Technological Expertise:</b> Collaboration with India provides access to technological expertise and experience in the construction and management of hydropower projects.</li> <li>• <b>Infrastructure Development:</b> Investments from India can help build the necessary infrastructure in Nepal.</li> <li>• <b>Export Revenue:</b> Exporting surplus electricity to India can become a source of revenue for Nepal.</li> </ul>

## Major areas of concern in the development of hydropower

- **Natural constraints:** Fragile geological features and inadequate hydrological data, High sediment load in rivers in Nepal, and the presence of glacial silt.
- **Lack of Infrastructure:** Lack of adequate access to transport facilities, and transmission grid for power evacuation decreases the viability of the projects.
- **Chinese concern:** India is reluctant to purchase **energy produced by hydropower projects which are run by Chinese companies** in Nepal.
- **Lack of policy, and regulatory mechanism** for the third party access to the grid.
- **Water sharing issues:** The issue of downstream water use and flood control etc. also emanates with bigger multipurpose projects.

## Road Ahead

- **Resilient and effective infrastructure:** Aiding Nepal in developing its **transmission network** within the country and also the interconnections with India.
- **Hydropower as a multiplier:** Both sides should view hydropower projects in Nepal as an **enabler of long-term cooperation and regional stability**.
- **More Coverage:** The projects can also be extended to other regional partners under the Bangladesh-Bhutan-India-Nepal (BBIN) framework for cross-border energy cooperation.

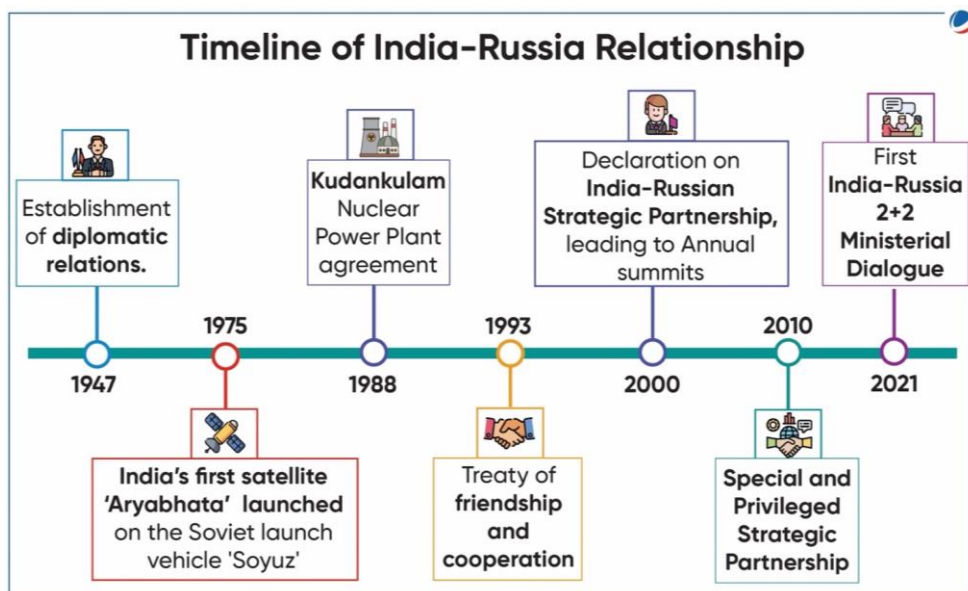
## 2.4. INDIA-RUSSIA RELATIONS

### Why in the news?

Recently, India and Russia signed three documents including a **Protocol on consultations** during the External Affairs Minister's official visit to Russia in December 2023.

### More about the news

- The protocol will foster progress in **military and economic cooperation**, energy trade, military-technical cooperation, connectivity and people-to-people exchanges.
  - The **duration** of the protocol is **four years (2024-2028)**.
- Two other documents relating to the **Kudan Kulam Nuclear Power Plants and an MoU on cooperation in pharmaceuticals and healthcare** were also signed during the visit.



The longstanding and time-tested partnership between India and Russia is driven by **shared interests of multilateralism**, and **global peace and prosperity**.

### Major Areas of India-Russia Cooperation and Its Significance

<b>Defence and Security Cooperation</b>	<ul style="list-style-type: none"> <li>• Russia is a <b>major supplier of defense items</b> to Indian armed forces and both nations are in <b>joint research, development, and production</b> of advanced defence items.                     <ul style="list-style-type: none"> <li>○ <b>Bilateral</b> projects include the <b>supply of S-400</b>, <b>licensed production of T-90 tanks and Su-30 MKI</b>, <b>production of Ak-203 rifles in India and BrahMos missiles</b> among others.</li> </ul> </li> <li>• Cooperation is guided by the <b>Agreement on the Programme for Military-Technical Cooperation for 2021-2031</b>.</li> <li>• <b>INDRA</b> as a tri-service bilateral military exercise.</li> </ul>
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<b>International /Multilateral Cooperation</b>	<ul style="list-style-type: none"> <li>• Russia supports <b>India’s bid</b> for a <b>permanent seat</b> in the <b>UN Security Council (UNSC)</b> and membership of <b>Nuclear Suppliers Group (NSG)</b>.</li> <li>• Also, both nations have an active engagement at: <ul style="list-style-type: none"> <li>○ <b>International/Multilateral Organizations</b> (e.g. <b>BRICS</b> and <b>SCO</b>).</li> <li>○ <b>Connectivity projects</b> such as <b>INSTC</b> (International North-South Transport Corridor), etc.</li> </ul> </li> <li>• It helps to act decisively against <b>international terrorism</b> and <b>cooperate</b> on matters such as drug trafficking, issues in Afghanistan, etc.</li> </ul>
<b>Trade and Economic Cooperation</b>	<ul style="list-style-type: none"> <li>• <b>Bilateral trade</b> during FY 2021-22 amounted to <b>\$13.2 billion</b>. (<b>\$30 billion</b> set for 2025)</li> <li>• <b>Bilateral investments</b> between the two countries crossed the <b>US\$30 billion</b> target set in <b>2018</b>. (<b>\$50 billion</b> target set for 2025)</li> </ul>
<b>Other Areas of Cooperation</b>	<ul style="list-style-type: none"> <li>• <b>Nuclear Energy:</b> The impeccable <b>non-proliferation record</b> of India has strengthened the partnership for peaceful use of nuclear energy. <ul style="list-style-type: none"> <li>○ India and Russia have also signed a <b>tripartite pact</b> with <b>Bangladesh</b> for <b>civil nuclear cooperation</b>.</li> </ul> </li> <li>• <b>Space Cooperation:</b> Russia has supported India’s space programme since its early days. E.g. <ul style="list-style-type: none"> <li>○ Russia is supporting India’s <b>1<sup>st</sup> manned space mission ‘Gaganyaan’</b>.</li> </ul> </li> <li>• <b>Science and Technology:</b> India-Russia relationship extends to the field of basic sciences as well including <b>Russian-Indian Network (RIN) of Universities, Arctic and Antarctic research</b> etc.</li> </ul>

### Challenges to India-Russia Relationship

- **Defence Challenges:** India needs to reduce its **defence supplies** from Russia as part of defence **modernization, and diversification** and to avoid **USA sanctions** under CAATSA.
- **Changing World Order:** The **USA-China** rivalry is shifting the world order towards a **bipolar world**. It is against **India-Russia’s** vision for a multipolar world.
- **Expanding Geo-strategic Interests:** As India grows beyond a **regional power**; its **geo-strategic interests** are expanding beyond the Indian Ocean and South Asia. E.g.
  - The **Indo-Pacific Region** and the **Eurasian Region** where India is partnering with countries having stressed relations with Russia.
- **Natural inclination towards the West:** Many experts believe that being the biggest democracy in the world, India shares a natural affinity towards the West (USA and major European nations) due to their democratic set-up.
- **Economic Challenges:** **High trade deficit** between two nations. The **regulatory impediments** and the use of **phytosanitary standards** and **non-tariff barriers** by Russia add to it. E.g.
  - Russia **classifies** tea as fruit and vegetable, leading to more phytosanitary restrictions.
  - The **increased oil purchases** in **2022** and the strengthening of the **Russian Ruble against the Indian Rupee** will increase the deficit further.

#### About CAATSA

- **CAATSA Act**, also known as **Countering America’s Adversaries Through Sanctions Act**, was enacted by the USA in 2017 to impose sanctions on three nations, i.e., Russia, Iran, and North Korea.
- It allows the **imposition of sanctions** on countries dealing with these three nations.
  - E.g. India was threatened by **CAATSA sanctions** on the purchase of the **S-400 air defence system** from Russia.

### Way Forward

- **Modernization of Defence Supplies** from Russia through **joint development and co-production** of advanced weapons, promoting **self-sufficiency** and reduced dependence of India on others for modernization and diversity under **Make in India**.
  - **Joint manufacturing of Spare parts and Reciprocal Logistics Support** for increased defence cooperation can also add to it.
- **Protect Multilateralism/Multipolarity** at UN and other forums such as BRICS, SCO etc. for more **rules-based international order**.
- **Diversification of Trade** to overcome the issues of limited economic relationship with high trade deficit.
  - **Positive outcome** on the recent list of over **500 products** from Russia to India for exports can be a good starting point.
- **Increasing private sector participation** in the economic relationship with removal of barriers to trade and investment.

- **Operationalising Eastern Maritime Corridor:** The proposed sea route that connects Chennai and Vladivostok (Russia's Far East) will improve logistical connectivity.
- **Broaden collaboration** on bilateral and regional issues covering new theatres of cooperation as part of shared common responsibilities on global peace and stability.

## 2.5. INDIA-ITALY RELATIONS

### Why in the news?

Recently, the Union Cabinet approved the **Migration and Mobility Agreement** between **India and Italy**.

### More about the news

- **Key provisions of the agreement:**
  - **Indian students**, after completing academic/vocational training in Italy, may be granted temporary residence for up to 12 months.
  - **For workers**, the Italian side has reserved a quota for non-seasonal and seasonal Indian workers for 2023, 2024, and 2025 under the current Flows Decree.
  - The agreement will remain **in force for five years and will be automatically renewed** for a successive period unless it's terminated by either signatory.

India and Italy are ancient civilizations that have interacted and traded with each other for over 2000 years via the spice route. Modern **political relations** between India and Italy were **established in 1947**.




Potential Benefits of the Agreement		
		
Enhance <b>people-to-people contacts</b>	<b>Foster mobility</b> of students, skilled workers, business people, and young professionals	<b>Strengthen cooperation on irregular migration</b> between the two sides

### Major areas of engagement between India and Italy

- **Political relations:** There has been a regular exchange of visits at political and official levels between both countries.
  - For Instance, the Indian PM paid his **first official visit to Italy** in October 2021 to attend the G20 Summit. In March 2023, the Italian PM paid her first-ever **state visit to India** as the guest of honour of **Raisina Dialogue**.
- **Economic Relations:** Italy is **India's 4th largest** trading partner in the EU.
  - The bilateral trade between the two countries was valued at US\$ 14.25 billion in 2022-23, with the **balance of trade** being **in India's favour**.
- **Defence Relations:** **India - Italy Military Cooperation Group (MCG)** is a forum established to boost defence cooperation.
  - India and Italy signed a **defence cooperation agreement** (in 2023) to promote cooperation in varied defence domains such as security and defence policy, and defence industrial cooperation among others.
- **Strategic Relations:** The relationship between India and Italy was elevated to **Strategic Partnership in March 2023** during the visit of the Italian Prime Minister to India.
  - A connection was identified between **the Indo-Pacific**, in which India plays a leading role, and the **enlarged Mediterranean** where Italy sits at the centre of the Mediterranean Sea and acts as a **natural bridge towards the Indo-Pacific**.
  - Italy's decision to **withdraw from the Belt and Road Initiative** aligns with **common goals in global connectivity** between Rome and New Delhi.
- **Multilateral:**
  - Italy supported India's entry into the **Wassenaar Arrangement and Australia Group**.
  - **The Blue-Raman project** (with an Italian company at its core) will bring the Mediterranean and the Indian Ocean closer in **exchange of digital data through a submarine cable system**.



- Italy supported India's major initiatives including the International Solar Alliance (ISA), the **India-Middle East-Europe Economic Corridor (IMEC)**, and the **Global Biofuels Alliance (GBA)**.

Other areas of cooperation		
 <b>Technology</b> An Agreement on S&T Co-operation has existed since <b>1978</b> leading to initiatives like <b>India-Trento Programme for Advanced Research (ITPAR)</b> .	 <b>Space</b> A joint declaration recently signed between the heads of <b>ASI (Italian Space Agency) and ISRO</b> .	 <b>Diaspora</b> The Indian community in <b>Italy</b> (estimated at <b>180,000</b> including <b>PIOs</b> ) is the <b>third largest community</b> of Indians in Europe after the UK and the Netherlands.

### Issues in India-Italy Relations

- **Low Trade:** India and Italy, despite having historical trade ties dating back to the Roman era have **relatively low current volume of trade and investment**.
- **Trust deficit due to earlier issues:**
  - **Italian Mariners' case:** The case sparked a conflict over legal jurisdiction and functional immunity, which **ended only in 2020 with the verdict of the Permanent Court of Arbitration**.
  - **Agusta Westland helicopter scandal:** The defence firm owned by Italian company Leonardo was accused of bribery, resulting in India cancelling the procurement deal and banning Leonardo from the Indian defence market in 2015.
- **Unrealized Alliance:** In 2021, the India-Italy-Japan trilateral partnership was launched yet it has not been operationalised.

### Way forward

- **Economic Partnership:** Strengthen trade ties to increase trade volume, explore new avenues for investment, and promote economic cooperation.
- **Strengthening EU-India partnership:** If the India and EU sign a trade pact in the coming time, Italy and India can enjoy major two-way trade benefits. It would also add **fodder to the reinvigorated EU-India partnership**.
- **Shared global agenda:** Italy and India **can converge on multilateral issues**, sharing a common imperative to shape and endorse a new global agenda together.
- **Culinary Exchanges:** Celebrate and promote the culinary heritage of both countries through food festivals and gastronomic events, with **Italian pasta and pizza** finding a place on Indian tables, and Indian spices adding a punch to Italian dishes.

## 2.6. GENOCIDE CONVENTION

### Why in news?

The International Court of Justice (ICJ) gave its **interim ruling** on South Africa's genocide case against Israel.

### More on news

- **South Africa vs. Israel case in ICJ:** South Africa argued that the manner in which Israel was conducting its **military operations in Gaza violated the Genocide Convention**.
- **Provisional Measures by ICJ:** ICJ ruled that **Israel must take all measures to prevent genocidal acts in Gaza (Palestine)**. However, it did not order ceasefire and did not find Israel guilty yet.

### Do you know?

- > The word "**genocide**" was first coined by Polish lawyer **Raphäel Lemkin** in 1944.
- > The term was developed in response to the **Nazi policies** of systematic murder of Jewish people **during the Holocaust**.
- > Genocide was **first recognised as a crime under international law in 1946** by the UNGA.

## About Genocide convention

- **Name:** Officially known as **Convention on the Prevention and Punishment of the Crime of Genocide, 1948**.
  - It codified the crime of genocide for the first time.
  - It was also the **first human rights treaty** adopted by the UN General Assembly.
- **Definition of Genocide:** The crime of genocide is defined in Article II of the Genocide Convention.
  - Genocide is defined as **acts committed with the intent to destroy, in whole or in part, a national, ethnic, racial, or religious group**.
  - According to the convention, genocide is a crime that **can take place both in time of war as well as in time of peace**.
- **Membership:** The Genocide Convention has been ratified by 153 States. **India has signed the treaty in 1949 and ratified in 1959**.
- **Responsibility of State parties:** State have obligation not to commit genocide and to take measures to prevent and to punish the crime of genocide, including by enacting relevant legislation and punishing perpetrators.
  - However, **India did not enact any legislation on the subject**.
- **Jurisdiction:** International Court of Justice (ICJ) hears cases related to the interpretation and application of the convention.
- **Other key information:** The definition of the crime of genocide, as set out in the Convention, has been widely adopted at both national and international levels, including in the Rome Statute of the International Criminal Court (ICC) (Article 6).

About International Court of Justice (ICJ)	About International Criminal Court (ICC)
<ul style="list-style-type: none"><li>• <b>Genesis:</b> It is a principal judicial organ of the United Nations (UN) established in 1945.</li><li>• <b>HQ:</b> The Peace Palace in The Hague (Netherlands)<ul style="list-style-type: none"><li>○ It is the <b>only principal organ</b> of the UN which is <b>not located in New York</b>.</li></ul></li><li>• <b>Role:</b> To settle legal disputes as per International law and to provide advisory opinions.<ul style="list-style-type: none"><li>○ Judgment is binding on the parties to a case and without appeal (subject to interpretation or revision).</li></ul></li><li>• <b>Composition:</b> <b>15 judges</b> (Currently India serves one Judge), who are elected for nine years by the UN General Assembly and the Security Council.</li><li>• <b>Official languages:</b> English and French.</li><li>• <b>Comparison with ICC:</b> ICJ hears disputes between nations over matters of law, unlike the International Criminal Court (ICC) which holds <b>individuals criminally responsible for offences</b> and crimes against humanity.</li></ul>	<ul style="list-style-type: none"><li>• <b>Genesis:</b> Established by the <b>Rome Statute of the International Criminal Court in 1998</b>.</li><li>• <b>HQ:</b> The Hague (Netherlands)</li><li>• <b>About:</b> It is an <b>international court to investigate and prosecute individuals</b> accused of serious international crimes: <b>genocide, crimes against humanity, war crimes, and aggression</b>.</li><li>• <b>Members:</b> 123 countries are party to Rome Statute. <b>India is not a member</b>.</li><li>• <b>Jurisdiction:</b><ul style="list-style-type: none"><li>○ It has <b>jurisdiction only over crimes committed after July 1, 2002</b>, when the Rome Statute entered into force.</li><li>○ <b>Only States are eligible to appear before the Court</b> in contentious cases. It has no jurisdiction over applications from individuals, non-governmental organizations, corporations or private entity.</li></ul></li><li>• <b>Other Key information:</b><ul style="list-style-type: none"><li>○ Its <b>judgments are final without appeal and binding</b> upon the parties concerned.</li><li>○ The Court <b>does not have its own police force and relies on State cooperation, to the arrest and surrender of suspects</b>.</li></ul></li></ul>

## 2.7. THE GLOBAL COOPERATION BAROMETER 2024 REPORT

### Why in the News?

World Economic Forum (WEF) in collaboration with McKinsey & Company released the report.

### About Global Cooperation Barometer

- It is a tool for leaders **to better understand the contours of cooperation broadly along five dimensions** using 42 indicators of global connection (see the table)
  - These **five pillars were chosen** because of their **impact on global development and their explicit dependence on cooperative efforts among nations and economies**.

- It measures cooperation from 2012 through 2022 and could help business and government stakeholders to:
  - **Face global challenges:** Such as rising global temperatures, growing forcible displacement (42 million in 2012 to 82 million in 2020), threats of a pandemic and the risks associated with new, unregulated technologies.
  - **Unlock new opportunities:** For example, Generative AI has the potential to contribute as much as \$2.6 trillion to \$4.4 trillion to the global economy.



**WORLD ECONOMIC FORUM**

**WEF**



Geneva,  
Switzerland

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**Genesis:** It was established in 1971 as a not-for-profit foundation.

**Aim:** The Forum engages the foremost political, business, cultural and other leaders of society to shape global, regional and industry agendas.

**Major Reports:**

- ◆ The Future of Growth Report.
- ◆ Global Risks Report.
- ◆ The Future of Global Fintech: Towards Resilient and Inclusive Growth.

### The 5 pillars of Global Cooperation Barometer

Pillars	About	Observation
<b>Trade and capital</b>	Promote global development and resilience	<ul style="list-style-type: none"> <li>• <b>Grew through the pandemic disruption</b>, but slowed in 2023.</li> <li>• <b>Geopolitical tensions and new restrictions</b> make the future <b>path unclear</b>.</li> </ul>
<b>Innovation and technology</b>	Accelerate innovation and beneficial technological progress	<ul style="list-style-type: none"> <li>• <b>Flows of data, IP and international students</b> powered an increase in cooperation until 2020.               <ul style="list-style-type: none"> <li>○ Pandemic drove widespread <b>remote working for white-collar workers</b> that supported continued growth in <b>cross-border data flows and relatively robust IT services growth</b>.</li> </ul> </li> <li>• However, <b>new questions</b> have arisen about <b>how to work together to harness opportunities</b>.               <ul style="list-style-type: none"> <li>○ The race to dominate the frontiers of technology development has led to <b>import and export bans on 5G network technologies</b>, limitations on semiconductors and bans on some social media platforms.</li> <li>○ The <b>share of cross-border patents fell sharply</b> to the lowest point in the past decade.</li> </ul> </li> </ul>
<b>Climate and natural capital</b>	Support the resolution of climate and natural capital challenges	<ul style="list-style-type: none"> <li>• Level of <b>cooperation</b> has been <b>rising steadily</b>, due in large measure to an increase in commitments, <b>but emissions also continue to rise</b>.               <ul style="list-style-type: none"> <li>○ <b>Net-zero commitments in the private sector have also proliferated</b> due to groups such as Glasgow Financial Alliance for Net Zero (GFANZ).</li> <li>○ <b>Emissions intensity</b> (emissions relative to GDP) <b>improved over the decade</b>, reflecting advances in electrification, decreases in heavy industry and increasing presence of renewable energy sources.</li> </ul> </li> </ul>
<b>Health and wellness</b>	Enable global population to lead longer and better lives	<ul style="list-style-type: none"> <li>• <b>Rose swiftly</b> in response to the <b>pandemic</b>, but appears to be <b>settling back to historical patterns</b>.               <ul style="list-style-type: none"> <li>○ <b>Maternal mortality rates increased for the first time</b> in three decades.</li> <li>○ <b>WHO's Pandemic Preparedness Treaty</b> (to be considered in 2024) is a prime example of international cooperation in progress.</li> </ul> </li> </ul>
<b>Peace and security</b>	Prevent and resolve conflicts	<ul style="list-style-type: none"> <li>• <b>Cooperation</b> in peace and security has <b>declined since 2016</b> and plummeted recently.               <ul style="list-style-type: none"> <li>○ This trend is driven by a <b>rise in forcibly displaced people</b>, a <b>surge in cyberattacks</b>, and a recent <b>rise in conflict and conflict-associated deaths</b>.</li> </ul> </li> </ul>

### Report suggested following measures to foster global cooperation:

- **Practice cooptation:** Stakeholders should focus on **identifying avenues toward advancing shared interest** that can exist **despite competition** – a practice known in the private sector as “cooptation”.
- **Raise the capabilities of management:** An **understanding** of both **global connections and geopolitical realities** – and implications for the business – should be a **core competency** for every multinational corporation C-suite executive (company's top management positions).
- **Think diversifying, not decoupling:** Greater diversification not only strengthens resilience, but also promote a more **inclusive trading system and economy**. This could further enable **broader participation by various countries**.
- **Promote innovation:** Commit to greater cross-border collaboration through
  - foundational R&D,

- international student exchanges,
- cross-border patent applications,
- simplified approaches to global regulation of frontier technologies such as Generative AI.
- **Bolstering cooperation to achieve interdependent climate objectives:** Spending must focus on creating incentives to deploy lower-cost solutions (e.g. solar/wind power) and reducing the costs of expensive solutions (e.g. passenger battery EVs; onshore wind power).
- **Intensifying pandemic era cooperation:** Global health norms and infrastructure established during and before the pandemic can be preserved to improve health outcomes, address future pandemics, aging populations, and chronic conditions.
- **Support for vulnerable populations:** By managing the integration of refugee populations from conflict zones, identifying mechanisms to support impacted individuals in conflict zones.
- **Cyber collaboration:** Integrating public and private sector actors to boost sharing of data flows on cybersecurity threats.

## India's initiatives for global cooperation

### Inclusivity

Inclusion of the **African Union (AU)** as a **permanent member of the G20**, expanding it to encompass **80% of the global population**.

### Climate Actions

**Green Development Pact Declaration** provides a roadmap where **employment and ecosystems are complimentary, consumption is climate conscious, and production is planet-friendly**.

### Tackling Pandemic

Through **Vaccine Maitri** programme, India supplied **Covid vaccine** to countries in need as well as UN entities.

### Promoting Solar Energy

India led **International Solar Alliance (ISA)** is promoting **One Sun One World One Grid (OSOWOG)** initiative.

## 2.8. NEWS IN SHORTS

### 2.8.1. ANGOLA WITHDRAWS FROM OPEC

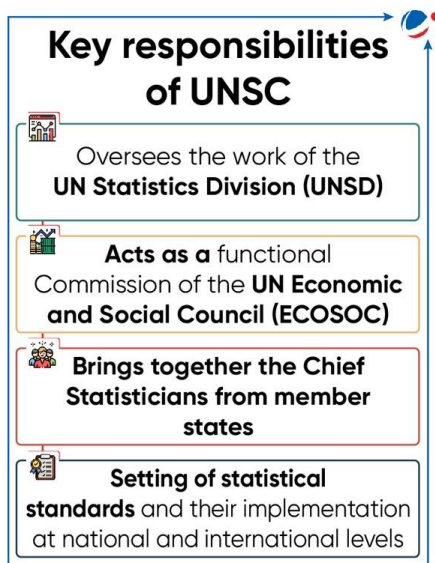
- Organization of the Petroleum Exporting Countries (OPEC) is an **intergovernmental Organization**.
  - Established at the **Baghdad Conference** in 1960, by Iran, Iraq, Kuwait, Saudi Arabia, and Venezuela.
    - ✓ Its **other members** are Algeria, Equatorial Guinea, Gabon, Libya, Nigeria, the Republic of the Congo, and the United Arab Emirates.
  - **Key Objective: Co-ordinate and unify petroleum policies** among Member Countries, to secure fair and stable prices for petroleum producers.
    - ✓ And, ensure efficient, economic, and regular supply of petroleum to consuming nations.
  - **HQ:** Vienna, Austria.
- **Significance of OPEC:** It possess more than 80% of the world's total crude oil (mixture of hydrocarbons that exists in liquid phase) reserves.
  - Also, OPEC+ represents around 40% of world oil production.
    - ✓ OPEC+ is a coalition of OPEC and 10 other major oil-exporting nations, including Russia.

### ● How does OPEC regulate the Crude oil Prices?

- Oil prices are mainly determined by **demand and supply**.
- It mainly uses a **spot or future sale** mechanism.
  - ✓ **Oil spot prices** represent the cost of **buying or selling oil** immediately.
  - ✓ **Oil futures** are contracts in which one agrees to exchange an amount of oil at a set price on a set date.
- OPEC uses **Brent Crude** as a benchmark for quality.
  - ✓ **WTI (West Texas Intermediate)** is another major benchmark.

### 2.8.2. UNITED NATIONS STATISTICAL COMMISSION (UNSC)

- India started a **four-year term as a member** of the UNSC.
  - UNSC, **established** in 1946 is the **highest body of global statistical system**.
- **Members:** Consists of 24 member countries of UN elected by ECOSOC.



### 2.8.3. HAGUE APOSTILLE CONVENTION, 1961

- Allahabad High Court mandates that **India**, a member of the Apostille Convention, **must accept foreign apostille-authenticated documents**.
- **Hague Apostille Convention, 1961**
  - It **simplified the global circulation of public documents**.
    - ✓ These public documents include **certificates of birth, marriage, and death, and educational documents** among others.
  - Contracting parties issue an **Apostille certificate to authenticate a document's origin**, allowing it to be presented abroad to another Contracting Party.
  - **Non-member countries require extra certification** from the State of origin for document acceptance.

### 2.8.4. IRAN'S RETALIATION AND INDIA'S INTEREST IN WEST ASIA

- Iran's retaliatory strikes in **Syria, Iraq, and Pakistan** were prompted by a terrorist attack in its Kerman province (refer to the map).
- **India's Interests in West Asia**
  - **Neighbourhood first policy:** West Asia is a part of India's **extended neighbourhood and Look West Policy**, and maintaining peace and stability in the region aligns with India's strategic interests.
  - **Diaspora:** Indians constitute more than **30% of total expatriate workers** in the in the **Gulf Cooperation Council (GCC)**.
  - **Remittance:** **18%** of India's total remittances come only from the **UAE**, **5.1%** from **Saudi Arabia**, while Kuwait, Oman and Qatar also have significant contributions.
  - **Connectivity and Infrastructure:**

- ✓ **INSTC** is a land- and sea-based multi-modal **transport network** that will connect the Indian Ocean and the Persian Gulf with the Caspian Sea.
- ✓ **India-Middle East-Europe Economic Corridor** spans India to Europe via West Asia.
- ✓ **Chabahar port** is vital for India for transporting cargo to Europe.
- **Energy security:**
  - ✓ More than **80% of India's oil and over 50% of gas are imported**.
  - ✓ **Iraq and Saudi Arabia** serve as **major oil suppliers**, while **Qatar** is a significant supplier of **LNG**.



### 2.8.5. UAE-INDIA CEPA COUNCIL (UICC)

- UAE-India Comprehensive Economic Partnership Agreement (CEPA) Council (UICC) was launched at India- United Arab Emirates (UAE) Business Summit.
- UICC will encourage close partnerships and tangible **cooperation across all levels** of UAE and Indian business communities.
  - UICC emphasises on **start-ups, women entrepreneurs, Micro, Small, and Medium-Sized Enterprises (MSMEs), and services sectors**.
- **India- UAE CEPA came into force in 2022.** It is the first full free trade Agreement to be signed by India with any country in past decade.
  - It covers **Trade in Goods and services, Rules of Origin, customs cooperation, Dispute Settlement etc.**
  - **Bilateral trade has increased** by approximately **15%** since CEPA came into force.

- **Significance of CEPA**
  - **Enhanced access for cross-border trade in services** and provide thrust to pharmaceutical sector.
  - **Raise bilateral merchandise trade to \$100 billion in five years** from about \$43 billion in FY21.
  - **Special safeguard measures provide protection** against imports surge from UAE due to tariff concessions.
  - **UAE can act as gateway to West Asian countries and Africa** for Indian exporters.

#### India- UAE Relations

- UAE is **India's third largest trading partner** (2022-23) after China and US and second-largest **export destination**.
- **Both countries have maritime cooperation to maintain peace and security** in the region through regular military exercises like **Desert Eagle**.

#### 2.8.6. HENLEY PASSPORT INDEX 2024 (HPI)

- HPI was **released by Henley & Partners**, a global leader in residence and citizenship planning.
- HPI **ranks different passports** according to **number of destinations** their holders can visit **without a prior visa**.
  - It covers **227 destinations** and **199 passports**.
  - Rankings are based on data provided by **International Air Transport Association**.
- **Key findings**
  - India stands at **80th rank in list of most powerful passports**. Its passport has visa-free access to 62 nations.
  - **France, Germany, Italy and Spain, Japan and Singapore** are sharing **number one spot**.



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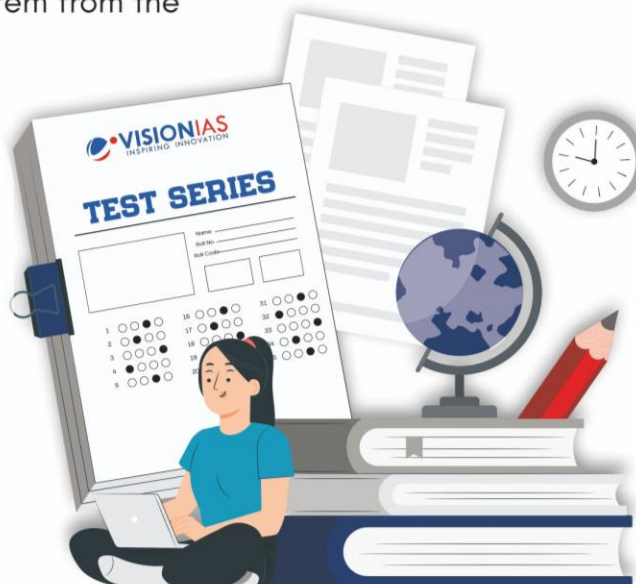
- **General Studies** (हिन्दी माध्यम में भी उपलब्ध)
- **CSAT** (हिन्दी माध्यम में भी उपलब्ध)
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# 3. ECONOMY

## 3.1. NATIONAL MULTIDIMENSIONAL POVERTY INDEX

### Why in the news?

NITI Aayog released a discussion paper titled 'Multidimensional Poverty in India since 2005-06'.

### About Multidimensional poverty


- It refers to a measure that considers various factors or dimensions **beyond income** to assess and **understand poverty**.
- **Multidimensional poverty** encompasses the **various deprivations experienced by poor people** in their daily lives – such as poor health, lack of education, inadequate living standards, poor quality of work, the threat of violence, among others.
  - **Ending poverty in all its forms** everywhere, the aim of **Sustainable Development Goal (SDG) 1**, entails viewing poverty not solely in relation to income and consumption, but as relating to other multiple capabilities.

### Measurement of multidimensional poverty:

- The Multidimensional Poverty Index (MPI) **assesses poverty at the individual level**. **Alkire-Foster Method** is most often used to compute MPIs.
- **Global MPI (GMPI)**: It is a globally recognized comprehensive measure that **captures poverty in multiple dimensions** beyond monetary aspects.
  - **GMPI Report** was first released by the Oxford Poverty and Human Development Initiative (**OPHI**) and the United Nations Development Programme (**UNDP**) since **2010**.
  - It covers **100 developing countries** and captures the **acute deprivations in health, education, and living standards** that a person faces simultaneously.
  - If a person is **deprived in a 1/3<sup>rd</sup> or more** of ten (weighted) indicators, the GMPI **identifies them as 'MPI poor'**.
- **National MPI (NMPI)**: It retains the 10 original indicators of the global MPI model and has **added two indicators**, viz., Maternal Health and Bank Account, in line with India's national priorities.
  - MPI value is arrived at by **multiplying the headcount ratio (H) and the intensity of poverty (A)**, reflecting both the share of people in poverty and the degree to which they are deprived.
    - ✓ **Headcount ratio (H)**: It indicates **proportion of multidimensionally poor** in the population.
    - ✓ **Intensity of poverty (A)**: It indicates average proportion of deprivations which is experienced by multidimensionally poor individuals.
  - Under the government's Global Indices for Reforms and Growth (GIRG) initiative, **NITI Aayog is the nodal agency for MPI**.
    - ✓ GIRG monitors India's performance on various important social and economic parameters.
  - NITI Aayog uses **National Family Health Survey (NFHS)** to measure the NMPI.
    - ✓ The latest NMPI, 'National Multidimensional poverty: A Progress Review -2023' is based on the data of NFHS 4 and 5.

### Key finding of the recent discussion paper

- **Decline in MPI**: Headcount Ratio decreased from 29.17% in 2013-14 to **11.28% in 2022-23**.
  - **24.82 crore Indians escaped** multidimensional poverty in last 9 years.
  - **Intensity of Poverty is also declining** which shows that extent of deprivation among the deprived population is falling.
  - The **pace of decline** in poverty **headcount ratio** was **much faster between 2015-16 to 2019-21** compared to 2005-06 to 2015-16.

**Do you know?** 

- > The **Alkire-Foster (AF) method** can show both the **breadth (incidence) and depth** (intensity) of poverty.
- > To identify the poor, the AF method counts the **overlapping or simultaneous deprivations** that a person or household experiences in different indicators of poverty.



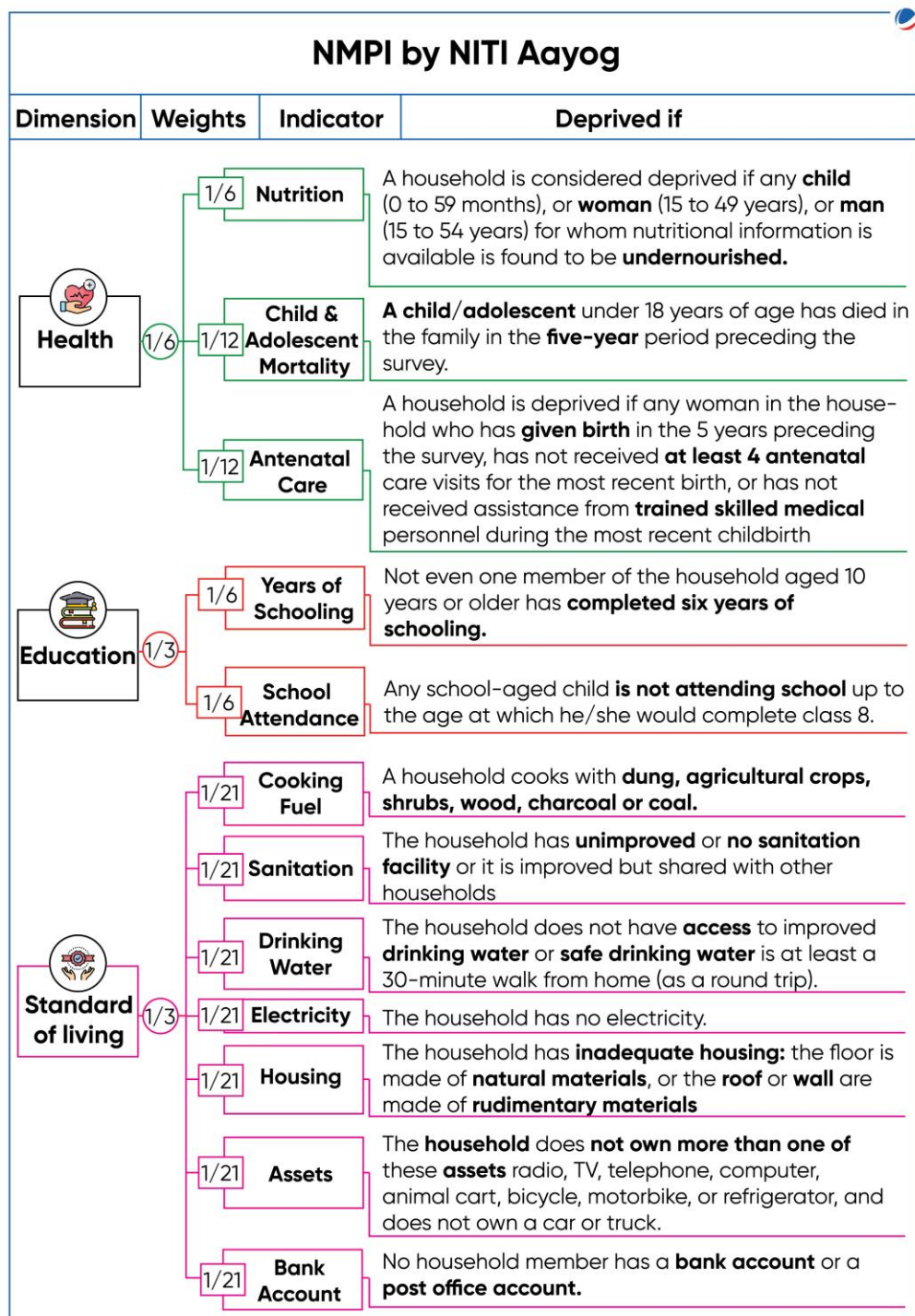
- **Poverty declining across indicators: All 12 indicators** of MPI have recorded significant **improvement**.
  - **Cooking Fuel** and **Housing** have the highest deprivation level of deprivation.
  - **Child & Adolescent Mortality, Electricity, and Bank Account** have the lowest deprivation levels.
- **Regional decline in MPI:** Poorer states record faster decline in poverty indicating reduction in disparities.
  - **Uttar Pradesh, Bihar, Madhya Pradesh, Odisha, and Rajasthan** saw fastest reduction in the proportion of multidimensional poor.
- **Attainment of SDG:** India on track to achieve **SDG Target 1.2** (reducing multi-dimensional poverty by at least half) much ahead of 2030.
- **Factors responsible for decline in MPI:** Various government programs including **PM Ujjwala Yojana, Saubhagya,** and transformative campaigns like **Swachh Bharat Mission and Jal Jeevan Mission** have collectively elevated living conditions and overall well-being of people.

### Significance of NMPI

- Provides for **more nuanced perspective** as it delves into **deprivations up to the district level** unlike conventional **monetary poverty assessments** that is based on **consumption surveys**.
- **Facilitates targeted interventions** to address acute poverty and uphold the principle of inclusivity.
- Determination of **overlapping deprivations** that **directly influence individuals' quality of life and overall well-being**.
- **Helps in more inclusive policy formulation**.

### Issues associated with NMPI

- **Less sensitive:** To be considered multidimensionally poor, households must be deprived in **at least 1/3<sup>rd</sup> of indicators**. This requirement makes the MPI less sensitive to minor inaccuracies.
- **Impact of COVID-19:** Some economists have argued that loss of livelihood due to reverse migration and deaths due to disrupted healthcare in 2020-21 are not covered in the Index.



- **Stagnant wages:** Real wages were stagnant for six years which had serious implications for consumption demands and this cannot be consistent with a decline in poverty levels.
- Issues in reliability of Data:

### Way forward

- **Include new dimensions in calculating MPI:** Like learning outcomes, social discrimination, unorganized workers, environmental degradation etc.
- **New measurement:** National MPI should incorporate 75<sup>th</sup> round of National Sample Survey (NSS) data along with NFHS.
- **Effective monitoring:** Comprehensive measures should be taken to monitor the progress across indicators on real time basis.
  - Also, social audit of the programmes, awareness generation about development programme, etc. is critical for eliminating multidimensional poverty.

## 3.2. UNIFIED PAYMENTS INTERFACE (UPI)

### Why in the news?

Recently, the Reserve Bank of India (RBI) has announced new rules and regulations to enhance the scope of Unified Payments Interface (UPI) payments.

### More on news

#### About new rules

- **Enhancing UPI transaction limit:**
  - ✓ The transaction limit for **UPI payments made to hospitals and educational institutions** has been **hiked to Rs 5 lakh** from Rs 1 lakh earlier.
  - ✓ Transaction limit for UPI is capped at Rs. 1 lakh, **except in a few categories** like **Capital Markets** (Broking, Mutual Funds, etc.), **Collections** (Credit card payments, Loan re-payments, EMI), **Insurance** etc. where **transaction limit is Rs. 2 lakhs**.
- **Increased e-Mandates for Recurring Online Transactions:** Limits for execution of e-mandates **without Additional Factor of Authentication (AFA) increased from Rs 15,000 to Rs 1 lakh** for credit card bill payments, mutual fund subscriptions and insurance premiums.

#### About National Payments Corporation of India (NPCI)

- NPCI is an umbrella organization for **operating retail payments and settlement systems in India**.
- It is an initiative of **RBI and Indian Banks' Association (IBA)** under provisions of **Payment and Settlement Systems Act, 2007**.
- It has been **incorporated as a "Not for Profit" Company** under provisions **Section 8 of Companies Act 2013**.
- It has launched payment products such as RuPay card, IMPS, UPI, BHIM, BHIM Aadhaar, Bharat BillPay etc.

### About Unified Payments Interface (UPI) and its Features

- UPI powers **multiple bank accounts** into a **single mobile application** (of any participating bank), merging **several banking features** e.g., transfer of funds, etc.
  - It was **developed by NPCI** in 2016 and **built over Immediate Payment Service (IMPS)** infrastructure.
  - It is the most successful real-time payment system globally, **providing simplicity, safety, and security in person-to-person (P2P) and person-to-merchant (P2M) transactions** in India.

### New Features of UPI

- **Credit Line on UPI:** It enables **pre-sanctioned credit lines** from banks via **UPI**. Earlier, **only the deposited amount** could be **transacted** through the **UPI System**.
- **UPI Lite X:** Users can both send and receive money offline through any compatible device that supports **Near Field Communication (NFC)**.
- **UPI Tap & Pay:** It allows **NFC-enabled QR codes** at merchants to **complete payments, with a single tap** without entering the PIN.

### Know the term

- **Near Field Communication (NFC)** is a **short-range wireless connectivity technology** that transmits data through electromagnetic radio fields to enable two devices to communicate with each other.





- **Conversational Payments:**
  - **Hello! UPI:** Users can simply give voice commands to transfer funds and **input a UPI PIN** to complete the transaction.
  - **BillPay Connect:** Customers can fetch and pay their bills by sending a **simple ‘Hi’** message or by giving a missed call.
- **Other Proposed Changes for UPI Payments**
  - **Deactivate UPI IDs:** National Payments Corporation of India (NPCI) has asked banks and mobile payment applications like Google Pay etc. to **deactivate UPI IDs and numbers of accounts that have been inactive** for one year.
  - **The four-hour time limit** for users **initiating first payments over Rs 2,000 to new recipients** to make UPI transactions safe.
    - ✓ This has added a **layer of control and security** as it allows users to reverse or modify transactions within that window.
  - **Introduction of UPI ATMs**, allowing cash withdrawal by scanning a QR code.

#### Initiatives to promote UPI

- **UPI for secondary market:** Introduced by NPCI to **enhance the ease of equity trading** in country.
- **UPI Chalega Campaign:** Launched by NPCI to promote UPI as an easy, safe, and instant mode of payment. It also **educates users about various features such as UPI LITE** that enables swift low value transaction.
- **MoU between Google India Digital Services and NPCI International Payments:** To **broaden use of UPI payments**, enabling **travellers to make transactions abroad** and **ease remittances process between countries**.
- **India’s UPI in overseas markets:** Various countries like Oman, UAE, France, Nepal, Bhutan etc. are using UPI system for payment.
- **UPI 123PAY:** It is an instant payment system **for feature phone users** who can use UPI payment service in a safe and secure manner.

#### Challenges associated with UPI

- **Regulation:** Expanding UPI to accommodate a global user base will **require adhering to data protection, financial laws and regulations of different countries** posing regulatory and compliance challenges.
  - Also, significant scalability in terms of software, network and partner banks is required.
- **Dominance of Foreign-owned UPI Apps:** Parliamentary panel’s report, ‘Digital Payment and Online Security Measures for Data Protection’ recently highlights that foreign entities like PhonePe and Google Pay dominate Indian fintech sector.
  - Market share of **PhonePe is 46.91% and Google Pay is 36.39%** in terms of the transaction volume in October-November 2023, whereas for **BHIM UPI it is 0.22%**.
- **Security and Fraud:** Cybercriminals may **exploit vulnerabilities in the system** or use social engineering techniques to gain access to sensitive information leading to financial losses.
- **Exchange Rates:** Managing currency conversion and exchange rates while facilitating payments and loading money to the wallet poses a significant challenge for cross-border transactions.
- **Lack of awareness:** UPI remains a barrier to its widespread adoption especially among individuals with a **lack of familiarity with digital payments, leading to financial fraud**.
- **Privacy and Surveillance:** The UPI system ensures end-to-end cryptography, but the **regulator i.e. NPCI have access to details of each**

Benefits of UPI	
 <b>Merchants</b> <ul style="list-style-type: none"> <li>■ <b>Low cost</b> of acceptance</li> <li>■ <b>Accept payments</b> without credit/debit cards</li> <li>■ Eliminates need to return or handle <b>cash change</b></li> <li>■ Suitable for <b>both physical and online merchants</b></li> <li>■ <b>Facilitates access</b> to credit</li> </ul>	 <b>Customers</b> <ul style="list-style-type: none"> <li>■ <b>Round-the-clock</b> availability</li> <li>■ <b>Single app</b> for accessing different bank accounts</li> <li>■ <b>Multiple use cases</b> for various kinds of payments</li> <li>■ Ability to <b>raise complaints</b> from mobile apps directly</li> <li>■ <b>Convenience</b> and ease to use</li> </ul>
 <b>Banks</b> <ul style="list-style-type: none"> <li>■ <b>Low investments</b> towards branch and PoS</li> <li>■ <b>Low cost of merchant</b> onboarding</li> <li>■ <b>Transaction data</b> for better understanding of customers to uplift cross-selling / upselling</li> </ul>	 <b>Fintechs/PSPs</b> <ul style="list-style-type: none"> <li>■ <b>Open architecture</b> to promote innovative products</li> <li>■ <b>Collaborations with FIs</b> for customer-centric solutions</li> <li>■ Possibility to market <b>innovative credit</b> products</li> </ul>

**transaction** Aadhaar number, device fingerprint, IP address, bank account numbers etc. This potentially compromises privacy rights.

### Way ahead

- **Regulation:** A collaborative approach among nations, **partnership among financial institutions, service providers etc. is required to develop a uniform compliance** and regulatory framework among the partner nations.
- **Infrastructure:** Banks and Payment service providers need to expand their infrastructure in terms of software, network etc. to process higher transactions per second and **accommodate a global user base**.
- **Fraud Protection:** A collaborative effort between UPI service providers, banks, and users is required to identify and respond to UPI frauds.
- **Transaction limits:** Striking a balance between security and transaction flexibility is crucial to drive wider adoption of UPI across various sectors.
- **Education and awareness:** Training programs and easy-to-understand guides should be designed to educate the masses about the **UPI ecosystem and mitigate associated concerns**.

## 3.3. NON- PERFORMING ASSETS (NPA)

### Why in the news?

RBI's annual **Trend and Progress of Banking in India report** for the financial year 2022-23, showed that the gross non-performing assets (GNPA) ratio fell to 3.9 per cent in 2022-23.

### About Non- Performing Assets (NPA)

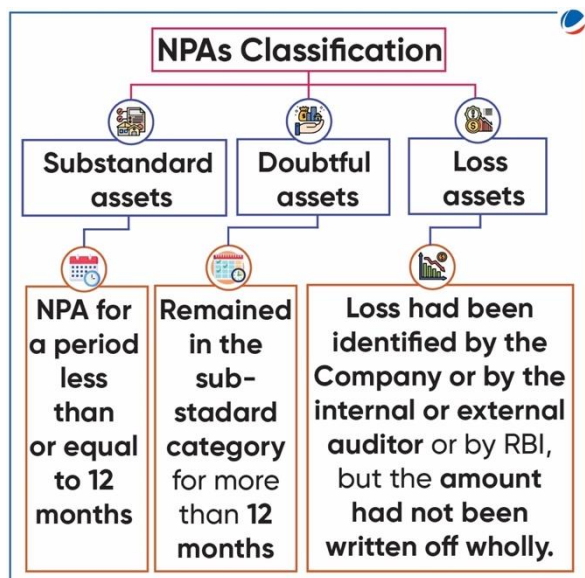
- A NPA refers to a classification for **loans or advances of a bank that are in default or arrears**.
  - A loan is in arrears when **principal or interest payments are late or missed and becomes an NPA** when the **interest and/ or instalment of principal remain overdue for more than 90 days**.
  - **GNPAs** are the **sum of all loan assets** that are classified as **NPAs**.

### Reasons for Non-Performing Assets

- **Defective Lending Process:** Improper selection and **lack of periodic review of the credit profile of borrowers** ensuring their repayment capabilities can create NPAs in PSBs.
  - Due to a **lack of cooperation with financial institutions**, borrowers default in more than one bank.
- **Willful Defaults:** Rising cases of borrower who have access to funds to repay their loans but still choose not to, and default on the repayment of the loan.
  - **Industrial sickness:** Ineffective management, **lack of adequate resources and technological changes, and changing government policies** produce industrial sickness. Therefore, banks financing these industries ultimately end up with a **low recovery rate of loans** reducing their profit and liquidity.
- **Regulatory:** Flouting of RBI guidelines and **non-compliance with regulatory directions** regarding banking operations by Public Sector Banks (PSBs), can lead to frauds and rise in NPAs.

### Steps taken to reduce NPA

- **Securitisation and Reconstruction of Financial Assets and Enforcement of Security Interest Act, 2002 (SARFAESI Act):** It allows secured creditors to take possession of collateral, against which a loan had been provided, upon a default in repayment.
- **Debt Recovery Tribunals:** Established under the Recovery of Debts and Bankruptcy Act, 1993 provide for the establishment of Tribunals for expeditious adjudication and recovery of debts.
- **Insolvency and Bankruptcy Code (IBC), 2016:** For reorganisation and insolvency resolution of corporate persons, partnership firms and individuals in a time-bound manner i.e. within **180 days** or the extended period of **90 days**.
- **National Asset Reconstruction Company (NARCL):** It aims to **reduce NPAs of banks, improving financial system stability and efficiency**.
  - It is incorporated under the Companies Act 2013 with **PSBs holding a majority stake**.
- **Indradhanush plan** for revamping PSBs, envisaging infusion of capital in PSBs.



- **Frauds by banker and borrower:** The size of frauds in the public sector banking system has been increasing, though still small relative to the overall volume of NPAs.
  - In the first half of the 2023-24 financial year (April- September), there is an **increase in reporting of fraud cases in the banking sector to 14,483** from 5,396 cases in the same period a year ago (2022-23).

#### Impact associated with Non- Performing Assets

- **Economic growth:** Rising NPAs **prevent banks from lending for other productive activities** leading to a slowdown in economic activity. It can further lead to a **decrease in employment opportunities and inflation.**
- **Higher interest rates:** Increasing NPAs can lead to an **increase in interest rates**, to cover the losses, which can lead to an increase in borrowing costs for individuals and companies.
- **Public trust:** Rising NPAs led to **reputational, operational and business risk for banks** and undermined **customers' trust with financial stability implications.**
- **Pendency:** The courts are facing the problem of increasing pendency of cases, as the **current set up of courts made to deal with the problem of debt recovery is not efficient** and does **not have enough manpower** available to deal with the high influx of debt recovery cases.
- **Capital adequacy issues:** NPAs **erode the capital base of banks.** When NPAs increase, banks may struggle to meet capital adequacy norms.

#### Other Highlights of Report on Trend and Progress of Banking in India 2022-23

- The consolidated balance sheet of SCBs grew by 12.2% in 2022-23, the **highest in nine years.**
- In 2022-23, the combined balance sheets of **Urban Co-operative Banks (UCBs) expanded by 2.3%** while that of **Non-Banking Financial Companies (NBFCs)** expanded by 14.8%.
- The rate of **growth of the unsecured retail segment has outpaced total bank credit growth.**
  - NBFCs' double-digit credit growth was driven by the growth of unsecured loans which grew more than twice as fast as secured loans.
- During 2022-23, the total amount of fraud reported by banks **declined to a six-year low**, while the **average amount involved in fraud was the lowest** in a decade.
- **The capital-to-risk-weighted assets ratio (CRAR)** of SCBs reached **16.8%** at the end of September 2023.

#### Concerns raised by the report

- Long tenure of directors, **absence of comprehensive risk management policy** and deficient compliance culture in UCBs.
- **Concentration risks** of corporate credit in NBFCs and significant **exposure of banks to NBFCs.**
- The top 50 exposures of Government-owned NBFCs constituted about 40 per cent of total corporate credit within the NBFC sector.
- Also, all these 50 exposures were to the power sector, which faces multiple inherent issues.

#### Way forward

- **Government support:** Adopting a **comprehensive 4R strategy** consisting of the **Recognition of NPAs** transparently, **Resolution and recovery value** from stressed accounts, **Recapitalising Public Sector Banks (PSBs)**, and **Reforms in PSBs** and the financial ecosystem can **reduce NPAs and strengthen PSBs.**
- **Strengthen credit monitoring:** Develop an **early warning mechanism and comprehensive MIS (Management Information System)** to enable timely detection of problem accounts, flag early signs of delinquencies and facilitate timely information to management on these aspects.
- **Approval process:** Banks should have an established **credit approval process, for new credits as well as re-financing of existing credits.**
  - A comprehensive assessment and periodic review of the borrower's financial health and repayment capacity should be carried out.
- **Institutional mechanism:** To cater to large industrial and infrastructure projects and the **need for long-term funding, new Development Financial Institutions (DFIs) can be developed.**
- **Risk Management:** The banks can mitigate their potential concentration risk to a specific borrower group, sector, geography, maturity duration etc. which was not initially envisaged at the time of loan origination.
  - **Encourage banks to diversify their loan portfolios to reduce concentration risk.** Overreliance on a specific sector or type of borrower can lead to higher NPAs during economic downturns in that sector.

## 3.4. G-SECURITIES

### Why in the news?

Recently, the Reserve Bank of India (RBI) has permitted the lending and borrowing of G-Securities (G-Secs) by issuing directions called RBI (Government Securities Lending) Directions, 2023.

### More on news

- **Government Securities Lending (GSL)** refers to **lending of eligible G-Secs, for a fee**, by the owner (lender) to a borrower, **on collateral of other G-Secs**, for a specified period.
  - Under GSL transaction, **G-Secs** issued by the Central government **excluding Treasury Bills (T-Bills)** shall be **eligible for lending/borrowing**.
  - **Also, G-sec** issued by the Central Government **including T-Bills and State Governments bonds** shall be eligible for placing as collateral under GSL transaction.
- **Other directions include**
  - **Eligible Participants in GSL transactions as lenders of securities:** Entities eligible to undertake Repo transactions and those approved by RBI.
  - **Tenure of GSL transaction:** Minimum one day and maximum period prescribed to cover short sales.
- **Permitting lending and borrowing of G-Secs will-**
  - **Add depth and liquidity to the G-sec market**, aiding efficient price discovery.
  - **Facilitate wider participation in the securities** lending market by providing investors an avenue to deploy idle securities and enhance portfolio returns.
  - **Enhance operational efficiency** of government bonds by insurers.

### About G-Securities (G-Secs)

- G-Sec is a **tradeable instrument issued by Central or State Governments**. It acknowledges the government's debt obligation.
  - **Such securities are short-term terms** usually called **Treasury bills (T-Bills)** with maturities of less than one year (91 days, 182 days, or 364 days) or **long-term** called **Government bonds or dated securities** with maturity of one year or more (between 5 years and 40 years).
  - In India, **Central Government issues both T bills and bonds or dated securities** while **State Governments issue only bonds or dated securities**, which are called State Development Loans (SDLs).
  - G-Secs carry practically **no risk of default** and, hence, are **called risk-free gilt-edged instruments**.
- Other G-Sec includes **Cash Management Bills (CMBs)**, introduced in 2010, a new **short-term instrument to meet temporary cash flow mismatches of the Government**.
  - CMBs have the **generic character of T-bills** but are **issued for maturities of less than 91 days**.
- G-Secs are issued through **auctions conducted by RBI**. Auctions are conducted on the electronic platform called the E-Kuber, the Core Banking Solution (CBS) platform of RBI.

### Benefits of G-Secs



**Low-risk investments** since they are backed by Government



Stable source of income as they **offer fixed interest rates**



Securities such as **State Development Loans (SDLs) and Special Securities (Oil bonds, UDAY bonds etc)** provide attractive yields.



Integrating G-Secs in a **diversified investment portfolio** can help **reduce overall risk**



**Easily tradable in market**, which means that investors can buy and sell them quickly



**Used as collateral to borrow funds** in the repo market

### Do you know?

- **T-bills** are **zero coupon** securities and **pay no interest**. Instead, they are **issued at a discount and redeemed at the face value** at maturity.
- **Dated G-Secs** are securities which carry a **fixed or floating coupon (interest rate)** which is paid on the face value, on a **half-yearly basis**.

### Initiatives taken for Government -Securities (G-Secs)

- **G-sec Acquisition Programme (G-SAP):** Under it, RBI **conducts open market operations** to **purchase G-Secs** from the market.
  - It helps the central bank in **controlling excessive volatility faced by market participants** in G-Secs market.
- **RBI Retail Direct Scheme:** Under this, retail investors will have the facility to **open and maintain 'Retail Direct Gilt Account' (RDG Account)** with RBI to access its G-Sec platform.

- **Draft RBI (Bond Forwards) Directions, 2023:** It aims to **introduce bond forwards in G-Secs**, a move that will enable market participants, particularly long-term investors, to **manage cash flows and interest rate risk**.
  - **Bond forwards** mean derivative contracts in which **one counterparty (buyer) agrees to buy a specific debt instrument from another counterparty (seller)** on a specified future date and at a price determined at the time of the contract.
- **Scheme for Non-competitive Bidding Facility in Auctions of G-Secs:** Introduced by RBI to **encourage retail participation in primary market** for G-Secs and SDLs.

### What are the concerns associated with government securities?

- **Captive investor base:** A diversified investor base for fixed-income securities is important for ensuring high liquidity and stable demand in the market. However, currently, a **large portion of G-Secs are held by captive investors such as banks**, and insurance companies.
- **Operational challenges:** RBI's Negotiated Dealing System Order Matching (NDS-OM) platform was not able to boost retail participation as it resulted in an artificial segmentation of investors in different securities.
- **Exchange rate management:** Inflows of foreign funds via government bonds can lead to rupee appreciation.
- **Liquidity:** The G-sec market **lacks liquidity due to the non-availability of buyers for the security in the secondary market**. It can lead to distressed sales (selling at a lower price than its holding cost) causing loss to sellers.
- **Major risks associated with holding G-Secs:**
  - **Market risk:** Market risk arises out of **adverse movement of prices of the securities due to changes in interest rates**. This could lead to loss if securities are sold at adverse prices.
  - **Reinvestment risk:** Cash flows on a G-Sec include a coupon every half year and repayment of principal at maturity, which needs to be reinvested. However, it poses a risk for investors as they may not be able to reinvest due to a decrease in prevailing interest rates.
  - **Interest rate risk:** Dated securities have a **long-term maturity of 5-40 years**, and thus are **exposed to interest rate risk**, reducing their relevance over longer tenure.

#### What are the techniques for mitigating G-Secs risks?

- **Holding securities till maturity** could be a strategy through which one could **avoid market risk**.
- **Market risk** and **Reinvestment risk** could also be managed through **Asset Liability Management (ALM) by matching the cash flows with liabilities**.
- Rebalancing the portfolio wherein the **securities are sold once they become short term** and **new securities of longer tenor are bought** could be followed to manage the **portfolio risk**.
- Advanced risk management techniques involve the **use of derivatives like Interest Rate Swaps (IRS)** through which the nature of cash flows could be altered.

### Way forward

- **Unified market:** Unifying the G-Sec and corporate bond markets would enable the **seamless transmission of pricing information from G-Secs to corporate bonds**. Having the same regulatory regime for trade, clearance, and settlement of corporate bonds and G-Secs will result in economies of scale and scope, leading to greater competition, efficiency, and liquidity in markets.
- **Trading:** To facilitate **greater investor participation and achieve ease of doing business**, G-Secs should be issued and traded through the stock exchange mechanism.
- **Investment:** The government **should issue G-Secs in demat** so that demat holders (currently, more than 120 million and expanding) can **easily invest in G-Secs**. G-Sec-based exchange-traded funds should also be developed to increase retail participation.
- **Transparent fiscal framework:** Fiscal Responsibility and Budget Management (FRBM) legislation should highlight a fiscal path to investors highlighting the steps to reducing government debt in a transparent and accountable manner to boost investors' confidence.
- **Tax Incentives:** Providing tax incentives in the form of no tax to be paid on interest income generated from the G-Sec can boost the demand for the G-sec in the market.

#### Related News

##### State Government Guarantees (SGGs)

- Reserve Bank of India (RBI) released the Report of the Working Group on State Government Guarantees (SGGs).
- In 2022, 32nd Conference of State Finance Secretaries discussed **problem of inadequate monitoring and reporting of guarantees** issued by State Governments.
  - As a response, a **Working Group** was formed to address this issue.

- **About SGGs**
  - A guarantee is a form of **contingent liability** designed to shield investors or lenders from the potential default risk of a borrower.
  - **State governments** often authorize and issue guarantees on behalf of state **enterprises, cooperative institutions, urban local bodies**, and other state-owned entities.
    - ✓ These guarantees are typically extended to lenders, commonly **commercial banks or other financial institutions**.
- **Concerns with SGGs**
  - **Fiscal risks: Guarantees can pose fiscal risks**, straining state finances with **unanticipated cash outflows and increased debt**.
    - ✓ Prudential level of **debt-GSDP for a state is 20%**, but non-disclosure of a high guarantee level **understates a state's debt-GSDP**.
  - **Moral hazards: Guarantees could create moral hazard**, leading to the guaranteed entity to be **sub-optimal in performing its obligation**.
    - ✓ Similarly, **investors and lenders may be less motivated** to thoroughly assess project compared to traditional non-recourse project financing.

#### Recommendations by RBI Report

- **Clearly define purpose** for which government guarantees are issued.
- **Charge a minimum fee** for guarantees extended.
- **Fix a ceiling for incremental guarantees** issued during a year at **5% of Revenue Receipts or 0.5% of GSDP** (whichever is less).
- **States should continue** to build up the **Guarantee Redemption Fund or GRF** (established to cushion liabilities due to invocation of guarantees).
  - Participation from the states in **GRF is voluntary**, 19 states have already established GRF.

## 3.5. PETROLEUM EXPLORATION & PRODUCTION

### Why in the News?

Oil and Natural Gas Corporation (ONGC) has started first crude oil production from its Cluster-2 deep-sea project in the **Krishna-Godavari (KG) basin in the Bay of Bengal**.

### Petroleum basin in India

- **A petroleum basin includes a diverse collection of rocks and sediments, but most importantly it contains source rocks.**
  - **Source rocks are specific shale formations in a basin where oil and gas are born.**
- There are **26 sedimentary basins in India**, covering a total area of 3.4 million square kilometer.
- Of the total sedimentary area,
  - **49% of total area is located on land,**
  - **12% in shallow water** (up to 400 meter water depth) and
  - **39% in the deepwater area** (farther up to **Exclusive Economic Zone or EEZ**).
    - ✓ The jurisdiction of the EEZ extends **200 nautical miles from the coastline**, thereby conferring on the coastal state the right to manage, explore, exploit, and conserve all resources within its purview, be they living or non-living.
- **These basins** are also divided into three categories **based on maturity of hydrocarbon resources as under:**
  - **Category-I:** Commercially established & producing basins. Total 7 basins (refer to the map)
  - **Category-II:** Prospectivity identified. Total 5 basins (Kutch, Mahanadi- North East Coast (NEC) region & Andaman-Nicobar, Vindhyan, Saurashtra)
  - **Category-III:** Prospective. Total 14 basins (Himalayan Foreland, Ganga, Kerala-Konkan-Lakshadweep, Bengal, Karewa, Spiti-Zaskar, Satpura-South RewaDamodar, Narmada, DecanSyncline, Bhima-Kaladgi,Cuddapah, Pranhita-Godavari, Bastar, Chhattisgarh)
- **Methods of Extracting Crude Oil:**
  - **Offshore drilling:** In marine environments, offshore basins like **Arabian Sea or Bay of Bengal**.
  - **Onshore drilling: On land**, covering various sedimentary basins across the country.

### Do you know ?

> **Hydrocarbons commonly occur in sedimentary basins** and are absent from intervening areas of igneous and metamorphic rocks.

> **A sedimentary basin** is an area of the earth's crust that is underlain by a **thick sequence of sedimentary rocks**.



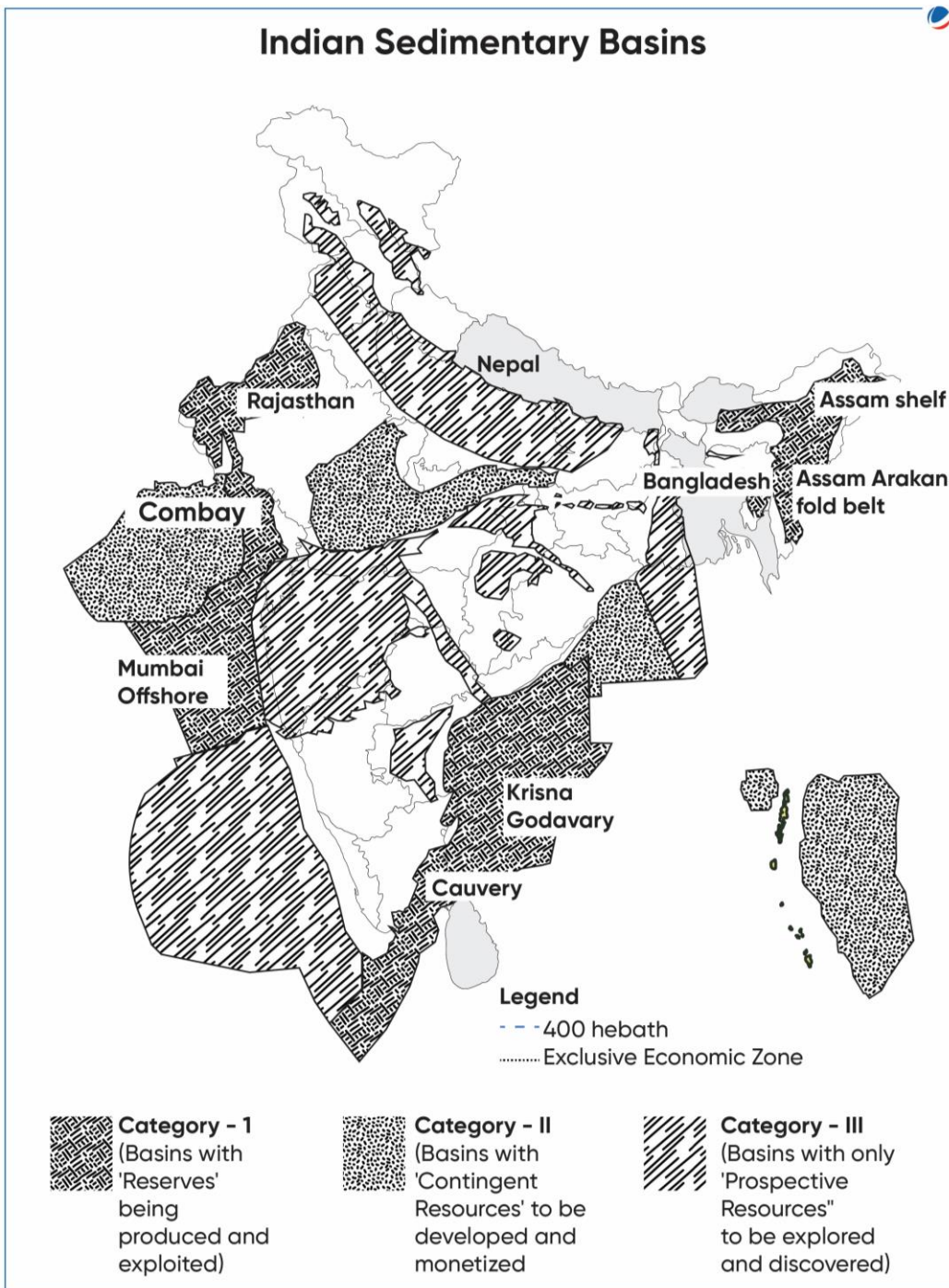
- **ONGC is India's largest oil and gas producer** contributing 72% of the country's hydrocarbon production.

#### Steps taken for enhancing Petroleum E&P

- **Directorate General of Hydrocarbons (DGH)** was formed to promote sound management of the oil and natural gas resources.
- **Approval processes have been streamlined** by digitization and standardization of contractual submissions on the e-platform.
- **National Data Repository (NDR)**, launched for public in 2017, serves as a government **data bank promoting E&P activities**.
- **Upgrade of the NDR** to a cloud-based, state-of-the-art facility with virtual data rooms is **in progress** for investors for 24x7 access to E&P data.
- As per **India Hydrocarbon Vision 2025**, lays the broad contours/targets for the development of Hydrocarbons.
- **100% FDI through automatic route for exploration activities** of oil and natural gas fields, infrastructure related to marketing of petroleum products and natural gas, etc.
- **National Seismic Programme (NSP)** aims to undertake a **fresh appraisal in all sedimentary basins** across India.

#### Challenges in Petroleum E&P

- **Capital:** Oil production units are capital intensive in nature. It requires expensive equipment and highly skilled labours.
- **Technological:** Extracting petroleum from challenging geological formations requires advanced **drilling technologies**.



## Data Bank

- **3rd largest energy and oil consumer** in the World
- **33%** share of Oil and gas in **India's primary energy**
- **85.7%** was the **import dependency of oil** while for **natural gas** it was **48.2%**.

- **Accidents:** E&P activities involve the risk of spills, leaks, and other accidents. For e.g., recent event of **Ennore oil spill** in Tamil Nadu.
- **Environmental:** Loss of habitats and wildlife due to drilling, pipelines, and other infrastructure.
- **Community displacement:** Displacement of local communities, leading to social and cultural challenges.

#### Way forward

- **Investment:** Explore opportunities for joint E&P of oil and gas assets with Global companies.
  - Also, stable tax regime and tax break would help attracting more private investment.
- **Industry-academia collaboration:** It provides access to the **latest research and technologies**, bridges the divide between theory and practice.
  - For e.g., MoU signed between DGH and Wadia Institute of Himalayan Geology for application of **AI/ML in Amguri and adjoining areas of Upper Assam**.
- **Sustainable E&P:** For example, **Oil India Limited** has taken steps for sustainable oil production by partnering with the **Assam State Biodiversity Board and the IUCN**.
  - They signed an agreement to study the **impact of oil production on Dibru Saikhowa National Park** (of Assam) and develop an oil production plan in response to the findings.
- **Control Oil spills:** by using latest technologies like oil-zappers. Provide **comprehensive training** for industry personnel on spill prevention and response protocols.
- **Mitigating impact on community:** Project planning should involve carrying out an **impact assessment to understand the potential effects on local communities**, including people's health, livelihood etc.

### Significance of Indigenous Petroleum Exploration and Production

#### Reduction in import bill



As India imports about **85%** of its crude oil requirement, indigenous petroleum production will reduce trade deficit.

#### Strategic Importance



**Reduces vulnerability to geopolitical uncertainties**, supply disruptions, and price fluctuations in the global market.

#### Revenue generation



**Indigenous petroleum production** contributes to government exchequers through taxes, royalties, and profit-sharing agreements.

#### Employment Generation



**Jobs across a range of activities**, including exploration, production, refining, and distribution.

#### About HELP

- HELP introduced in 2016, replaced **New Exploration Licensing Policy (NELP)**.
- **Provides for a Single license** for E&P for **all types of hydrocarbons** viz. conventional oil and gas, CBM, shale oil, gas hydrates, etc.
- Shifted from the previous profit-sharing model to a **Revenue Sharing Contract model** (i.e., revenue is shared between the government and the contractor).
  - In profit-sharing model, the profit was shared **after cost recovery**.
- OALP was **introduced** enables **investors to select blocks of their choice** by evaluating data in the **NDR** and expressing interest.
- **Reduced royalty rates, marketing and pricing freedom, round-the-year bidding**, etc.

#### Unconventional Petroleum Resources

- **Oil and natural gas trapped in less permeable rocks** is referred to as an unconventional resource because it **cannot be explored, developed and produced by conventional processes**.
  - **"Conventional resources"** is a term referring to **oil and natural gas trapped in rock that is porous and permeable**.
    - ✓ The natural pressure of the underground rock formation allows oil and natural gas to flow freely up a petroleum well.
- **These include deposits like:**
  - **Coalbed Methane (CBM) or Coal Seam Gas (CSG):** Refers to **methane rich gas naturally in coal seams** typically comprising 80% to 90% methane with lower proportions of ethane, propane, nitrogen, and carbon dioxide.
  - **Shale gas/oil:** It is a form of **natural gas/oil that remain unexpelled, unmigrated, and entrapped** within the pore space and fractures of a source rock (commonly, shale).
    - ✓ The shale gas/oil is produced commercially when sufficient **fracture conductivity is induced by hydraulic fracturing**.
  - **Gas hydrates:** These are naturally occurring **ice-like solids** (clathrates) in which **water molecules trap gas molecules in deep-sea sediments** and in and below the permafrost soils of the polar regions.

## 3.6. FOOD PROCESSING INDUSTRY

### Why in the news?

India's processed food exports have grown by 150% in the last nine years making agricultural exports touch a value of about \$53 billion.

### What is Food processing?

- Food processing is the set of methods and techniques which are used to transform raw ingredients into finished and semi-finished products.
- According to Ministry of Food Processing Industries (MoFPI), if any **raw product of agriculture, animal husbandry or fisheries is transformed** in such a way that
  - its **original physical properties undergo a change**,
  - the **transformed product is edible** and
  - has **commercial value**, then it comes **within the domain of Food processing Industry (FPI)** .

### Benefits of food processing exports

- **Reduction in waste** as processing helps in extension of shelf life.
- **Nutritional benefits** include addition of particular vitamins through fortification methods tailored to specific dietary needs.
  - It can **address the malnutrition**, under nutrition among children as well as overall population.
- **Enhanced Employment**: by generation of additional job in various segments of logistics, trading etc.
- **Rural development**: Increased export and demand of processed food worldwide can benefit farmers by improving their incomes leading to rural development, poverty reduction etc.
- **Adoption of new and emerging technologies for processing** improves efficiency in this sunrise sector
- **Exports can lead to Foreign exchange earnings** improving India's trade balance and economic growth.

### Challenges persisting in Food Processing Industry

- **Lack of cutting-edge infrastructure**. Many businesses operate in the small and medium enterprises sector, which often lacks the resources to upgrade to the latest technology.
- **Logistical challenges** such as **inadequate storage and transport facility, inefficient global supply chains** also leads to wastage and inadequate processing of food materials.
- **Lack of access to credit and financing** creates **entry barriers** make it difficult for small businesses to enter the market and compete with larger and better established companies.
- **Inadequate quality control & testing infrastructure** leads to issues such as pest infestations, presence of chemical residues.
- **Global Standards** are often not met due to which our products are banned by the importing country affecting India's export leading to loss of income for exporters, farmers and processors.

### Way forward

- **Changing the trend from sustenance to market-oriented** by increasing focus on large-scale food processing rather than exporting only raw materials.
- **Promoting better Interaction between** farmers and processors and the market demand like buying directly from farmer producer organisations (FPOs).



## Data Bank

- **First** in dairy production
- **Second** in horticulture crops
- Average annual growth rate (AAGR) of **8.3% in the last five years**.
- **22.6% contribution in agri-food exports in 2021-22**.

### Institutional Measures

- **Agricultural and Processed Food Products Export Development Authority (APEDA)** has been established as per APEDA Act, 1985 for development of export **by providing financial assistance, fixing of standards, improving packaging etc**
- **The Marine Products Export Development Authority (MPEDA)** is a statutory body entrusted with the primary task of **promotion of export of marine products**.
- **Indian Institute of Packaging (IIP)** develops **standards for export packaging fruits & vegetables**.
- **The Export Inspection Council (EIC)** is the **official export certification body having global acceptance** which ensures quality and safety of products exported.
- **Agriculture Export Policy (2018)** has been introduced with the objectives of **doubling India's share in world agri exports** by integrating with global value chains.

- **Strengthening institutional framework** to develop manpower and bringing improvement in R&D capabilities.
- **Enhance export competitiveness** by developing **Efficient Quality control, and Food safety Assurance** of processed food products
  - facilities to move up the value chain and **meet international standards like sanitary and phyto sanitary measures.**
  - **Evolving the supply chain model** by adoption of cooperative model, diversification of agricultural exports, timely delivery of goods etc.

#### Initiatives taken by Government

- **Pradhan Mantri Kisan Sampada Yojana (PMKSY):** It is an Central sector scheme for development of Mega Food Parks, Integrated Cold Chain and Value Addition Infrastructure, Food Safety and Quality Assurance Infrastructure etc
- **Pradhan Mantri Formalization of Micro Food Processing Enterprises Scheme (PMFME Scheme)** aims at upgradation of micro Food processing units, providing seed capital to SHGs, branding and marketing support
  - **One District One Product (ODOP)** component of PMFME aims to create **specific product clusters.**
- **Production Linked Incentive Scheme for Food Processing Industry (PLISFPI)** is a central sector scheme to support **creation of global food manufacturing champions** and **support Indian brands in the international markets.**
- **Liberalised FDI regime:** 100% FDI through automatic route for FPIs and 100% FDI through government-approval route for retail trading, including through e-commerce.
- **Krishi Udan and Krishi Rail schemes have been** launched to ease out freight rates enabling smooth movement of perishables.

## 3.7. PRADHAN MANTRI GRAM SADAK YOJANA

### Why in the news?

A parliamentary panel has asked the Union Rural Development Ministry to tighten the supervision of road construction in rural areas under the PMGSY, indicating the use of poor-quality materials.

### About Pradhan Mantri Gram Sadak Yojana

- It started as a **100 % centrally sponsored scheme** launched in the **year 2000** to provide **all-weather rural road connectivity to eligible rural habitations.**
- **Ministry:** Ministry of Rural Development
- **Eligibility:** Population size >500 in plain areas and >250 in hills and other difficult areas.
- **Funding Pattern:**

The funding pattern was revised to a **60:40 ratio between Centre and State** in 2015-16, and a **90:10 ratio for Northeastern States and Himalayan States.**
- The scheme has four verticals, **(i) PMGSY I, (ii) PMGSY II, (iii) Road Connectivity Project for Left Wing Extremism Areas (RCPLWEA), and (iv) PMGSY III.**
  - **PMGSY I (2000):** It was launched to provide rural connectivity, by way of a single all-weather road, to the eligible habitations as per **Census 2001.**
  - **PMGSY-II (2013):** It was launched with a target to upgrade 50,000 Km in various States and Union Territories.
  - **Road Connectivity Project for Left Wing Extremism Affected Areas (RCPLWEA) (2016):** It was launched for construction and upgradation of strategically important roads; mainly to improve the road connectivity in left wing extremism affected districts and adjoining areas.
  - **PMGSY-III (2019):** It was launched for consolidation of 1,25,000 Km to connect major rural links connecting habitations, inter-alia, to Gramin Agricultural Markets (GrAMs), Higher Secondary Schools and Hospitals.

### Benefits of Pradhan Mantri Gram Sadak Yojana

- **Boosts rural incomes** with new and alternative non-farm livelihood opportunities with increased mobility.
- **Easier and increased access to markets:** Ease of access to newer markets has helped boost family incomes.
- **Rural roads lead to path of prosperity:** Villagers are travelling to other towns and big cities for newer livelihood opportunities.
- **Better access to health and education:** rural roads have enabled school buses to reach far-flung villages, making it easier for children to get to school.
- **Village roads bring women freedom and choice:** More women and girls in villages are going to schools, accessing various facilities and becoming financially independent.

## Challenges in achieving desired outcomes of PMGSY

Challenges in PMGSY	Committee Recommendations
<ul style="list-style-type: none"> <li>• <b>Non-timely fund release by states:</b> 41% of the total roads are in a poor state due to non-provisioning of adequate funds by the State.</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Consistent flow of funds</b> should be ensured with proper supervision of states and coordination with ministry of finance for the timely release of funds.</li> </ul>
<ul style="list-style-type: none"> <li>• <b>Poor Quality of Roads:</b> Due to non-existence or non-functioning of the mandatory provision of quality control labs at the ground level.</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Stricter compliance Quality Control Labs on the ground</b> should be ensured for thorough evaluation of sites and maintenance of road quality.</li> </ul>
<ul style="list-style-type: none"> <li>• <b>Issues with Tendering and Contractors:</b> Contractors use a practice called "low-tendering," submitting very low bids to win the projects which compromises the quality of materials.</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Measures for proper bidding process</b> should be taken to prevent low-tendering along with implementing a rigorous monitoring system.</li> </ul>
<ul style="list-style-type: none"> <li>• <b>Post-Construction Maintenance:</b> As per scheme, a road should have a design life of 10 years. However, contractors do not adhere to this which results in degraded road quality.</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Post construction road maintenance for 10 years as per provisions</b> of scheme should be ensured. The contractors not abiding by this should be blacklisted.</li> </ul>
<ul style="list-style-type: none"> <li>• <b>Use of old census:</b> Habitations under PMGSY are based on the 2001 Census which has led to many eligible habitations being left out.</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Inclusion of 2011 census figures:</b> A new vertical should be introduced for the inclusion of habitations as per the 2011 census.</li> </ul>

## 3.8. NEWS IN SHORTS

### 3.8.1. INDIA BECOMES FOURTH-LARGEST STOCK MARKET

- India overtakes Hong Kong to become the world's fourth-largest stock market.
- According to **data compiled by Bloomberg**, the combined value of shares listed on Indian exchanges reached USD 4.33 trillion, versus USD 4.29 trillion for Hong Kong, on Jan 22, 2024.
  - Top three stock markets are the US, China, and Japan.
- **Stock market** is where investors, both individual and institutional, trade a wide range of securities such as stocks, bonds, Exchange Traded Funds (ETFs), derivatives, etc.
  - **Two types** of stock market:
    - ✓ **Primary Market:** New shares, bonds, etc., are offered for the first time.
    - ✓ **Secondary Market:** Existing securities (equities, bonds, etc.) are traded. e.g., Stock exchanges like Bombay Stock Exchange.
- **Significance of stock market**
  - **For Businesses:** Access to capital, risk diversification, business expansion, etc.
  - **For Investors:** Better returns compared to traditional savings instruments, tax benefits, capital growth, etc.
  - **For Society:** Social Impact bonds, Sustainable investment through Green bonds, etc.
  - **For Economy:** Mobilization of idle savings, boost to entrepreneurship through venture capital funds, etc.

- **Issues with Indian Stock markets:** High volatility, limited issuer and investor base adversely affects liquidity, sub-optimal corporate debt market due dominance of government bonds, etc.

#### Regulation of Stock markets in India

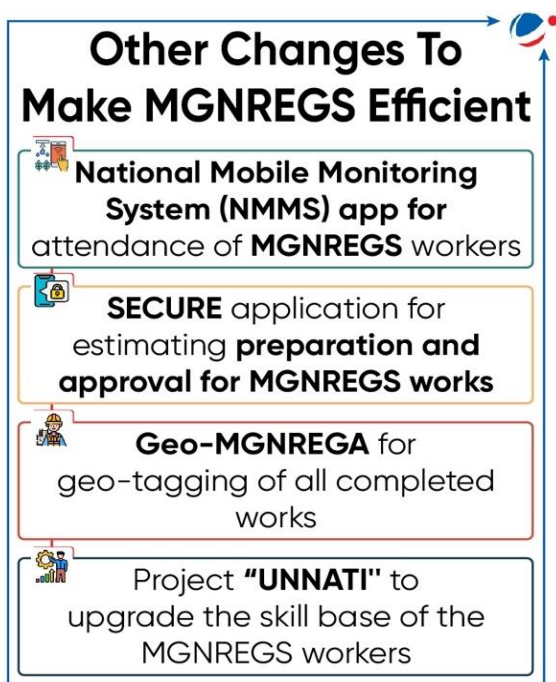
- **Securities and Exchange Board of India (SEBI):** Regulates different market intermediaries like stock brokers, stock exchanges, etc.
  - SEBI is a statutory body under SEBI Act, 1992.
- **Reserve Bank of India (RBI):** Regulates Government Securities market, etc.

### 3.8.2. DIRECT LISTING OF PUBLIC INDIAN COMPANIES

- Centre allowed **direct listing of public Indian companies** on international exchanges of **GIFT International Financial Services Centre (GIFT-IFSC)**. This was enabled by:
  - **Companies (Listing of Equity Shares in Permissible Jurisdictions) Rules, 2024** and
  - Amendment to **Foreign Exchange Management (Non-debt Instruments) Rules, 2019**.
    - ✓ Direct Listing Scheme of FEMA rules 2019 provides framework for **issuing and listing of equity shares of public Indian companies on international exchanges**.
      - **Prior to this**, Indian companies were **not allowed to issue or list equity shares abroad**.
- **Expected benefits:** Give Indian companies **access to cheaper foreign capital, boost foreign investment, etc.**

### 3.8.3. AADHAAR-BASED PAY MANDATORY FOR MGNREGA

- Recently, Aadhaar-based payment system (ABPS) became mandatory for MGNREGS workers.
- **Mahatma Gandhi National Rural Employment Guarantee Scheme (MGNREGS)** gives a **legal guarantee of a hundred days of wage employment** in a year to adult members of a rural household willing for unskilled manual work.
- **MGNREGS has utilized APBS since 2017** and is made mandatory now (from 1st January).
  - Government may consider exemption on a case-to-case basis if any Gram Panchayat has either a technical problem or an Aadhaar-related problem.
- **ABPS working**
  - ABPS uses the worker's **unique 12-digit Aadhaar number** as their financial address.
  - To be paid under ABPS,
    - ✓ A worker's **Aadhaar details must be seeded to her job card**;
    - ✓ Her Aadhaar details must be **seeded to her bank account**;
    - ✓ Her Aadhaar must be **mapped with the National Payments Corporation of India (NCPI) database**.
- **Significance of the move**
  - Curbing corruption by **weeding out fake beneficiaries**.
  - **Will ensure speedy payments and reduce rejection** (due to change of bank account of beneficiaries).

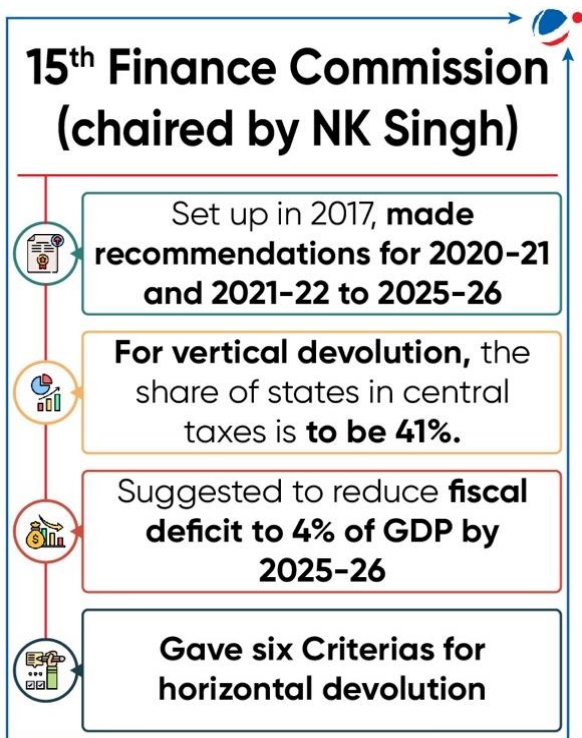


**More than 1100 government schemes and programs run by Center and States have been notified to use Aadhaar. Some of them are**

- Pradhan Mantri Ujjwala Yojana
- Pradhan Mantri Awas Yojna
- Pradhan Mantri Fasal Bima Yojana
- Atal Pension Yojana

### 3.8.4. 16TH FINANCE COMMISSION

- It was constituted with the approval of the **President of India in pursuance of Article 280(1) of the Constitution**.
- The government appointed **Arvind Panagariya (former vice-chairman of NITI Aayog)** as the **chairman** and members would be notified separately.
- The Commission's work involves redressing the **vertical imbalances between the taxation powers and expenditure responsibilities** of the center and the States respectively and **equalization of all public services across the States**.
- **The commission shall make recommendations on the following**
  - Distribution between the Union and States of the **net proceeds of taxes and allocation** between the States of such proceeds.
  - **Principles for governing the grants-in-aid and revenues** of the state under Article 275 of the Constitution.
  - Measures needed to **augment the Consolidated Fund of a State** to supplement the resources of the Panchayats and Municipalities based on **state finance commission recommendation**.
  - The commission may review present arrangements for **financing Disaster Management initiatives**, concerning the funds constituted under Disaster Management Act, 2005.
- The 16th FC recommendations, upon acceptance by the government, **would cover the period of five years commencing April 1, 2026**.



- **Phasing out of exemptions** and incentives for the corporate sector.
- **Vivad se Vishwas Scheme** for reducing litigations in the direct tax payments.
- **Finance Act of 2020** allows individual taxpayers to pay income tax at lower slab rates by forgoing specified exemptions.
- **Other reforms:** Aadhaar – PAN linkage, digital technology (Faceless Assessment, Faceless Appeal) to improve tax administration, Taxpayers Charter, etc.

#### About direct tax

- In India, the primary **direct taxes at the central level** are **personal and corporate income taxes**, governed by the **Income Tax Act of 1961**.
- However, India's **tax-to-GDP ratio is comparatively low**, ranking much lower than other countries.
  - For instance, **OECD countries** typically have an **average tax-to-GDP ratio exceeding 30%**.
- The **dominance of the informal sector, tax evasion, exemptions and incentives**, etc. are key reasons for low ration in India.

### 3.8.5. DIRECT TAX TO GDP RATIO ROSE TO 15-YEAR HIGH

- **Direct Tax to GDP ratio rose to 15-year high in FY23**  
Central Board of Direct Taxes data shows.
- **Key highlight:**
  - **Direct Tax to GDP ratio** reached a 15-year high at **6.11% of GDP in FY23**.
    - ✓ Direct Tax to GDP ratio gives an estimate of a **country's ability to mobilise resources to fuel its development**.
  - **Tax Buoyancy**, however, **declined** from 2.52 to **1.18** compared to the previous year.
    - ✓ Tax buoyancy indicates the **measure of efficiency or responsiveness in tax collection in response to the growth in GDP**.
      - **Tax revenues** are considered as **buoyant** when they **increase more than proportionately** in response to the **increase in GDP** even when the **rates of taxes remain unchanged**.
    - ✓ The recent decline indicates that the current economic growth **did not lead to as much of an increase in direct tax collections for FY 23** as seen in **FY22**.
  - **Gross direct tax collections** increased by over 173% to Rs 19.72 trillion in FY23 from Rs 7.22 trillion in FY14.
- **Initiatives prompting rise in Direct Tax to GDP**
  - **Corporate tax rate has gradually decreased** since the Finance Act of 2016.

### 3.8.6. REVERSE FLIP

- Many Startups are reverse flipping i.e. moving their overseas holding entities to India.
- 'Reverse flipping': It is a term used to describe **the trend of overseas start-ups shifting their domicile to India and listing on Indian stock exchanges**.
- **Reasons for Reverse Flipping:**
  - Capitalise on India's large and growing economy
  - Access to deeper pools of venture capital
- The **Economic Survey 2022-23** recognized the concept of reverse flipping and **proposed ways to accelerate the process**, such as simplifying corporate laws and capital movements, simplification of taxation, etc.

### 3.8.7. MOMENTUM INVESTING

- Many academic studies have shown that momentum investing can generate high returns.
- **About Momentum Investing**
  - It refers to a style of investing wherein investors **purchase assets** such as stocks or bonds that are consistently **rising in price**, while **selling assets** whose **prices are falling**.
  - **Momentum investor** hope that the upward price momentum of these assets would continue, thus allowing them to sell these assets at higher prices in the future to make profits.
  - The **buy high, sell higher** philosophy of momentum investing is in stark contrast to the traditional approach of **buy low, sell high**.

### 3.8.8. MODEL BASED LENDING

- RBI governor has cautioned banks and NBFC against **model-based algorithmic lending**.
  - It is a **remote and automated lending process**.
  - It **uses digital technologies for customer acquisition, credit assessment, loan approval, disbursement, recovery, and associated customer service**.
- **Benefits:** financial inclusion, quick processing, increased collaboration with fintechs, facilitation of innovative products.
- **Concerns:** accuracy and information asymmetries, algorithmic biases, exclusion of various sections

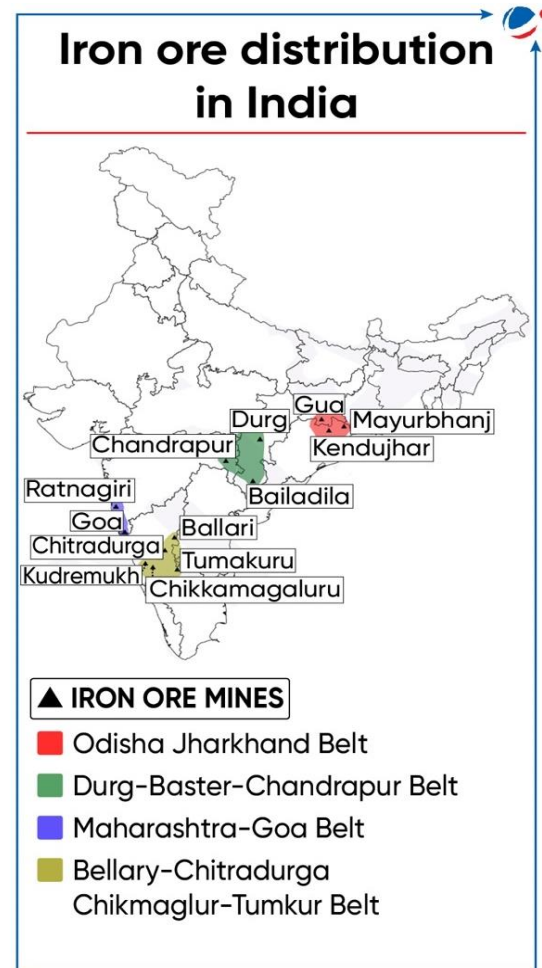
### 3.8.9. MODERN MONETARY THEORY (MMT)

- MMT argues that countries that **issue their own currencies can never “run out of money”** the way people or businesses can.
  - As long as there is unemployment, it calls for **government spending without** being concerned about fiscal deficit.
  - **At full employment, MMT prescribes taxes and government borrowing to counter inflation.**
- The **monetization of fiscal deficit** aligns with this theory.
  - It involves **central bank printing currency for emergency** spending by government.
  - **India ceased this practice in 1996** via an MOU between the RBI and the government.

### 3.8.10. INDIAN IRON ORE MARKET

- Competition Commission of India (CCI) published a study examining competition in the iron ore market.
- Iron ore is predominantly composed of iron oxides called **magnetite and hematite** and yields **metallic iron (Fe) when heated with a reductant**.
- CCI study shows India's **self-sufficiency in iron ore production**, contributing 7% globally and ranking as the **4th largest producer**.
- **Concerns raised by CCI**
  - Recent years have seen increase in iron ore **exports** (iron ore has low value as compared to finished products like Steel).
  - Allocation of **captive mines** (owned by companies for self-use) to some players **creates entry barriers**.
    - ✓ **Mines and Minerals (Development and Regulation) Amendment Act, 2021** allows the captive mines to **sell up to 50% of surplus** iron ore in the **open market**.
  - **Differential pricing** of iron ore for different end-users is likely to create competition concerns.

- **Key Recommendation:**
  - **Discourage export:** Iron ore is a non-renewable national resource and **crucial to various industries**.
    - ✓ **Prioritise the export of higher value-added products** such as finished steel to promote **Atmanirbhar Bharat**.
  - **Upgrade quality:** Use **cutting-edge technologies** to upgrade **low-grade iron ore to higher grades**.
  - **Sustainable mining:** Promote **clean technology adoption and transformation of production processes** into sustainable mineral production modes.



### 3.8.11. AUDIT QUALITY DEFICIENCIES

- **National Financial Reporting Authority (NFRA)** found deficiencies in audit quality of big four audit firms.
- NFRA as a regulator oversees accounting standards and auditing profession in India.
  - **NFRA is a statutory body** constituted in **2018** under **Section 132 of the Companies Act, 2013**.
  - **Act mandates NFRA to monitor compliance with Auditing Standards** and to **oversee the quality of service** of the professions associated.
  - Under this mandate, **NFRA initiated audit quality inspections in big four audit firms**.



- ✓ Namely Deloitte, Haskins & Sells LLP; BSR & Co LLP; SRBC & Co LLP; and Price Waterhouse Chartered Accountants LLP.

- **Key Issues Highlighted**

- **Independence Issues:** Firms are not in full compliance with the independence related requirements of the **Code of Ethics**.
- **Quality of Audit Documentation:** Deficiencies in documentation can lead to challenges in justifying **audit conclusions and procedures**.
- **Inadequate Risk Assessment:** Concerns raised about **effectiveness of internal risk management** processes within organization.
- **Regulatory Compliance Issues: Violations of Companies Act 2013** seen in policies of SRBC & Co.
  - ✓ It did not fully recognize the **relationships between SRBC and its network members**.

### 3.8.12. BHARATMALA PHASE 1 EXTENDED

- Bharatmala Phase 1 deadline extended by Six years to 2027-28.
- Bharatmala Pariyojana, launched under **Ministry of Road Transport & Highways**, is an umbrella program for **highways sector**.
  - **Phase I was approved in 2017** to focus on bridging critical infrastructure gaps through **development of 34,800 km of National Highways by 2022**.
  - Till November-2023, **42% of project has been completed**.
- **Objectives of Bharatmala Pariyojana**
  - **Optimize efficiency of freight and passenger movement** across country by bridging critical infrastructure gaps.
  - **Improving connectivity in North East**.
  - **Improving efficiency of existing corridors** through development of Multimodal Logistics Park.
- **Features of Bharatmala Pariyojana**
  - **Satellite mapping of corridors** to identify upgradation requirement.
  - **Technology-based automated traffic surveys** of over more than 1,500 points.
  - **Origin-Destination study of freight movement** across 600 districts.
- **What are the gaps in highway infrastructure?**
  - **Inadequacy in optimization of National Highway network & Road network** due to resource constraints and absence of a national plan.
  - **Lack of integrated planning** in connectivity of major corridors and ports with hinterland.
  - **Presence of Congestion Points**, with multiple points of local congestion present even on already developed corridors.

- **Lack of accident response infrastructure.**



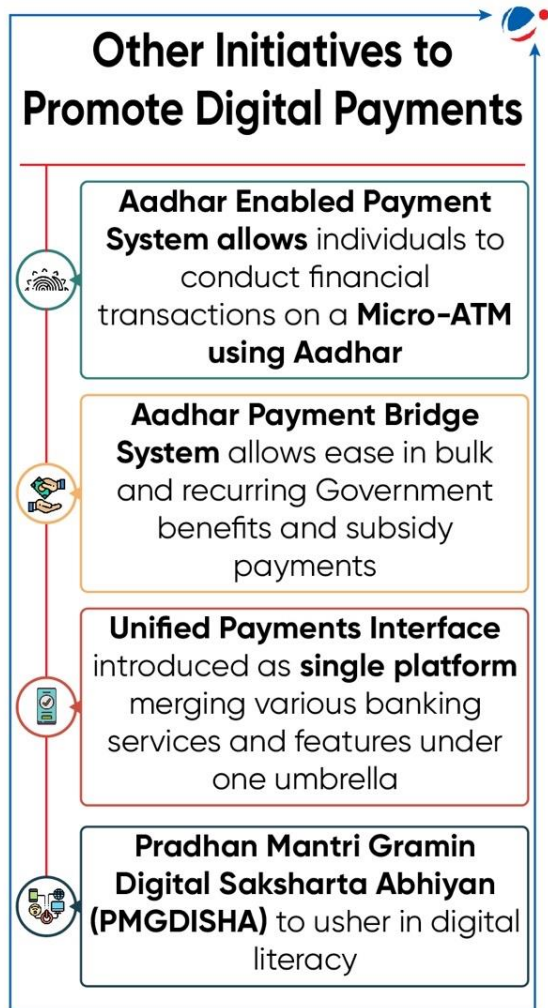
### 3.8.13. 2023 LIST OF D-SIBS

- Reserve Bank of India (RBI) releases 2023 list of Domestic Systemically Important Banks (D-SIBs).
- **D-SIBs** are systemically important due to their **size, cross-jurisdictional activities, complexity** and lack of substitute and interconnection.
  - It also means that **the bank is too big to fail**.
    - ✓ If DSBs fail, there would be significant disruption to the essential services to the banking system and the overall economy.
- **Declaration/Regulation of D-SIBs:**
  - It is based on the **D-SIBs Framework** of RBI which was released in **2014**.
    - ✓ This Framework is based on **Basel Committee on Banking Supervision's (BCBS's)** framework for dealing with **D-SIBs**.

- Banks are placed in **5 buckets**.
  - ✓ As per latest list, India's **D-SIB's** are **State Bank of India** (bucket 4) and **HDFC Bank** (bucket 2), **ICICI Bank** (bucket 1).
- **D-SIBs** have to maintain **Additional Common Equity Tier 1 (CET1)** requirement as a percentage of **Risk Weighted Assets (RWAs)**.
- Bucket 1 banks have to maintain lowest **CET1** i.e. **0.20%** and **Bucket 5** have to maintain highest **CET** i.e. **1%**.
- In case a **foreign bank** having branch presence in India is a **Global Systemically Important Bank (G-SIB)**, it has to maintain additional CET1 capital surcharge.
  - **Financial Stability Board (FSB)** releases the list of **G-SIBs**.

### 3.8.14. PAYMENTS INFRASTRUCTURE DEVELOPMENT FUND (PIDF) SCHEME

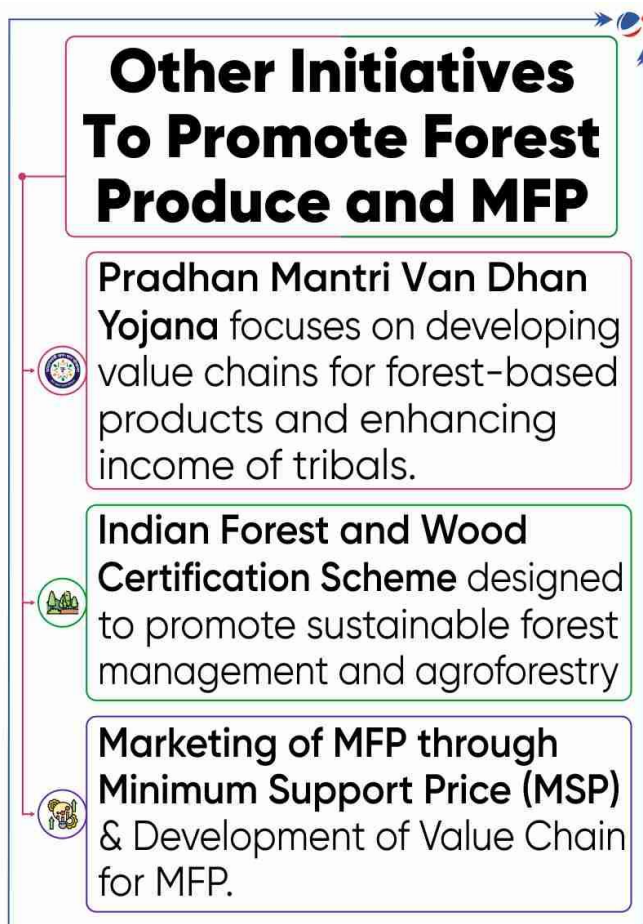
- RBI extends Payments Infrastructure Development Fund (PIDF) Scheme till 2025.
- **About PIDF Scheme**
  - It was **first operationalized in 2021** for three years.
  - **Aims to encourage** deployment of **payment acceptance infrastructure** such as physical Point of Sale (PoS) terminals, Quick Response (QR) codes, in **tier-3 to tier-6 centres, North eastern states and UTs of J & K and Ladakh**.
    - ✓ It was extended to **street vendors** covered under PM Street Vendor's AtmaNirbhar Nidhi (**PM SVANidhi Scheme**) in **Tier-1 and Tier-2 centres**.
  - PIDF is **governed through an Advisory Council** and managed and **administered by RBI**.
  - **Types of Acceptance Devices Covered:** Physical PoS, mPoS (mobile PoS), GPRS (General Packet Radio Service), PSTN (Public Switched Telephone Network) etc.
- **To widen the scope of beneficiaries and acceptance infrastructure**, following enhancements are being made under the scheme:
  - Beneficiaries of **PM Vishwakarma Scheme** in all centres included as merchants under PIDF Scheme.
  - **Sound Box devices and Aadhaar-enabled biometric devices** are eligible for claim of subsidy under Scheme.
  - **Subsidy for special focus areas** has been made **uniform at 90% of the cost of device**, irrespective of the type of device.



### 3.8.15. NATIONAL TRANSIT PASS SYSTEM (NTPS)

- Union Minister launches **National Transit Pass System (NTPS)-'One Nation-One Pass'**.
- It is under the **Ministry of Environment, Forest and Climate Change** to facilitate the **seamless transit of timber, bamboo, and other Minor Forest Produce (MFP)** across the country.
  - Currently, transit permits are issued for the transport of timber and forest produce **based on state-specific transit rules**.
- NTPS enables **managing records** for both inter-state and intra-state transportation of timber, bamboo, and MFP from **private lands/government/private depots**.
  - **States have exempted some species grown on private land** from the purview of transit permits, to transport these species **No Objection Certificate** is provided.

- **Benefits of NTPS:**
  - Will contribute to ease of doing business by **streamlining the issuance of transit permits** by providing a **unified, online mode** across the country.
  - Provide a significant impetus to **the agroforestry sector**.
  - Saving **transportation costs and time**, and **Seamless movement across state borders**.
- **Under the Forest Rights Act (FRA) of 2006**, MFP includes all non-timber forest produce of plant origin including bamboo, brushwood, stumps, etc.
- **The forest dwellers are legally empowered with the ownership and governance** of the MFP through the **Panchayat Extension to Scheduled Areas Act, 1996**, and **FRA, 2006**.



### 3.8.16. ATAL SETU NHAVA SHEVA SEA LINK

- Inaugurated by PM, it is the **country's longest Sea bridge**, also referred to as **Mumbai Trans Harbour Link**.
- It is a **21.8 Kms long bridge** of which 16.5 km is built completely over the Sea.
- It connects **Sewri in Mumbai with Nhava Sheva in Raigad** district, thereby easing travel between **Mumbai-Navi Mumbai**.

### 3.8.17. STANDARDISATION IN INDIA

- India should be a Pioneer of Standards says Union Minister for Consumer Affairs, Food and Public Distribution.
- Speaking at 77<sup>th</sup> **Foundation day of Bureau of Indian Standards (BIS)**, Minister also **highlighted recent progress related to standards in India** stating:
  - **Mandatory jewellery hallmarking covers 343 districts** and **90% jewellery that people are buying is hallmarked**.
  - About **156 Quality Control Orders (QCOs) of 672 products** are being processed.
- Standards Development is the process of creating and establishing agreed-upon **guidelines or criteria to ensure quality and operability** of various products or services.
- **Significance of standardization:**
  - **Supports economic growth** and enhances competitiveness.
  - Fosters **technological development** and **supports innovation**.
  - **Addresses health, safety and environmental concerns**.
- **Standards Development process** in India is largely government led with BIS acting as **National Standard Body**.
  - **Established under BIS Act 2016**.
  - Involved in harmonious development of activities of **standardization, marking and quality certification**.
  - Administered by **Ministry of Consumer Affairs, Food and Public Distribution** with its Minister being President of BIS.

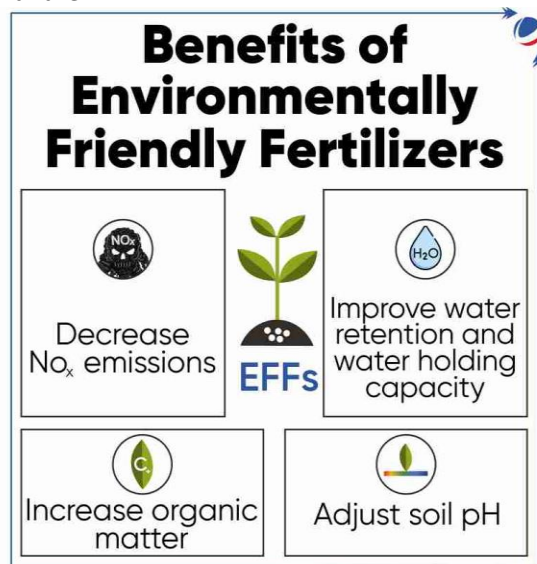
- **Other initiatives for standards development:**
  - Standards National Action Plan (SNAP)
  - Indian National Strategy for Standardization (INSS)
  - Quality Council of India (QCI) and its Scheme for Accreditation of Standards Developing Organizations (SDOs)
  - One Nation One Standard Scheme of BIS.

Some certification of BIS	
 ISI	Used for <b>standard industrial products</b> in India. <b>Mandatory</b> for some products like electronics and voluntary for others.
 BIS Hallmark	Hallmarking system for the <b>sale of precious metal like gold and silver jewellery</b> which certify the purity of the metal.
 ECO Mark	For labeling of <b>environment friendly products</b> .

### 3.8.18. UREA GOLD

- Cabinet Committee on Economic Affairs (CCEA) approved launch of Urea Gold.
- Urea gold will support the other initiative of government in the sphere of **Environmentally Friendly Fertilizers (EFFs)**.
- **Urea gold** is a **Sulphur-Coated Urea (SCU)**.
  - It is a **non-organic slow-release fertilizer** and is generally prepared by coating preheated urea granules with molten sulphur.
  - **Sulphur coating** ensures a more **gradual release of nitrogen**.
    - ✓ It **prolongs the urea action**, thus helping plants to stay greener for longer time.
    - ✓ It will **increase efficiency** and **reduce frequent application of fertilizer**, thus enhancing soil health.
  - As per **Indian Council of Agricultural Research (ICAR)** study, use of SCU leads to **reduction in urea consumption** by 25%.
- **EFFs** are fertilizers that can reduce **environmental pollution** from nutrient loss by retarding, or even controlling, the release of nutrients into soil.
  - EFFs also include organic fertilizers such as Biocompost, Vermicompost, etc.

- **Initiatives for EFFs in India:**
  - **PM PRANAM** (Programme for Restoration, Awareness, Nourishment, and Amelioration of Mother Earth) Scheme.
  - Development of **Nano Urea** and **Neem Coated Urea**.
    - ✓ **Pradhan Mantri Kisan Samruddhi Kendras (PMKSK)** will facilitate these fertilizers.
  - **GOBARDhan** (Galvanizing Organic Bio-Agro Resources Dhan), helps in preparing organic manure.



### 3.8.19. PROTECTION OF PLANT VARIETIES AND FARMERS' RIGHTS ACT

- **Delhi High Court permits PepsiCo to claim patent** for potato variety grown for its potato chips.
- Judgement came on PepsiCo's appeal under **Protection of Plant Varieties and Farmers' Rights (PPVFR) Act, 2001** against order of PPVFR Authority.
  - PPVFR Authority had **revoked PepsiCo's registration** with respect to plant variety - **FL 2027**.
  - FL 2027 is **chipping potato variety** with low external defects which is grown exclusively for PepsiCo by some farmers.
    - ✓ It has **high dry matter/high solids content and stable sugars**, making it highly suitable for manufacture of chips.
- Under WTO's **TRIPS** (Agreement on Trade-Related Aspects of Intellectual Property Rights), it is **obligatory** for a member to provide protection to **new plant varieties**.
  - Under this, India enacted **PPVFR Act**.
  - A plant variety which conforms to criteria of **Distinctiveness, Uniformity and Stability (DUS)** is eligible for registration under PPVFR Act.

- PPVFR Act **recognizes following rights:**
  - **Farmers' rights:** Registration and protection of new variety, farmers' variety, and extant variety, rewards for conservation of plant genetic resources etc.
  - **Researchers' rights:** Use of any registered variety for experiments.
  - **Breeders' rights:** Exclusive rights to produce, sell, import or export etc.

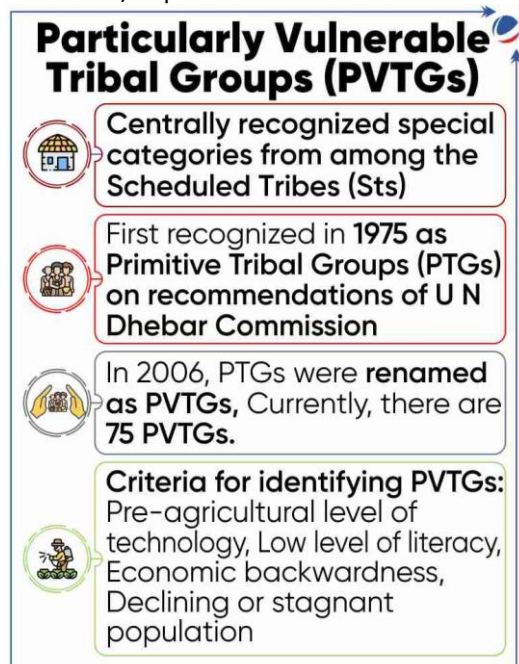
#### PPVFR Authority

- It is a **statutory body** under **PPVFR Act**, established in 2005.
- Comes under **Ministry of Agriculture and Farmers Welfare**.
- **Functions** include registration of new plant varieties, rewarding farmers engaged in conservation and preservation of plant genetic resources, maintenance of national register of plant varieties and national gene bank.

### 3.8.20. SOLAR POWER SCHEME FOR PVTGS HABITATIONS

- President has sanctioned implementation of the scheme under new solar power Scheme for Particularly Vulnerable Tribal Groups (PVTGs) Habitations/ Villages.
  - The scheme was launched under **Pradhan Mantri Janjati Adivasi Nyaya Maha Abhiyan (PM JANMAN)**.
- **Key features of scheme**
  - **Two components:**
    - ✓ **Electrification of 1 Lakh PVTG households (HHs) through Off-grid solar power**
      - **Solar Home Lighting System (SHLS)** for scattered un-electrified HHs in PVTG areas.
      - **Solar Mini-grids** for cluster of HHs in a PVTG habitation/ hamlet.
    - ✓ **Solarization of multi-purpose centers (MPCs)** by installation of Off-grid Solar power pack with battery bank.
  - **Implementing agency:** Respective DISCOMs in PVTG area.
  - **Timeline:** 2023-24 to 2025-26.
  - **Monitoring:** By **Ministry of New and Renewable Energy (MNRE)** and **Ministry of Tribal Affairs (MoTA)**.
  - **Grievance Redress mechanism:** Vendors shall operationalize helpline number in local language/ language of PVTG area.
- **PM JANMAN**
  - **Aim:** To **saturate PVTG HHs and habitations with basic facilities** such as safe housing, clean drinking water and sanitation, improved access to education, etc.
  - Comprises **11 critical interventions through 9 ministries**, including MoTA, over 3 years.

- Implemented as combination of:
  - ✓ **Centrally Sponsored Schemes** in partnership with State Governments/ UT Administrations and
  - ✓ **Central Sector Schemes** through line Ministries/Departments.



### 3.8.21. ELECTRICITY (AMENDMENT) RULES, 2024 NOTIFIED

- Ministry of Power notified Electricity (Amendment) Rules, 2024 to amend Electricity Rules, 2005.
- In exercise of powers conferred by **Section 176 of Electricity Act 2003**, government has prescribed new rules for-
  - **promoting ease of doing business** by industries like Green Hydrogen manufacturers, **facilitate energy transition** and energy security.
- **Key highlights of rules**

Parameters	Rules	Significance
<b>Transmission Lines</b>	<ul style="list-style-type: none"> <li>• Consumers having more than specified load and Energy Storage Systems are allowed to <b>establish, operate and maintain dedicated transmission lines themselves without the requirement of licence.</b></li> </ul>	<ul style="list-style-type: none"> <li>• New bulk consumers will benefit with <b>affordable electricity</b> and <b>improved grid reliability.</b></li> <li>• Faster <b>industrial growth</b> and <b>more job creation.</b></li> </ul>
<b>Open Access (OA)</b>	<ul style="list-style-type: none"> <li>• Provide <b>methodologies for determining various OA charges</b></li> </ul>	<ul style="list-style-type: none"> <li>• Rationalisation of OA charges will lead to <b>faster adoption</b> of</li> </ul>

	like wheeling charges, state transmission charges and additional surcharge. <ul style="list-style-type: none"> <li>• <b>Additional surcharge on OA shall be linearly reduced</b> and get eliminated within four years.</li> </ul>	<b>renewable energy by industry, thus reducing emission.</b> <ul style="list-style-type: none"> <li>• <b>Facilitate industries in getting electricity through OA at competitive rates.</b></li> </ul>
<b>Power Tariff</b>	<ul style="list-style-type: none"> <li>• Tariff shall be <b>cost reflective</b> and there shall <b>not be any revenue gap</b> between approved Annual Revenue Requirement and estimated annual revenue from approved tariff except under natural calamity conditions.</li> </ul>	<ul style="list-style-type: none"> <li>• Ensure <b>financial sustainability</b> of power sector.</li> </ul>

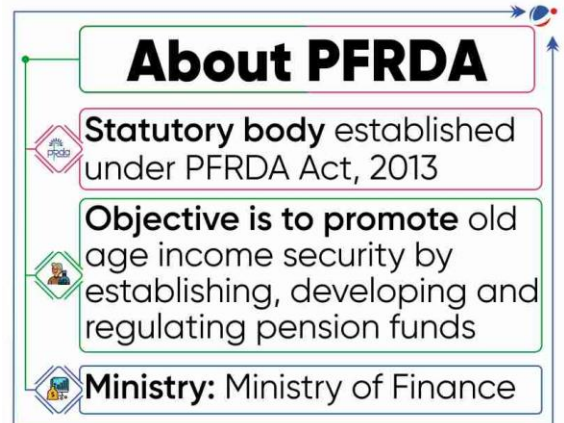
### 3.8.22. GLOBAL HYDROGEN TRADING MECHANISM (GHTM)

- **Indian Gas Exchange or IGX (India's only gas exchange)** and Gujarat State Petroleum Corporation (GSPC) signed a MoU to establish a **GHTM** in collaboration with IFSC-GIFT City in Gandhinagar (Gujarat).
  - They will develop a **global hydrogen price index**, a benchmark for **price discovery and market information** on India's growing **green hydrogen market**.
- **Benefits: Enhance transparency, boost investor confidence, and facilitate the growth** of the green hydrogen market on a global scale.

### 3.8.23. POINT OF PRESENCE (POP) REGULATIONS FOR NPS SUBSCRIBERS

- **Pension Fund Regulatory and Development Authority (PFRDA) notifies** new point of presence regulations for NPS subscribers.
- **PFRDA has notified the Point of Presence (PoP) Regulations 2023**, requiring only one registration for the National Pension System (NPS).
  - POPs are the **first points of interaction** of the NPS subscriber with the NPS architecture.
    - ✓ The authorized branches of a POP, called **Point of Presence Service Providers (POPSPs)**, will **act as collection points**.
  - **Banks and non-banks can now act as PoPs** to onboard NPS subscribers, and they will require

- only a single registration for NPS, instead of multiple registrations earlier.
- The **timeline for disposing of applications** has also been **reduced** from 60 days to 30 days.
- The simplification is in line with the Union Budget 2023-24 announcement **to review regulations to reduce the cost of compliance and enhance the ease of doing business**.
- **About National Pension System (NPS):**
  - **Introduced by the Central Government in 2004** to help the individuals have income in the form of pension.
  - **Any citizen of India**, whether resident or NRI, **can join NPS**.
  - It is **mandatory to all employees** joining services of the **Central Government (except Armed Forces)** and Central Autonomous Bodies on or after 1st January 2004.
  - **PFRDA regulates NPS under the PFRDA Act, 2013.**



### 3.8.24. FUTURE OF GROWTH REPORT 2024

- The report, **published by the World Economic Forum (WEF)**, introduces a **multidimensional framework** to assess the **quality of economic growth** across 107 countries globally.
- It characterizes nations' economic growth across four dimensions: **Innovativeness; Inclusiveness; Sustainability; and Resilience**.
  - Framework produces an aggregate result for each pillar on a 0-100 scale, where **100 is an ideal and country is perfect in every pillars**.

Pillar	Description
<b>Innovativeness</b>	<ul style="list-style-type: none"> <li>• <b>Extent to which an economy's trajectory</b> can absorb and evolve in response to <b>new technological, social, institutional and organizational developments</b> to improve the longer-term quality of growth.</li> <li>• Global average of innovation is <b>45.2</b>. <b>India scored 40.2</b></li> </ul>

<b>Inclusiveness</b>	<ul style="list-style-type: none"> <li>• Extent to which an <b>economy's trajectory includes all stakeholders</b> in the benefits and opportunities it creates.</li> <li>• Global average of Inclusiveness is <b>55.9. India scored 41.7.</b> <ul style="list-style-type: none"> <li>○ <b>Over 75% of people in India lack basic social protection.</b></li> <li>○ <b>Share of wealth</b> owned by top <b>10 percentile population of India has increased</b> from 0.55 (1995) to 0.65 (2021).</li> </ul> </li> </ul>
<b>Sustainability</b>	<ul style="list-style-type: none"> <li>• Extent to which an economy's trajectory can keep its <b>ecological footprint within finite environmental boundaries.</b></li> <li>• Global average of Sustainability is <b>46.8. India scored 56.0.</b> <ul style="list-style-type: none"> <li>○ On current trajectories, the world is set to <b>miss its Paris Agreement targets</b> for global warming.</li> </ul> </li> </ul>
<b>Resilience</b>	<ul style="list-style-type: none"> <li>• Extent to which an <b>economy's trajectory can withstand and bounce back from shocks.</b></li> <li>• Global average of Resilience is <b>52.8. India scored 51.2.</b> <ul style="list-style-type: none"> <li>○ Most countries <b>need better preparation and proactive investment</b> for demographic change.</li> </ul> </li> </ul>

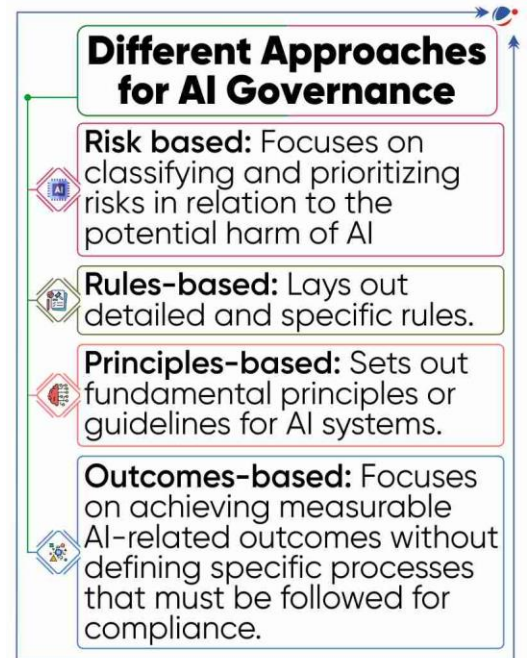
- The report also classifies clusters of countries with **similar growth characteristics into 7 groups based on inclusion, innovation, and sustainability.**
  - **India** is grouped among countries with **traditionally efficiency-driven growth pathways**, building up innovativeness, inclusiveness and resilience from a low base, with **comparatively low environmental footprint.**

### 3.8.25. INCLUSIVE ACCESS TO ADVANCED AI

- World Economic Forum's AI Governance Alliance (AIGA) Calls for Global Efforts for Inclusive Access to Advanced Artificial Intelligence (AI).
- **AIGA (launched in 2023)** aims to accelerate the development of **ethical guidelines** and **governance frameworks for Generative AI.**
  - **Generative AI** is a type of AI technology that can produce various types of content, including **text, imagery, audio and synthetic data.**
  - **World Economic Forum (WEF)** is an international **non-profit organization** based in **Geneva (Switzerland)** committed to improving state of the world.
- **At recent WEF Annual Meeting 2024,** AIGA released new reports on advanced AI focusing on generative AI governance. **Key highlights** are below,
  - **Challenges:** Absence of a **standardized perspective** on the generative AI model lifecycle,

vague definitions etc. are **impacting development of safe generative AI.**

- **AI Governance:** Global landscape for AI governance is **complex and rapidly evolving, AIGA recommended for,**
  - ✓ **International coordination:** A **multi-stakeholder approach** involving government, civil society, academia, industry for legitimate governance of AI.
  - ✓ **Compatible standards:** To **avoid significant differences** in standards, **national bodies should work together** and align their efforts.
  - ✓ **Flexible regulatory mechanisms:** To **match AI's rapid advancements,** investment in innovation and governance frameworks must be **agile and adaptable.**
  - ✓ **Role of Global South:** Include Global South at all AI stages for innovation, ensuring everyone benefits and minimizing global harms.



### 3.8.26. LABOUR RULES FOR WORKERS ABROAD

- Trade Unions have opposed UP and Haryana governments' recruitment of workers to work in Israel, primarily for construction activities.
  - They have cited that it is against Indian ethos of bringing back citizens from conflict zones.
- **Issues faced by migrant labourers**
  - **Vulnerability to regional conflicts:** Risk of conflict and violence due to volatile political landscape. e.g., Ongoing Israel – Hamas conflict.
  - **Exploitation and unfair labour practices:** Wage theft, poor working conditions, etc., due to limited legal knowledge and language skills.

- **Denial of social security:** Due to lack portability, etc.
- **Other issues:** Lack of proper accommodation, poor standard of living, etc.
- **Measures taken by India for protection of migrant labourers**
  - **Bilateral and multilateral arrangements:** India has signed Labour Manpower Agreements (LMAs) with six West Asian countries including Kuwait, Oman, etc.
  - **Welfare programmes:** National Pension scheme for NRIs, Indian community welfare fund, etc.
  - India has signed **Global Compact for Safe, Orderly and Regular Migration (2018)**.
  - **Other measures:** e-Migrate Application system, MADAD portal for grievance redressal, etc.

#### ILO conventions for protection of migrant workers

- **Migration for Employment Convention (Revised), 1949 (No. 97):** To maintain an adequate and free service to assist migrants for employment.
- **Migrant Workers (Supplementary Provisions) Convention, 1975 (No. 143):** For illegally employed migrant workers.

**Note:** India has not ratified both conventions.

### 3.8.27. RULES EXPLORATION LICENSE FOR MINING

- Ministry of Mines notified four **rules to implement the Exploration License (EL) regime**.
- Notified under the **Mines and Minerals (Development and Regulation) (MMDR) Act, 1957**, these rules include:
  - Mineral (Auction) Amendment Rules, 2024
  - Mineral Conservation and Development (Amendment) Rules, 2024
  - Minerals (Evidence of Mineral Contents) Amendment Rules, 2024
  - Minerals (Other than Atomic and Hydro Carbons Energy Minerals) Concession Amendment Rules, 2024
- **Exploration License (EL)**
  - **EL** means a licence granted for undertaking **reconnaissance operations** or **prospecting operations** or both.
    - ✓ It was introduced through **MMDR Amendment Act, 2023**.
    - ✓ Issued in respect of **29 minerals specified in Seventh Schedule** of MMRD Act including Cobalt, Lithium, Nickel, Gold, etc.

- **Granted by:** State governments through competitive bidding.
- **Tenure:** 5 years from date of execution of EL.
- **Central government through rules** can prescribe the details such as manner of auction, bidding parameters, etc.
- **MMDR Act 1957** is the **principal legislation regulating mines and mineral sector** in India.
  - It classifies mining related activities into-
    - ✓ **Reconnaissance** (preliminary survey to determine mineral resources),
    - ✓ **Prospecting** (exploring, locating, or proving mineral deposits), and
    - ✓ **Mining** (commercial extraction).

### 3.8.28. COAL/LIGNITE GASIFICATION PROJECTS

- Cabinet approves Viability Gap Funding of Rs 8500 crore for promotion of Coal/Lignite Gasification Projects.
- **Key highlights of the scheme**
  - Incentive for coal gasification projects is provided to Government PSUs and Private Sector under **three categories**.
    - ✓ **Category I:** For **Government PSUs**, upto 3 projects will be supported.
    - ✓ **Category II:** For Private Sector and Government PSUs.
    - ✓ **Category III:** For **demonstration Projects (indigenous technology)** and/or small-scale product-based Gasification Plants.
  - **Selection of entities under category II and III** shall be carried out through a competitive **bidding process**.
  - **Grant** will be paid to the selected entity in **two equal instalments**.
  - **Empowered Group of Secretaries (EGoS), chaired by the Secretary Coal**, is fully empowered to **modify** the scheme's modalities except total outlay.
- **Coal gasification**
  - Underground **Coal gasification** is a process by which **coal is converted to useful gases** without the need for mining.
    - ✓ Gases can subsequently be used to produce **heat, generate power or synthesize a variety of chemical products**.
    - ✓ It helps in harnessing the **coal reserves** that are **deep, scattered and covered by forests**.
  - India has a target to **gasify 100 million tonnes of coal by 2030**.



#### Related News

Cabinet approved two joint venture projects for coal gasification

- **Joint venture of Coal India and GAIL for Coal-to-SNG** (Synthetic Natural Gas) Project in Burdwan (West Bengal).
  - SNG is **equivalent to natural gas which is mostly methane**. It can be produced from coal, biomass, petroleum coke and solid waste.
- **Joint venture of Coal India and BHEL** for the Coal-to-Ammonium Nitrate Project in Jharsuguda (Odisha).

### 3.8.29. STEEL MAKING

- Government is aiming to increase share of scrap in steel making process to 50 % by 2047 says Union Minister of Steel.
- **Steel Scrap in Steel making**
  - Steel is a material **most conducive for circular economy** as it can be used, reused and **recycled infinitely**.
  - **While iron ore remains the primary source** of steel making, **used or re-used steel** in form of **Scrap** is **secondary raw material** for steel industry.
- **Benefits of Steel scrap**
  - **Resource Conservation:** Use of **every ton of steel scrap shall save** 1.1 ton of iron ore, 630 kg of coking coal and 55 kg of limestone.
  - **Reduced carbon footprints:** Use of scrap cuts emission by 25 % in comparison to **primary route of steelmaking**.
    - ✓ India's steel sector accounts for **12% of India's CO2 emissions**.
  - **Energy Savings:** Production of steel from **recycled steel** requires less energy.

#### Recent Steps Taken

- **National Steel Policy, 2017:** Aspires to achieve **300MT of steel-making capacity** by 2030 with a contribution of **35-40% from EAF route**.
  - **Electric Arc Furnaces (EAF)** route produce steel mostly from **scrap collected for recycling**.
  - **EAF and Blast Furnace-Basic Oxygen Furnace (BF-BOF)** route are methods of steelmaking.
- **Steel Scrap Recycling Policy, 2019:** Enhances availability of **domestically generated scrap** to reduce **consumption of coal** in steel making.

## Challenges in Reuse of Steel Scrap



**Import Dependency:** India relies on imported high-grade steel scrap to meet demand.



**Logistical Hurdles:** Difficulties in moving and storing large quantities efficiently.



**Energy-Intensive Processing Concerns:** Concerns about **ecological footprint** of recycling.



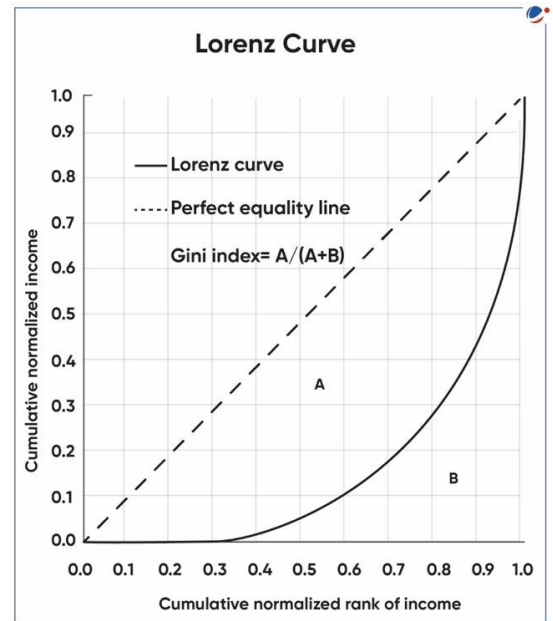
**Challenges in Ensuring Quality:** **Deterioration over time** or contaminations of scrap steel poses a significant challenge.

### 3.8.30. DECLINE IN INDIVIDUAL INCOME INEQUALITY: SBI RESEARCH

- SBI Research report reveals decline in individual income inequality in the country **in past 8 years**.
- **Key highlights of the report:** From 2013-2014 to 2021-2022:
  - In terms of Gini coefficient, **income inequality of taxable income** group has **declined** from 0.472 to **0.402**.
  - **36.3% of taxpayers** have moved from lower income to **higher income tax bucket**.
  - Top **2.5% of taxpayer's contribution in income** has **declined** from 2.81% to 2.28%
  - **Female** labour force participation is **rising**.
  - **Micro firms** are transitioning towards **small, medium and large size firms**.
- These findings **dispel the notion of 'K'-shaped growth or recovery**.
  - K-shaped recovery happens when **different sections of an economy** recover at **starkly different rates**.
    - ✓ Many experts have suggested that post the COVID-19 pandemic, India is experiencing a 'K-shaped' recovery, **where the rich thrive while the less privileged face challenges**.

- **About Gini coefficient**

- Gini coefficient is a **statistical measure of income or wealth inequality**, ranging from **0** (perfect equality) to **1** (perfect inequality).
  - ✓ Theoretically, **values over 1 are possible** due to negative income or wealth.
- Gini coefficient larger than **0.40 is considered high**.



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# 4. SECURITY

## 4.1. POLICING POWER TO CENTRAL ARMED POLICE FORCES (CAPFS)

### Why in the News?

Punjab has filed a suit against the **Union government under Article 131 of the Constitution**, challenging the decision of increasing the operational jurisdiction of the Border Security Force (BSF) in Punjab.

### More about News

- Punjab has challenged the **constitutional validity of a notification issued by the Ministry of Home Affairs** in October 2021 under **Section 139 (1) of the BSF Act, 1968**.
  - Section 139 (1) of the BSF Act 1968, empowers **Centre to publish orders regarding the jurisdiction of BSF** in areas adjoining the borders of India.
- The Notification extended BSF's jurisdiction in Punjab, West Bengal, and Assam **from 15 Km to 50 Km** while **reducing it in Gujarat from 80 km to 50 km**.
  - The **50-Km limit was already in place in Rajasthan**.
- **The Supreme Court will assess** whether the increased jurisdiction surpasses the **'local limits of the area adjoining the borders of India'** under **Section 139**.
- It will also **consider the factors that should influence the demarcation of the BSF's jurisdiction** in a border area within a state.

### Policing power of CAPF

- The **initial delegation of police powers to the Border Security Force (BSF)** occurred in 1969 under the provisions of the BSF Act of 1968, with subsequent adjustments being officially notified in 1973 and 2014.
- The **Sashastra Seema Bal (SSB), entrusted with guarding the Indo-Nepal border**, has also been endowed with the authority of police and other investigating agencies under the Criminal Procedure Code (CrPC).

### Rationale behind extension

- **Uniformed jurisdictions:** Ensuring uniformity in BSF operations across states, therefore enhancing security along the borders.
- **Operational Necessity and Policing Efficiencies:** Emphasis on the necessity to combat specific crimes like illegal entry and offenses under the Passport Act.
- **Addressing Evolving Challenges and Changing Dynamics:** Response to emerging challenges near border areas, including instances of **drones dropping weapons and drugs**.
  - Proactive measure to strengthen control and response capabilities against trans-border crimes.
- **Information Gathering and Proactive Action:** BSF often receives information about crime scenes beyond previous jurisdiction, prompting the need for an extended reach.

### Notification Empowering BSF Operations

- **Authority to Prevent Offenses under Multiple Acts:** The notification grants the BSF **the power to conduct search, seizure, and arrest operations, specifically targeting offenses** falling under **various acts**.
  - These include the **Criminal Procedure Code (CrPC), Passport (Entry into India) Act of 1920, and the Passport Act of 1967**.
- **Limited Jurisdiction Expansion:** It **does not extend to the Arms Act 1959, Customs Act 1962, and Narcotics Drugs and Psychotropic Substances Act 1985**.
- **No Investigative Powers:** Despite the increased operational authority, the notification **does not confer investigative powers upon the BSF**.
  - **Suspects and accused individuals must still be handed over for further investigation and legal proceedings.**

### Article 131 in Constitution of India

- It refers to the **Original jurisdiction of the Supreme Court** in disputes:
  - Between the **Government of India and one or more States**.
  - Involving the **Government of India and any State(s)** against one or more other States.
  - **Among two or more States**.

### Importance of border states

- **Strategic Importance:** Acting as the first line of defence against external threats.
  - They play a crucial role in **shaping the nation's security landscape**.
- **Economic Significance:** They contribute significantly to cross-border trade and economic activities
- **Cultural and Social Connectivity:** Border states often share cultural and social ties, people-to-people relations and cultural exchanges.
- **Law Enforcement Imperative:** Stringent law enforcement is imperative in border states.
- **Diplomatic Relations:** Diplomatic relations with neighbouring countries are significantly influenced by the stability and cooperation exhibited by border states.

## Challenges Arising from the Delegation of Police Powers to CAPFs

- **Federalism Concerns:** Poses a challenge to the federal structure as states argue that **law and order, being a state subject**, is compromised by the expansion of BSF's jurisdiction.
- **Accountability and Sensitivity Issues to local populations:** As national accountability mechanisms under the Ministry of Home Affairs (MHA) are inherently less accessible compared to regional accountability mechanisms offered by state police forces.
- **Impact on BSF's Core Function:** Highlights the potential adverse effects on the core function of the BSF, as the troops deployed on Border Out Posts (BOPs) might have to be withdrawn for operations in depth, impacting border security.
- **Risk of Turf Wars:** Expresses concerns about the lack of coordination with state police, potentially leading to conflicts due to the concurrent jurisdiction of two forces controlled by different governments.
- **Human Rights Violation Apprehensions:** Raises apprehensions about increased human rights violations due to the expanded jurisdiction of BSF without adequate safeguards, potentially resulting in the arbitrary use of powers.

## Way Forward

- **Inclusive Decision-Making:** Given India's extensive borders and geopolitical significance, decisions concerning border security must **prioritize inclusive decision-making**.
- **Joint Initiatives for Enhanced Security:** This involves enhancing the capacity of police forces and fostering greater cooperation between Central Armed Police Forces (CAPF) and state police.
- **Rejuvenation of Federal Communication Channels:** Institutional channels of federal communication, **such as the Inter-State Council**, need to be revitalized to ensure that decisions align with diverse state perspectives.

### About Border Security Force (BSF)

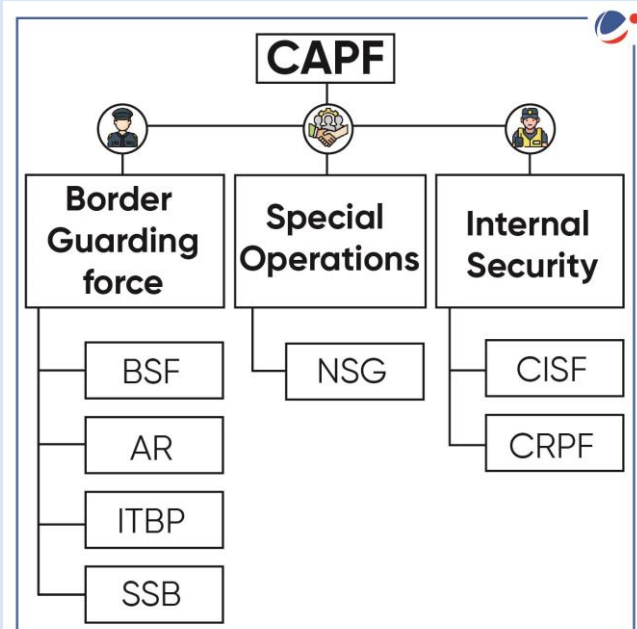
- **Established** in 1965, BSF is called "**First Line of Defence for Indian Territories**".
- Its primary **mission is to safeguard India's borders with neighbouring nations**.
- It possesses the authority to apprehend, conduct searches, and seize individuals under various laws, **including the Criminal Procedure Code, the Passport Act, the Passport (Entry into India) Act, and the NDPS Act, 1985, among others**.
- It is part of **Seven Central Armed Police Forces (CAPFs)** under the **Ministry of Home Affairs**.

### Central Armed Police Forces (CAPFs)

- The **seven-Armed Police Organisations, collectively known as Central Armed Police Forces (CAPFs)**, operate under the administrative control of the **Ministry of Home Affairs**.
- While the **Assam Rifles functions administratively under the MHA, its operational control lies with the Ministry of Defence**.

### Specific Roles and Functions of CAPFs

- **Border Guarding Forces:** Among the CAPFs, the **Assam Rifles (AR), Border Security Force (BSF), Indo Tibetan Border Police (ITBP), and Sahastra Seema Bal (SSB)** serve as Border Guarding Forces, each deployed in distinct border regions.
  - **The AR are deployed in the North Eastern region** to tackle insurgency and guard the **India Myanmar border** while the **BSF is deployed on the India-Bangladesh and India-Pakistan borders**.
  - **The ITBP is deployed on the India-China border; and the SSB is deployed on the India-Nepal and India-Bhutan borders**.
- **Special Task force: National Security Guard (NSG)** is designated as a commando-trained force organization in India, specializes in executing special operations.
- **Internal security:**
  - **Central Industrial Security Force (CISF):** It is entrusted with the responsibility of providing security and protection to industrial undertakings and vital installations.
  - **Central Reserve Police Force (CRPF):** **Primarily** deployed in aid of civil power, the CRPF handles matters related to the maintenance of law and order, internal security, and counterinsurgency.



## 4.2. GEOSPATIAL INTELLIGENCE

### Why in the news?

ISRO is planning to launch 50 satellites for intelligence gathering in the next 5 years.

### More on news

- This will involve **creating a layer of satellites in different orbits** with a capacity to track the movement of troops and image thousands of kilometres of area.
- It will **improve the ability of satellites to detect changes, and will bring in more of AI-related and data-driven approach** to analyze geospatial data.

### Geospatial intelligence

- Geospatial intelligence is an **intelligence discipline that analyzes geospatial data** to better understand and visually depict human activity at specific geographic location.
- It uses imagery to **survey and assess human activity and physical geography anywhere on Earth.**
- Geospatial intelligence usually **collects and integrate data** from a network of technologies, including **satellites, mobile sensors, ground-control stations and aerial images**
  - This data will be **used to produce real-time maps and simulations** to help identify when, where and to what extent a threat is likely to emerge. E.g., Disaster, Wild fire, Hybrid warfare etc.

### Significance of geospatial technology enabled Intelligence gathering

- **Strengthening India's intelligence architecture:** Geospatial data overlying on high-resolution satellite images substantially enhances the precision and reliability of intelligence, surveillance, and reconnaissance activities.
- **Advancing situational awareness:** With its unique ability of real-time monitoring, geospatial data can provide actionable insights for quick and secure decision-making to handle critical insurgencies.
  - **Strengthening Border Security and Coastal Surveillance System**, e.g., Mapping of terrain and hotspots of border crossing.
  - **Preventing and/or disrupting potential internal and external security threats**, e.g., tracking infiltration and monitoring camps of terrorists, left wing extremists etc.
  - **Targeting & Battle Damage Assessment:** It can help analyze enemy vulnerability, determine how best to achieve adequate military results (e.g., avoiding civilian casualties), and plan future targeting action.

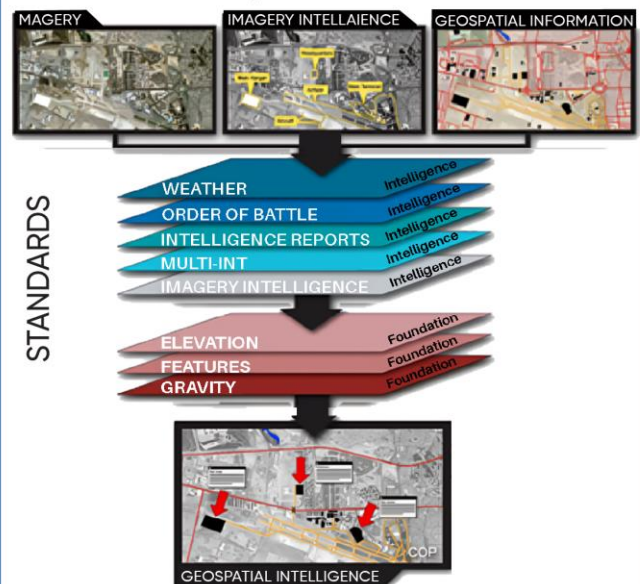
## Know the term

- **Geo-spatial Data:** Data about **objects, events, or phenomena** that have a location on the **surface of the earth.**
- Location may be **static in the short-term** (e.g., the location of a road, an earthquake event, children living in poverty), **or dynamic** (e.g., a moving vehicle or pedestrian, the spread of an infectious disease).

## WHAT IS GEOINT?

→ GEOINT is composed of **information layers**, which answer such questions as..

- Where am I?
- Where are the friendlies?
- Where are the enemies?
- When might they move?
- Where are the non-combatants?
- Where are the obstacles, natural or man-made, and how do I navigate among them?
- What is the environment?
- What does it mean?
- What is the impact?



- **Tackling new and emerging threats:** Geospatial analytics can help to predict and counter new threats like cyber-attacks, hybrid warfare, stealth weaponry etc. which endanger critical infrastructure of the nation.
- **Disaster Management:** Geospatial data can play significant role in risk reduction, Preparedness, Response and rescue, and recovery phase of disaster.
- **Military and civilian logistics:** By using geospatial intelligence, Medical and health service support can be provided in short time. It will also improve the movement of troops, supplies, arms, and ammunition across the nation.
- **Operations Support:** Geospatial intelligence will help in obtaining the last equipment activity situation, and finally helping in maintaining decision superiority.
- **Maritime Domain Awareness (MDA):** Expanding regional coverage of geospatial intelligence to monitor the maritime domain more comprehensively leads to securing the Indian Ocean region.

#### India's steps towards strengthening Geospatial Intelligence

- **Earth Observation Satellites:** India has one of the largest constellations of remote sensing satellites in operation e.g. EOS-07 launched in February 2023.
- **Establishment of dedicated institutions:** Like Indian Institute of Remote Sensing, a constituent unit of the ISRO, National Center of Geo-Informatics (NCG), etc.
- **National Spatial Data Infrastructure:** Implemented as a network of spatial data nodes established in various data-providing agencies in central and state governments towards improving access to geospatial data.
- **NavIC (Navigation with Indian Constellation):** India's indigenous navigation system to provide accurate position information service.
- **Bhuvan portal:** National Geo-portal developed and hosted by ISRO for providing visualization of Satellite Imagery and Maps.
- **National Geospatial policy:** Policy enables legal framework supporting geospatial sector and democratization data for enhanced commercialization.

#### Conclusion

In the context of India, fast-evolving situation across multiple active theatres and a large diverse border (15k km Land borders and 7.5k km coastline) create an ideal case for use of geospatial intelligence most effectively to support the soldier on the ground.

Scan the QR code to know more about **Geospatial Data**.

**Weekly Focus #76:** Geospatial Data: Driving the new age of defence



## 4.3. DRONES AND SECURITY

### Why in the news?

Adani Defence and Aerospace recently introduced the Drishti 10 Starliner Unmanned Aerial Vehicle (UAV) for the Indian Navy.

### More on the News

- The UAV embarked on its journey from **Hyderabad to Porbandar**, marking its induction into naval maritime operations.
- It is Indian **Navy's first indigenously manufactured UAV**, with over **60% indigenous content**.
  - It would promote the navy's **Maritime Domain Awareness (MDA)** and augment their anti-piracy and seaborne missions.

### Know the term

- **Drones: Unmanned Aerial Vehicles (UAVs) or Remotely Piloted Aerial Systems (RPAS)** that are **controlled** either by a **pilot** on the **ground** or with the help of technology.
- **Counter Drone or Anti drone technology:** Wide range of technology systems that help in the detection, identification and neutralization of drones.

- **Key features:**
  - Advanced **intelligence, surveillance, and reconnaissance (ISR) Platform**
  - **Medium Altitude Long Endurance (MALE) UAV**
  - **450 kg payload capacity**
  - Received STANAG 4671 certification (NATO standardization agreement)
- The step highlights the significance of drone technology for security purposes.

### Role of Drones in National Security

- **Surveillance and Intelligence:** Drones can be used in remote surveillance, reconnaissance and intelligence-gathering operations by security agencies.
- **Offensive military operations:** Drones can be used to strike the enemy or its infrastructure in deep, inhospitable locations.
- **Replacing manned aircrafts:** It helps in achieving military goals without the risk posed to pilots' life during security operations.
- **Military logistics:** Indian army has planned to replace mules and choppers with drones for supplies at forward posts along the Line of Actual Control (LAC) in Ladakh, Leh, and Northeastern India.
- **Serve as force multiplier:** AI enabled drones are capable with communicating with each other, **Automatic Target Recognition (ATR)** and coordinating with ground based conventional military operations.
- **Use for maintaining law and order:** Police drones can be used to monitor large crowds, surveillance of illegal activities, search and rescue operations etc.

### Concerns associated with Drone technology

- **Threat to national security:** Drones falling in hands of rouge elements can pose a threat to national security.
  - E.g., Cross border infiltration of drones along the international border with Pakistan for dropping improvised explosives, weapons and drugs.
  - Rogue drones also pose a threat to civilian aerospace and critical infrastructure, like, Nuclear Installations.
- **Shortage of skills in Drone ecosystem:** There is overall shortage of skilled drone operators, drone engineers, service engineers, quality inspectors etc.
- **Global positioning system (GPS) denied environments:** Imported drones using GPS navigation devices may find operational issues in GPS-denied environments.
  - E.g., Heron Mk II MALE UAV purchased from Israel.
- **Shortage of drone batteries:** Due to weight concerns, advanced Lithium-ion battery technologies are now being used for drone development instead of traditional Nickel-Cadmium and Silver-Zinc batteries.
  - DRDO and ISRO are working on Lithium-Ion cell development, but the activity is still in infant stage.
- **Ethical and Moral Concerns:** Since the usage of long-range drone attacks by American -forces, they have been criticized for their disproportionate impact on civilian communities.

#### Drone regulations in India

- **National Counter Rogue Drone Guidelines:** In 2019, Ministry of Civil Aviation released the document to lay out guidelines assessing drone threat.
- **Drone Rules 2021:** It divides the Indian airspace into three zones Green, Yellow and Red based on acceptability of flying drones.
  - **Red zones are no go zones** where no drones can be operated except for a permission given by Central Government.

### India's Initiatives for use of Drone Technology in defense sector

- **Acquisition of foreign drones:** India has imported drone technology from various countries like the US and Israel.
  - **Heron Mark-II drones: A Medium Altitude Long Endurance (MALE) UAV,** inducted by Indian Air Force to carry out surveillance along Northern borders with Pakistan and China.
  - **Searcher Mk II drones:** Developed by Israel Aerospace Industries, it is a reconnaissance drone used by Indian army and navy.



- **Drone, Detect, Deter and Destroy (D4 System):** DRDO developed indigenous anti-drone system, inducted into the Indian Armed Forces.
- **Border Security:** BSF has deployed hand-held static and vehicle-mounted anti-drone systems to counter rising drone threat along Indo-Pak Border.
- **Indigenous UAV systems:** DRDO has been developing UAV systems which are at varying stages of development.

Indigenous drones of DRDO	
DRDO Lakshya	<ul style="list-style-type: none"> <li>• Target drone used for <b>discreet aerial reconnaissance and target acquisition</b>.</li> <li>• Launched by a solid <b>propellant rocket motor</b> and sustained by a turbojet engine in flight.</li> </ul>
DRDO Nishant	<ul style="list-style-type: none"> <li>• Multi-mission UAV launched using a <b>Mobile Hydro pneumatic Launcher with Day/Night capability</b>.</li> <li>• Used for <b>battlefield surveillance and reconnaissance, target tracking &amp; localization, and artillery fire correction</b>.</li> <li>• Inducted in Indian Army.</li> </ul>
RUSTOM-1	<ul style="list-style-type: none"> <li>• It is an all composite, 800 kg class <b>Short Range Remotely Piloted Aircraft System (SR-RPAS)</b>.</li> <li>• Capabilities of Intelligence, Surveillance, Reconnaissance, Target Acquisition/Tracking and Image Exploitation.</li> </ul>
TAPAS/ Rustom-2	<ul style="list-style-type: none"> <li>• Medium Altitude Long Endurance (MALE) unmanned aerial vehicle.</li> <li>• Developed for Intelligence, Surveillance, Target Acquisition and Reconnaissance (ISTAR) application, is in advance stage of developmental trials.</li> </ul>
Archer	<ul style="list-style-type: none"> <li>• <b>Short Range-Unmanned Aerial Vehicle-Weaponised (SR-UAV-W)</b></li> <li>• Being developed for Reconnaissance, Surveillance and low intensity conflict.</li> </ul>

#### Way forward

- **Research and Development:** To facilitate faster development and deployment of indigenous UAV and counter UAV technology.
- **Involvement of private sector:** To upgrade private sector's capability to manufacture key components used in drones in order to substitute their imports.
  - Further, defence startups must be encouraged to develop military grade drones under initiatives like **Innovations for Defence Excellence (iDEX) initiative**.
- **Tri services joint doctrinal framework on drone deployment:** This would bring synergy in drone operations and address ethical issues by fixing accountability framework for military usage of drones.

## 4.4. ILLEGAL MIGRATION

#### Why in the news?

Gujarat Crime Investigation Department (CID) is probing the case of possible illegal immigration related to the Nicaragua-bound plane carrying Indians, which was grounded in France.

#### About Illegal Migration

- Illegal migration refers to trans-boundary migration of people from one country to another without valid documents, using illegal means.
- In Indian context, **as per Citizenship Act, 1955, an illegal migrant is defined** as, a foreigner who enters India,
  - **without a valid passport** or other prescribed travel documents, or
  - **with a valid passport** or other prescribed travel documents **but remains in India beyond the permitted time period**.

#### Reasons for illegal migration

- **Economic Factors:** These include **poverty, lack of economic opportunities, stagnation of income**, etc., that may force an individual or a group to look beyond their home country for better Economic opportunities.
- **Better standard of living:** Real or Perceived promise of better opportunities in destination countries.
  - E.g., the **promise of 'The American Dream'** still attracts lot of migrants both legal and illegal towards U.S.A.

- **Human Trafficking networks:** Smuggling of migrants is a highly profitable illicit activity with a relatively low risk of detection.
  - As of October 2023, 2925 illegal agents have been notified in India through the e-Migrate portal.
- **Political and religious persecution:** This has led to refugees and **illegal immigrants from Tibet, Afghanistan, Sri Lanka, Myanmar, Pakistan, and Bangladesh** finding shelter in India.
- **Overpopulation:** This may lead to **crisis of living space**. E.g. In countries like Bangladesh where high population density has led to illegal migration in North eastern States of India.
- **Natural Disasters:** This may force people to migrate for survival and better living conditions.
  - E.g., Illegal migration **from Sahel region of Africa** due to frequent **droughts**.
  - **Frequent floods and cyclone** in **Bangladesh** force migration of people to India.
- **Existing Social Networks:** Social networks established by previous migrants attract more migrants from similar communities, often resulting in migration through illegal routes in absence of other options.

### Impacts of Illegal Migration

- **Economic Exploitation:** Illegal and **undocumented migrants lack legal safeguard** and thus are prone to informal, temporary or unprotected jobs and even forced labour.
- **Violation of Human Rights:** Illegal Migrants are vulnerable to multiple inhumane conditions and **criminal offences like** assault, rape or extortion during their arduous journeys or at the destination region.
- **Risk of Detention and deportation:** Illegal migrants face constant fear of being deported by the authorities and may also be mistreated during detention.
  - E.g., **Detention centers of US** for illegal migrants, are often alleged to **have poor living conditions** impacting physical, mental, social health of detainees including children.
- **Social Tensions:** Large scale illegal migration may **distort existing demography** and pose a threat to existing socio-cultural identity.
  - E.g. **Threat to Assamese identity** due to illegal migration from Bangladesh has given rise to various socio-political tensions in Assam.
- **Facilitates Organized Crimes:** Often organized criminal groups are involved in smuggling migrants across borders (e.g. US-Mexico Border).

#### Initiatives Taken to counter illegal migration

- **'Surakshit Jayen Prashikshit Jayen' campaign:** Initiative of Ministry of External Affairs (MEA) to raise awareness of using safe and legal channels while traveling for employment abroad.
- **Migration and mobility partnership agreements:** Such agreement with countries e.g., France, seek to encourage legal and orderly migration, assure the return of identified illegal migrants to their country and combat irregular migration.
- **Border management:** To restrict infiltration of illegal immigrants. Initiatives include,
  - Physical infrastructure in the form of **border fencing, floodlighting** etc.
  - **Comprehensive Integrated Border Management System (CIBMS)**, a technological solution to improve situational awareness along border areas.
  - **Regular patrolling and anti-tunneling exercise** by Border Security Force, Assam Rifles etc. to stop illegal infiltration.

#### Global Initiatives

- **Global Compact for Safe, Orderly and Regular Migration:** Global agreement under **International Organization for Migration (IOM)** on a common approach to international migration in all its dimensions.
  - One of its objectives is to, 'Prevent, combat and eradicate trafficking in persons in the context of international migration'.
- **Protocol against the Smuggling of Migrants by Land, Sea and Air**, under the United Nations Convention against Transnational Organized Crime (UNTOC).
- **Organizations such as the International Criminal Police Organization (INTERPOL)** support the efforts of national police authorities in breaking up the criminal networks behind the smuggling of migrants.

### Challenges in Tackling Illegal Migration

- **Lack of data:** Centre in an affidavit filed in SC held that 'clandestine and surreptitious' manner of entry of illegal migrants makes it difficult to have an accurate data collection.
- **Porous Borders:** It facilitates the flow of illegal migrants across multiple countries using Donkey routes/flights.

- **Poor regulation of travel agencies:** It has led to **cropping up of unscrupulous travel and placement agents running illegal operations**, particularly in regions where demand for moving abroad is high.
- **Coordination issues:** Cross country dimension of international human trafficking networks requires extensive International cooperation of law enforcement agencies.
- **Involvement of organized criminal groups:** Organized criminals have established professional networks that transcend borders and encompass all regions.
- **Legal shortcomings:** Absence or inadequacy of national legislation to address the smuggling of migrants in many parts of the world.

### Way Forward

- **International Cooperation:** Transnational nature of illegal migration mandates an institutional mechanism for cooperation, data exchange, safeguarding human rights etc. in context of Illegal migration.
- **Combat human trafficking:** Better coordination of law enforcement agencies under ambit of INTERPOL, to dismantle criminal networks behind human trafficking and migrant smuggling.
- **Capacity development of local law enforcement:** To detect and prevent illegal migration and safeguard migrants in vulnerable situations.
- **Countering Organized crime:** UNTOC can help in addressing the involvement of organized groups.
- **Demarcate between Refugees and Illegal migrant:** India, since ages has been a host to refugees fleeing politico-religious persecution.
  - However, there is need to have a dedicated refugee policy to deal with them in a non-arbitrary manner.

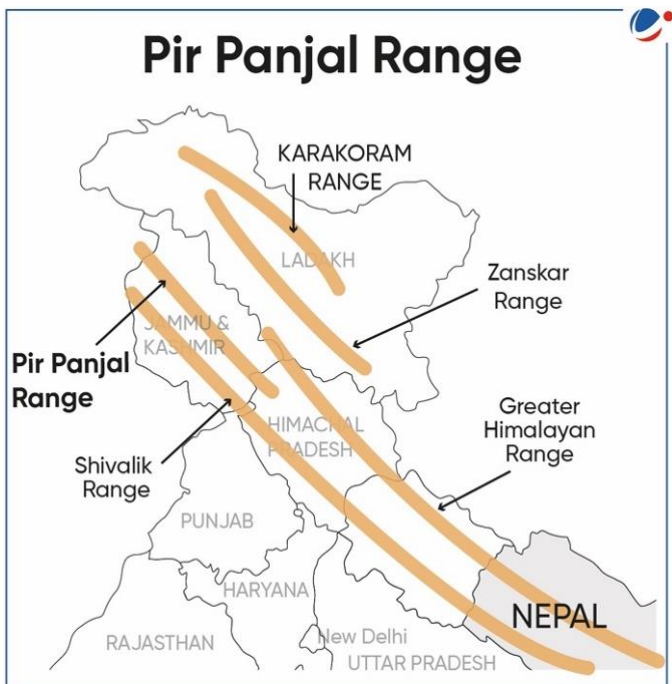
## Know the term

- **Donkey Route:** It is an **illegal route** taken by people to get out of their country across borders all over the world.
  - Popular donkey routes from India have **stopover in some Latin American** countries which have visa on arrival facility for Indians.

## 4.5. NEWS IN SHORTS

### 4.5.1. OPERATION SARVASHAKTI

- The Army initiates Operation Sarvashakti in Jammu and Kashmir's Rajouri-Poonch sector, targeting terrorists amid repeated attacks on troops.
- **About Operation Sarvashakti:**
  - Indian Army plans “**Operation Sarvashakti**” on the lines of “**Operation Sarpvishay**” launched in 2003.
  - It is to **target resurgence of militants** on both sides of **Pir Panjal in Jammu and Kashmir**.
  - Operation aims at combined counter-militancy efforts with **Chinar Corps and White Knight Corps coordinating in Collaboration with Jammu and Kashmir Police, CRPF, Special Operations Group, and intelligence agencies is crucial**.
- **Importance of this region**
  - **Strategic Terrain for Militants:** Pir Panjal provides dense forest hideouts, **facilitating hit-and-run operations and rest for militants**.
  - **Natural Division and Key Entry Points:** It acts as a natural division between Kashmir Valley and Jammu, **controlling key entry points to the Valley**.
  - **Shift in Militant Focus:** Post-2019, **militants focus on Pir Panjal, retreating into its forests amid reduced local support**.
- **About Pir Panjal Range**
  - **Natural Border:** Pir Panjal delineates Kashmir and Jammu, influencing landscapes and cultural nuances.
  - **Peaks:** **Deo Tibba (6,001m)** and **Indrasan (6,221m)** are highest peaks of the range.
  - **Passes:** **Banihal Pass** and **Peer Ki Gali** connect Kashmir and Jammu, enhancing regional connectivity.
  - **Rivers:** It spans **between Jhelum to Chenab**, encompassing Rajouri, Budhal, and Poonch on the Indian side.



- It has a **high level of indigenization (about 75%)**, highlighting efforts towards Atmanirbhara Bharat in the defence sector.
- **Need for Defence Indigenization:**
  - **Autonomy:** Decision-making autonomy in Geo-strategic issues.
  - **Reducing dependence on import:** World's largest arms importer between 2018-22 (as per **SIPRI Report**).
    - ✓ Also, it aims to reach US\$5 billion in defence exports by 2025.
  - **Prevention from disruption of supply-chain:** Like the Russia-Ukraine conflict.
  - **Other:** Tackling neighbours like China, supporting friendly nations etc.
- **Challenges:** Lack of **private participation**, less allocation of funds for **R&D** (less than 1%; far less than the US, China) etc.

#### 4.5.2. AKASH-NG (NEW GENERATION) MISSILE

- Defence Research and Development Organisation conducted successful flight-test of Akash NG missile.
- Akash-NG is a Surface to Air Missile **capable of intercepting high-speed, agile aerial threats.**
  - It has **range of around 80 km.**
- Its **active electronically scanned array (AESA)** multi-function radar features all three functions - **search, track and fire control** in one platform.
- Akash Weapon System is **Short Range Surface to Air Missile (SRSAM) Air Defence System**, indigenously designed and developed by DRDO.

#### 4.5.3. INDIAN NAVY COMMISSIONED INS IMPHAL

- **INS Imphal** is the third of four **indigenous Visakhapatnam class stealth-guided missile destroyers** under **project 15B.**
  - **Project 15B** is the latest in the lineage of **Project 15A (Kolkata class)** and **Project 15 (Delhi class)** indigenous destroyers with upgraded capabilities and greater indigenous content.
  - The other two destroyers of this Project are **INS Visakhapatnam** and **INS Mormugao.**
- **Key Features:**
  - It is designed by the Indian Navy's **Warship Design Bureau** and constructed by **Mazagon Dock Shipbuilders Limited (MDL), Mumbai.**
  - It is **armed with** medium-range surface-to-air missiles, **Brahmos** surface-to-surface missiles, **Indigenous torpedo launchers** etc.



#### 4.5.4. EXERCISES IN NEWS

- **Exercise Khanjar:** India-Kyrgyzstan Joint Special Forces Exercise Khanjar has held in Himachal Pradesh.
- **Exercise Cyclone:** 2nd edition of the India-Egypt exercise 'Cyclone' held in Egypt.
- **Exercise Desert Knight:** Indian Air Force conducted Exercise Desert Knight along with French Air and Space Force and UAE Air Force.
- **Ex-Desert Cyclone:** It is a joint military exercise between India and UAE.
- **Exercise Sea Dragon:** It is a multinational maritime exercise to enhance interoperability between Indian

Navy and participating navies from US, Australia, South Korea and Japan.

- **MILAN 24 Exercise:** It is a biennial multi-national naval exercise.
  - It was first conceived by Indian Navy in 1995 at Andaman and Nicobar Command with participation of four countries (Indonesia, Singapore, Sri Lanka and Thailand).
- **Ex-Ayutthaya:** The maiden Bilateral Maritime Exercise between the Indian Navy (IN) and Royal Thai Navy (RTN) was conducted in December 2023.
  - Along with this bilateral exercise, the 36th edition of India-Thailand Coordinated Patrol (Indo-Thai CORPAT) was also conducted.



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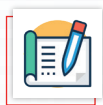
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## COMPONENTS OF AN IMPACTFUL ANSWER



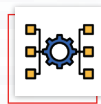
**Identification of Context:** Understanding the specific theme or topic of the question, and situating the response within its relevant context.



**Content Competence:** Demonstrating a comprehensive grasp of the subject matter, supported by accurate facts, relevant examples, and insightful analysis.



**An impactful Introduction:** Engagingly setting the stage for the answer, capturing the examiner's attention while providing a brief overview of the discussion to follow.



**Structure and Presentation:** Organizing the answer coherently with clear headings, subheadings, or bullet points, and presenting information logically and aesthetically for easy comprehension.



**Balanced Conclusion:** Summarizing key points concisely, offering insights or recommendations if applicable, and providing a satisfying closure to the argument or discussion.



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# 5. ENVIRONMENT

## 5.1. 50 YEARS OF PROJECT TIGER

### Why in the News?

The Indian government officially marked 2023 as the 50th year of 'Project Tiger'.

### About Project Tiger

- **A Centrally Sponsored Scheme** of the Ministry of Environment, Forests and Climate Change (MoEFCC), launched in 1973.
  - **Initially launched in 9 Tiger reserves (TRs)** in different states of India.
  - Provides central assistance to tiger range States **for in-situ conservation** of tigers in designated tiger reserves.
- **Objective:** To ensure the maintenance of a viable population of tigers in India for scientific, economic, aesthetic, cultural and ecological values.
  - Project Tiger has a holistic ecosystem approach. Though the main focus is on the flagship species tiger, the project strives to maintain the stability of ecosystems by also supporting abundant prey populations.
- **Implementing Agency: National Tiger Conservation Authority (NTCA).**
  - NTCA was launched in 2005, following the recommendations of the Tiger Task Force. It was given statutory status by 2006 amendment of Wildlife (Protection) Act, 1972.
- **Funding pattern: 60% Central Assistance** is being made available to States for expenditure on all **non-recurring items**.
  - **For recurring items, Central Assistance is restricted to 50%** of the expenditure, while a matching grant is provided by the Project States.
  - **North Eastern and Himalayan States** are provided 90% central assistance in both cases.
- **Project Tiger and Project Elephant were merged** as Project Tiger & Elephant.
- **Activities undertaken under Project Tiger**
  - **Establishment and development of Tiger Reserves: 55 tiger reserves.** (Veerangana Durgavati Tiger Reserve and Dholpur – Karauli Tiger Reserve were declared in 2023)
  - **Core-buffer strategy to manage tigers:** Core areas have the **legal status** of a **national park or a sanctuary**.
    - ✓ Whereas **buffer or peripheral areas** are a mix of **forest and non-forest land**, managed as a multiple-use area.
  - **Technological advancements:** The e-Bird **project** uses Unmanned Aerial Vehicles (UAV) for Surveillance and Monitoring.
    - ✓ **NTCA conducts assessment using the application M-STRIPES** (Monitoring System for Tigers Intensive Protection & Ecological Status).
  - **Special Tiger Protection Force (STPF):** Deployed in several TRs for focused **anti-poaching operations**.

The conservation of tigers in India can be divided into two phases.

- **The first phase starting in the 1970s**, involved the enactment of the Wildlife Protection Act and the establishment of protected areas that helped conserve tigers and tropical forest ecosystems.
- **The second phase began in 2005-06**, with the government adopting a landscape-level approach and implementing strict monitoring for tiger conservation.

### Challenges in Tiger Conservation

- **Habitat Loss and Fragmentation:** Out of the approximately **four lakh square kilometres** of forests in tiger states, **only one-third** are in relatively **healthier** condition (**Status Tiger Report 2022**).



## Data Bank



- **5th Cycle of All India Tiger Estimation 2022 Report**
  - **Minimum number of tigers in India: 3,167.**
  - **The highest number of tigers:** Central Indian Highlands and Eastern Ghats.
  - **The largest tiger population:** Madhya Pradesh (785) followed by Karnataka (563)
  - **Highest tiger abundance within the Tiger Reserve:** Corbett (260), followed by Bandipur (150)

- **Human-Wildlife Conflict:** As human populations expand and encroach upon tiger habitats, conflicts arise.
- **Poaching and Illegal Wildlife Trade:** Poachers target tigers for their **skins, bones, and other body parts**.
- **Climate change:** Shifting temperatures are altering the habitats of tigers in the **Himalayan States, Sundarbans and Western Ghats**.
  - Climate change accelerates, and wildfires are becoming more frequent in ecosystems that do not typically experience a fire season.
- **Monitoring:** TR such as Mukundra, Ranthambore, Nagarhole, etc. are situated along the boundaries of the state, which creates an issue of monitoring as the animal moves from one generation to another.
- **Other:** Tigers reserves are also threatened by **invasive plant species** such as **Lantana camara**.

#### Way ahead

- **Habitat Protection and Restoration:** Strengthen efforts to protect and expand tiger habitats.
  - Establish and maintain **wildlife corridors** to connect **fragmented habitats**.
- **Community Involvement and Awareness: Engage local communities** in conservation efforts through education and awareness programs.
  - Promote sustainable livelihoods for communities living near tiger habitats to reduce dependence on natural resources.
- **Anti-Poaching Measures:** Enhance law enforcement and anti-poaching efforts with **better training, equipment, and technology**.
  - Collaborate with local communities to gather intelligence and report illegal activities.
  - **Impose severe penalties** and consequences for wildlife crimes to act as a deterrent.
- **Climate Change Mitigation: Support research** on the impacts of climate change on tiger habitats and populations.
- **Public-Private Partnerships:** Encourage private sector involvement in tiger conservation through **corporate social responsibility (CSR) initiatives**.

**Do you know?** 

> **White tigers** are not a **separate sub-species** but are white due to an expression of **recessive genes**.

#### About Tiger

- A flagship species of India was declared a **National Animal of India**.
- **Habitat:** The largest population is in India, with smaller groups in Bangladesh, Nepal, Bhutan, China and Myanmar.
  - **India harbours almost 75%** of the world's wild tiger population.
- **Distribution of Tiger population in India:** Habitats ranging from the high mountains, mangrove swamps, and tall grasslands, to dry and moist deciduous forests, as well as evergreen and shola forest systems.
- **Significance of Tiger:**
  - **Ecological:** Tigers are both a **Flagship and Umbrella species**.
    - ✓ As a Flagship species they are important for conservation and as an Umbrella species, conservation of tigers leads to conservation of other species.
  - **Economic:** Ecotourism and related industries.
  - **Cultural and spiritual:** Symbols of power, strength.
- **Characteristics:**
  - **Solitary and territorial animals** and an adult male's territory may encompass territories of two to seven females.
  - **Stripes are individually as unique** as human fingerprints.
  - Tigers are **excellent swimmers**.

**TIGER PROTECTION STATUS**



**IUCN STATUS**  
EN

**CITES**  
Appendix I

**Wildlife Protection Act, 1972**

Schedule I  
Schedule IV

## 5.2. SEWAGE MANAGEMENT IN INDIA

### Why in the news?

The National Mission for Clean Ganga (NMCG) under the Ministry of Jal Shakti, issued a notification to amend the **River Ganga (Rejuvenation, Protection and Management) Authorities Order, 2016**.



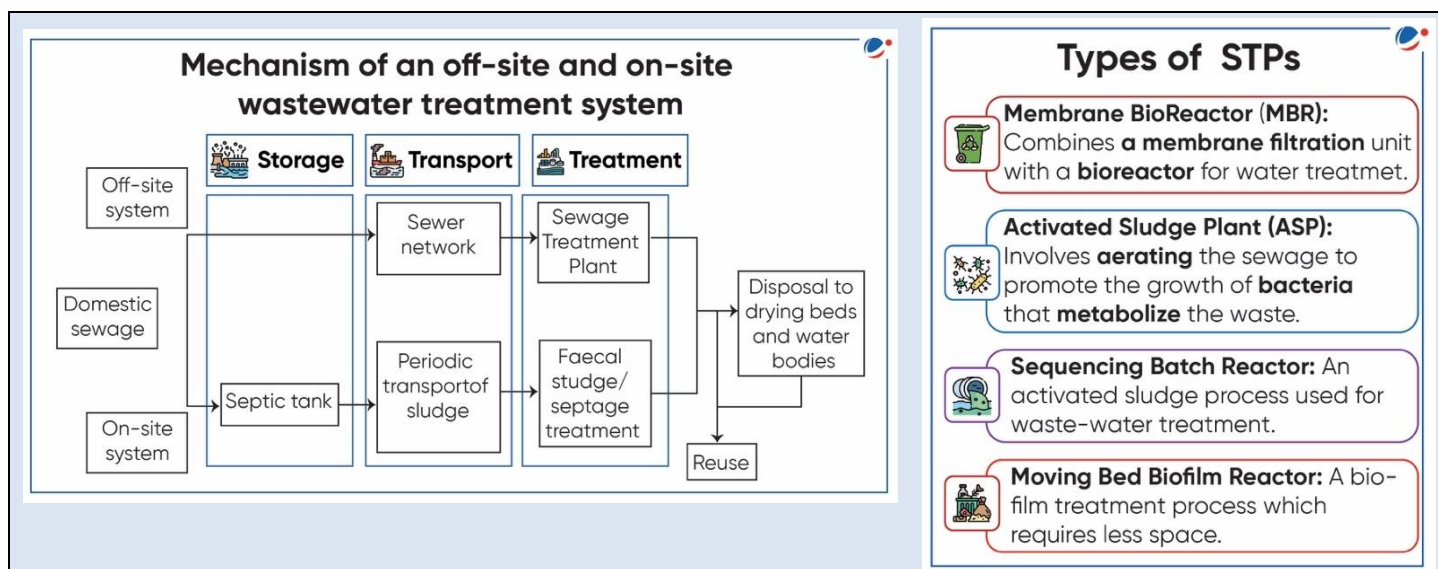
## More about the news

- The amendment allows NMCG to **discharge the treated effluent with prescribed standards into the river Ganga** after exploring the options for its direct reuse.
  - Earlier **the provision was against the discharge of untreated or treated sewage** into the river by anyone.
- The move is **aimed at ensuring more water flow into the river** thereby improving its biodiversity.

**To know more about the National Mission for Clean Ganga (NMCG), kindly refer to Article 5.1. Namami Gange Programme (NGP) in September 2023 edition of VisionIAS Current Affairs Magazine.**

## Sewage generation in India and STPs

- The **estimated sewage generation** from Class I cities and Class II towns in India is more than **33,000 Million Litres per Day (MLD)** and the **current treatment capacity of STPs is just 18.6%**.
- STPs are **facilities that treat wastewater from domestic, commercial, and industrial sources** to remove pollutants and contaminants before releasing them into the environment.



## Institutional arrangement and initiatives for Sewage Treatment in India

- **As Water is a 'State Subject'** under the **Seventh Schedule (Article 246)**, it is the responsibility of the States/UTs to ensure the cleanliness and development of rivers.
  - **National Urban Sanitation Policy (2008)** made local governments responsible for behavioural change, total sanitation, and 100% safe waste disposal.
- The **74th Constitutional Amendment (1993)** decentralized the **water supply and sanitation** services from the state government to the **Urban Local Bodies (ULB)**
- As per the provisions of the **Environment (Protection) Act, 1986** and the **Water (Prevention & Control of Pollution), Act 1974**,
  - **Industrial units and local bodies are required to install STPs** and Effluent treatment plants (ETPs) to treat their sewage before discharging into the river.
  - However, there is **no specific act dedicated to the management of wastewater** in India.
- **Other initiatives** include components of the **Atal Mission for Rejuvenation & Urban Transformation (AMRUT)**, **Smart Cities Mission**, **Namami Gange program** and **National River Conservation Plan**.

## Challenges associated with STPs

- **Lack of Capacity in ULBs:** To plan and implement sewage treatment projects within their administrative jurisdictions.
  - CAG audit (2016) in Jharkhand found that **none of the sampled ULBs had a sewage network**, which led to 175 MLD of untreated wastewater being discharged into open drains.

- **Lopsided implementation by the states: 5 states** (Maharashtra, Gujarat, Uttar Pradesh, NCT of Delhi and Karnataka) **account for 60% of the total installed treatment capacity.**
- **Lack of specific framework:** There is **no specific policy at either the Central or State level** that incorporates treatment of polluted water or its ecological restoration.
- **Differences in discharge standards:** For instance, **Surface water body is regulated by 35 parameters** while **wastewater for land application is regulated by only 10 parameters.**
- **Low Compliance rate:** It is found that **only 23 % of treatment capacity** is meeting the consented parameters of State Pollution Control Boards (SPCBs).
- **Low economic viability:** **STPs are highly capital-intensive** and usually take around **three to eight years to break even** thereby hindering private investments.

### Way forward

- **Establishing multiple monitoring points:** Including sources, environmental systems, exposure pathways, and the recipients for better control of pollution loads.
- **Utilization in Irrigation:** The **Indian Agricultural Research Institute, Karnal**, has researched sewage farming and recommended an irrigation method for sewage-fed tree plantations, which can be widely adopted.
- **Focus on alternative usage:** Local bodies can focus on the utilization of treated sewage for non-potable purposes like horticulture, irrigation, fire fighting, industrial cooling etc.
  - **Government of Karnataka** has issued a directive to utilise tertiary treated sewage for non-potable purposes, like all gardening, including parks, resorts, and golf courses.
- **Defining better and uniform water quality standards:** This along with monitoring will detect pollution levels, trace them back to the source and estimate the impacts.
- **Setting up of underground STPs in land-scarce cities:** This will help to eliminate negative environmental impacts like noise, odour, and aesthetics in a crowded city
  - For example, **underground STPs** are set up in most **heavily populated Chinese cities.**
- **Implementing Nature-based Solutions (NbS):** like artificial wetlands, planted soil filters, vegetated submerged beds etc.



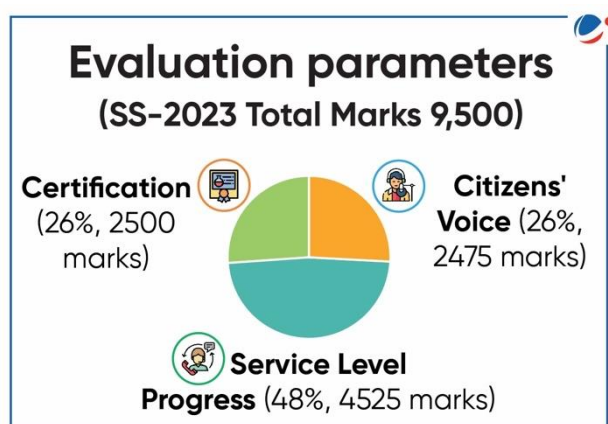
## 5.3. SWACHH SURVEKSHAN AWARDS 2023

### Why in the news?

Recently, the President of India conferred the Swachh Survekshan Awards for 2023.

### More about the News

- The **Swachh Survekshan 2023 dashboard** was also launched at the event.
- The President also emphasised on the **theme for the year i.e., "Waste to Wealth"** as a means to achieve cleaner cities.



## About Swachh Survekshan Awards

- **About:** Swachh Survekshan is a survey of **cleanliness, hygiene and sanitation** in cities and towns across India.
- **Launch:** In 2016 under the ambit of the **Swachh Bharat Mission (Urban)**.
- **Institutions involved:** The survey is conducted annually by the **Ministry of Housing and Urban Affairs (MoHUA)**.
- **Objective:** To encourage large-scale **citizen participation and create awareness** about the importance of making towns and cities a better place to live.
- **2023 assessment:** It was conducted in 4 phases for the first time in 4477 cities and the total marks increased to 9500 from 7500 (2022's survey).

## Key Highlights of the 2023 Awards

- **Indore (Madhya Pradesh) and Surat (Gujarat)** were declared as the Cleanest Cities in India (Rank 1) followed by **Navi Mumbai (Maharashtra)** (Rank 3).
  - **Indore** has been declared as the cleanest city for the **7<sup>th</sup> consecutive time**.
- In cities with **less than 1 Lakh population**, **Sasvad (Maharashtra), Patan (Gujarat) and Lonavala (Maharashtra)** secured the top three spots.
- **Maharashtra was named the cleanest state in the country**, followed by Madhya Pradesh and Chhattisgarh.
- **Mhow (Madhya Pradesh)** was selected as the cleanest cantonment board followed by **Deolali (Maharashtra)** and **Ahmedabad (Gujarat)**.
- **Varanasi (Uttar Pradesh)** was declared the cleanest Ganga town followed by **Prayagraj (Uttar Pradesh)**
- **Chandigarh** was declared as the **Best Safaimitra Surakshit Sheher**.



## 5.4. INDIA METEOROLOGICAL DEPARTMENT (IMD)

### Why in the News?

India Meteorological Department (IMD) celebrated the **150<sup>th</sup> Year** of its establishment and service to India.

### Recent Initiatives launched by IMD

- **National Framework of Climate Services (NFCS):** It is premised on the concept of the Global Framework for Climate Services (GFCS) launched by the **World Meteorological Organization (WMO)**.
  - NFCS aims to set up a platform that will provide **climate information and services helpful for agriculture, energy, disaster management, health and water sectors**.
  - NFCS would **enable every individual and organisation to be climate-smart** and hence improve the economy of the country.
- **Indigenously Developed Decision Support System**
  - **About:** A Web-GIS-based integrated **Decision Support System (DSS)** known as **Weather Analysis and Forecast Enabling System (WAFES)**.
  - **Working:** The **WAFES serves as a visualization platform** to analyse meteorological observations and prediction models, aiding decision-making for severe weather phenomena and their socio-economic impact.
  - **Components:** DSS includes the **Meteorological Information Communication System (MICS), Data Information Processing System (DIPS), Synthesized Integrated Visualization System (SIVS), and Public Weather Information System (PWIS)**.



## India Meteorological Department (IMD)

**Genesis:** Established in **1875**, as one of the **first scientific departments** of India.

**About:** It is the **National Meteorological Service** of India and the **principal government agency** in all matters relating to **meteorology and allied subjects**.

**Ministry:** Ministry of Earth Sciences

**Mandate of IMD :**

- ◆ Take meteorological **observations and forecast** meteorological information.
- ◆ **Warn** against **severe weather** phenomena.
- ◆ Provide **meteorological statistics** required for agriculture, industries etc.
- ◆ Conduct and **promote research in meteorology** and allied disciplines.
- ◆ Detect and locate **earthquakes** and **evaluate seismicity** in different parts of the country.

- **Target Areas:** It provides real-time information for various sectors such as **Urban, Power, Hydrology, Health, Energy, Agriculture, Transport and Tourism** under the "UPHEATT" initiative (**for the cause of welfare**).
- **Other initiatives Launched**
  - **Panchayat Mausam Sewa Portal:** To help **farmers** in planning their agricultural activities.
  - **IMD's Mobile App:** IMD launched an **integrated GIS-based interactive** mobile app **MAUSAM** for all weather-related services.

#### Achievements of IMD

##### Observations

- **In 2023, WMO recognised three IMD observatories, viz., Dwarka & Veraval (Gujarat) and Cuttack (Odisha) as long-term observing stations for more than 100 years of hydrological observations.**
- **39 Doppler Weather Radars (DWRs)** well distributed across the country to monitor severe weather events (**till 2023**).
- **To support the Gati Shakti and Udaan Scheme,** IMD has contributed significantly by ensuring safe aviation through **Aviation Weather monitoring and forecasting** for all 117 Airports.

##### Improvement in Forecast Accuracy

- **Significant improvement in forecast accuracy** of severe weather events by **40-50%** during the last **5 years**.
- A very high-resolution (400 metre) **Air Quality Early Warning System (AQEWS) integrated with a Decision Support System (DSS)** for air quality has been developed, showing an accuracy of 88% for predicting extreme pollution events.
- A new Multimodal ensemble technique for the forecast of tropical cyclones was introduced.

##### Communication System Networks

- **Website** released for alerts on **block-level weather forecasts and advisories for farmers,** fisherfolk and livestock rearers.

##### Appreciation

- **Appreciations from the United Nations** for early warning services provided by IMD during **Super Cyclone Amphan in 2020 and Cyclone MOCHA in 2023.**

#### Challenges Faced by IMD in Accurate Weather Prediction

- **Limited Weather Models:** The IMD relies on **weather models** to make predictions. However, these models have **limited capacity** and are gradually being improved.
- **Data Interpretation:** Forecasters need to **analyze multiple satellite images, radar data,** and hints from models to enhance accuracy.
  - Sometimes, **misinterpretation occurs** leading to forecast errors.
- **Localized Extreme Weather Events:** The IMD faces challenges in predicting **cloudbursts, lightning events, and other localized extreme** weather phenomena.
- **Tropical Climate:** India's tropical climate makes it **difficult to predict weather** accurately.
  - **A complex monsoon season** can make it difficult to predict weather.
- **Human Resource and Training:** **Recruitment, training, and retention of qualified personnel** in meteorology can be a challenge, **impacting the overall forecasting capabilities.**

#### Way Ahead

- **Enhanced Data Collection:** Invest in advanced **technologies and infrastructure** to improve the **accuracy and availability** of climate data, including **satellite observations,** ground-based measurements, and **ocean monitoring.**
- **Global Collaboration:** Foster international cooperation and collaboration in **sharing data, technologies, and expertise** to address regional variations and global climate challenges collectively.
- **Predictive Analytics and Artificial Intelligence:** Leverage advanced **predictive analytics** and artificial intelligence tools to enhance the precision of climate predictions and identify patterns in complex climate systems.
- **Early Warning Systems:** Develop and implement robust early warning systems to effectively communicate and mitigate the impact of extreme weather events, especially in vulnerable regions.
- **Capacity Building:** Strengthen the capacity of **meteorological agencies and institutions** through **training programs,** knowledge sharing, and **skill development** to enhance their ability to monitor and predict climate trends.

## 5.5. INDIAN LANDSLIDE SUSCEPTIBILITY MAP

### Why in the News?

IIT Delhi created the first hi-resolution **Indian Landslide Susceptibility Map (ILSM)**.

### About Indian Landslide Susceptibility Map (ILSM)

- A **landslide susceptibility map** divides the **terrain into zones** based on the likelihood of landslide occurrence.

### Key Feature of ILSM

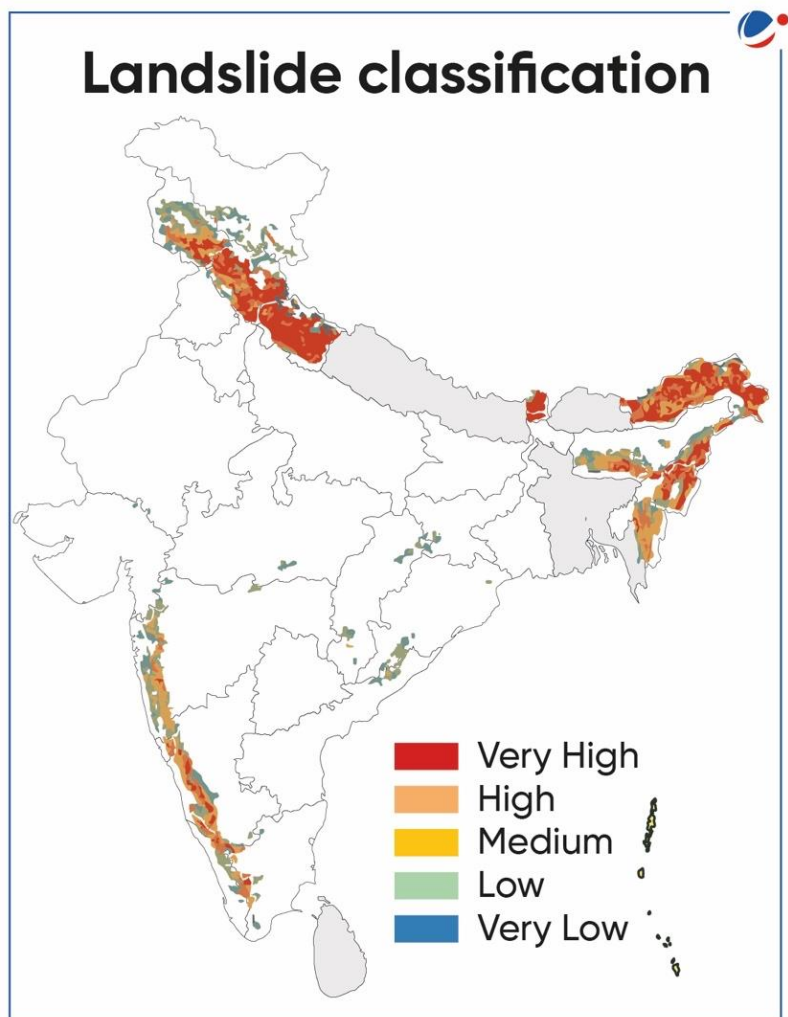
- **Innovative Framework for High-Resolution Landslide Mapping:** Embracing big data and use of multiple machine learning models with different underlying principles.
  - The map model **incorporates 16 landslide conditioning factors** such as height, slope, soil composition, road distance, river proximity, vegetation cover, precipitation, etc.
- **High Spatial Resolution Mapping:** Map has a spatial resolution of **100 metres with over 95% accuracy**.
- **Multi-Class Vulnerability Classification:** Divides India into **Five Vulnerability Classes (refer to map)**.

### Key Findings of ILSM

- **Overall Landscape Susceptibility to Landslides in India:** Map classifies **13.17% of India's geographical area** as susceptible to landslides.
  - **4.75% of the area** is categorized as "very highly susceptible."
  - **Geological Survey of India** estimates a slightly lower figure at **12.6%**.
- **Regional Variation in Susceptibility:**
  - **Sikkim** has the **highest percentage of land area (57.6 %)** susceptible to landslides.
  - **Arunachal Pradesh** has the highest absolute area susceptible to landslides.
  - **Kerala**, among the **non-Himalayan** regions, exhibits the **highest area susceptible to landslides**.
- **Identification of New Landslide-Prone Zones:** **Eastern Ghats** show landslide-prone zones identified by the map.
  - **These zones were not reported** by previous models or government records.

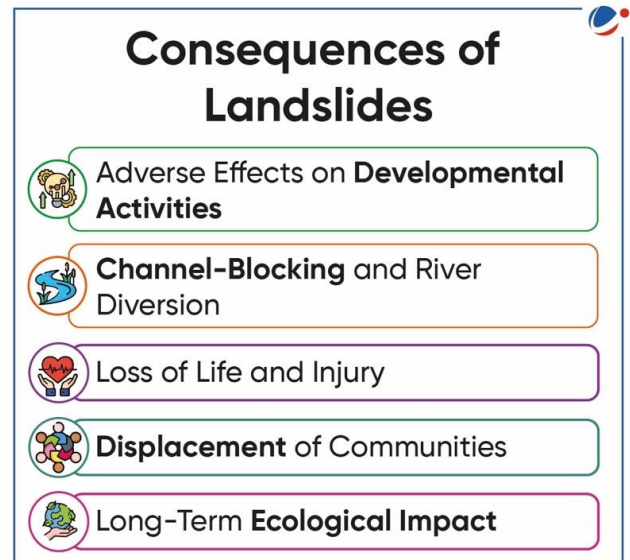
### Significance of ILSM

- **Policy Formulation and Implementation:** It serves as a foundation for the formulation and implementation of policies related to **disaster risk reduction**, providing a **data-driven approach** for governments and agencies.
- **Scientific Understanding of Landslide Dynamics:** Helping **researchers and scientists** study factors contributing to landslides and refine prediction models.
- **Early Warning and Preparedness:** The map provides crucial information for identifying areas with **high susceptibility to landslides**, enabling early warning systems and preparedness measures.



## About Landslide

- **Phenomena:** Landslides occur **when gravity forces pushing** on hill slope material **exceed the frictional forces holding the material** in place, causing **slope failure**.
  - **Landslide susceptibility** represents this potential for slope failure.
  - Due to **steep slopes and heavy rainfall** most of the landslides occur in the **northwest Himalayas** followed by the **northeast Himalayas** and the **Western Ghats**.
- **Causes:** Landslides are caused by **complex interactions of geological, geomorphological, hydrological, and meteorological characteristics**.
  - **Geological Factors Influencing Landslides in the Himalayas:** The Himalayas are composed of sedimentary rocks which are **prone to denudation and erosion**.
    - ✓ **Steep slopes and rapid rivers** contribute to **toe erosion** making the slope unstable.
    - ✓ **Most of the landslides** in the Himalayas are **rockfalls**.
  - **Geological Dynamics of Landslides in the Western Ghats:** **The presence of basalt rocks and gentle-sloped rivers** in the Western Ghats resulted in fewer rockfalls. However, weathering due to heavy rainfall has led to the development of a thick layer of regolith, thereby leading to mudslides.
  - **Role of Rainfall in Landslide Triggering:** **Rainfall intensity and duration** as critical factors for landslide initiation.
    - ✓ **Western Ghats require less rainfall** to trigger landslides when compared to the Himalayas due to the **high soil depth in Western Ghats**.
    - ✓ High soil depth **allows more water retention** and an increased **porewater pressure** ultimately leading to landslides.
  - **Anthropogenic Contributions to Landslide Risk:** **Road development and construction** contribute to **slope instability**.



## Initiatives Taken by India

- **National Landslide Risk Management Strategy released by National Disaster Management Authority (NDMA):** The strategy document brings out the message of the need to strengthen and mainstream landslide disaster preparedness, mitigation, response and relief mechanisms through
  - **Landslide Hazard Zonation:** It covers aspects of reliability and validation of landslide zoning maps in the Indian scenario and proposes a plan of activities for landslide zoning.
  - Landslide Monitoring and **Early Warning System**
  - **Awareness generation** and capacity building
  - Preparation of **Mountain Zone Regulations** and Policies
  - Stabilization and Mitigation of Landslide and **Creation of Special Purpose Vehicle (SPV)** for Landslide Management
- **National Landslide Susceptibility Mapping (NLSM) Programme:** Launched in **2014-15**, under it **Geological Survey of India** has completed landslide susceptibility mapping of 4.3 lakh sq. km. of landslide-prone areas in the country.
- **Landslide Atlas of India:** **The database covers landslide-vulnerable regions in 17 states and 2 UTs of India** in the **Himalayas and Western Ghats**.
  - Prepared by **National Remote Sensing Centre (NRSC) of ISRO**.

## Conclusion

**Adopting area-specific measures** is crucial for **landslide prevention**. Enforce restrictions on **construction, roads, and dams** in vulnerable areas. Complement with positive actions like **large-scale afforestation, bund construction** for water flow control, and **encourage terrace farming** in northeastern hill states where **Jhumming (Slash and Burn/Shifting Cultivation)** is practised.






## 5.6. PRITHVI VIGYAN (PRITHVI) SCHEME

### Why in the news?

The Union Cabinet has approved the overarching scheme “PRITHvi Vigyan (PRITHVI)” of Ministry of Earth Sciences.

### About PRITHvi Vigyan (PRITHVI)

- **Ministry:** Ministry of Earth Sciences (MoES)
- **Tenure:** Period from 2021-26
- **Overall cost:** ₹ 4,797 crore
- It encompasses **five ongoing sub-schemes**
  - **ACROSS** (Atmosphere & Climate Research-Modelling Observing Systems & Services)
  - **O-SMART** (Ocean Services, Modelling Application, Resources and Technology)
  - **PACER** (Polar Science and Cryosphere Research)
  - **SAGE** (Seismology and Geosciences)
  - **REACHOUT** (Research, Education, Training, and Outreach)

Major Objectives of the Scheme				
				
Increased long-term observations of the atmosphere, ocean, geosphere, cryosphere and solid earth to record the vital signs of the Earth System and change.	Development of models for understanding and predicting weather, ocean and climate hazards and understanding the science of climate change.	Exploration of polar and high seas regions for discovery of new phenomena and resources.	Development of technology for exploration and sustainable harnessing of oceanic resources for societal applications.	Translation of knowledge from earth science into services for societal, environmental and economic benefit.

### About sub-schemes of PRITHvi Vigyan (PRITHVI)

Sub-schemes	Objectives	Major Components
<b>ACROSS</b>	Development of global advanced weather prediction models	<ul style="list-style-type: none"> <li>• <b>Monsoon Convection, Clouds, and Climate Change (MC4):</b> To improve the observational database and climate of monsoonal precipitation changes.</li> <li>• <b>High Performance Computing System (HPCS):</b> To develop modern supercomputers, artificial intelligence and machine learning algorithms.</li> <li>• <b>Monsoon Mission (MM-II):</b> Predicting weather/climate extremes and development of climatic application.</li> <li>• <b>Atmospheric Observations Network:</b> Aimed at sustenance of observational network as per World Meteorological Organization standards.</li> </ul>
<b>O-SMART</b>	Oceanographic research activities with the objectives for providing forecast and services for sustainable harnessing of our oceanic resources.	<ul style="list-style-type: none"> <li>• <b>Ocean observation and network:</b> Provide vital data for operational forecast, scientific research and applications.</li> <li>• <b>Marine Living Resources (MLR) programme:</b> To develop an ecosystem model for the management of the living resources in the Indian EEZ.</li> <li>• <b>Programme on ‘Sea Water Quality Monitoring’:</b> To identify the periodical changes in seawater quality.</li> <li>• <b>Ocean Observation Systems:</b> Provide vital data for operational forecast, scientific research and applications.</li> <li>• <b>‘Ocean-modelling data assimilation and process specific observations’ programme:</b> To measure water quality parameters in the coastal waters around India in a sustained manner.</li> <li>• <b>Deep Ocean Mission (DOM):</b> To explore deep ocean for resources and develop deep sea technologies for sustainable use of ocean resources.</li> <li>• <b>Other activities:</b> <ul style="list-style-type: none"> <li>○ Harnessing ocean energy for generating freshwater</li> <li>○ Seafloor Research Facility</li> <li>○ Studies on Gas hydrates</li> </ul> </li> </ul>

<b>PACER</b>	Integrates all scientific programs regarding studying polar region	<ul style="list-style-type: none"> <li>• <b>Indian Antarctic Programme:</b> Indian Scientific Expeditions, Maintenance of Research bases at Antarctica etc.</li> <li>• <b>Indian Arctic Programme:</b> Study Fjords, climate change, sea level change in Arctic</li> <li>• <b>Indian Scientific Expeditions to the Southern Ocean (ISESO):</b> Study circumpolar current, their role in carbon sequestration, biogeochemistry and climate change.</li> </ul>
<b>SAGE</b>	Strengthening earthquake monitoring and research on the Earth's solid components	<ul style="list-style-type: none"> <li>• <b>Seismological monitoring and micro-zonation</b></li> <li>• <b>Geodynamics and surface processes</b></li> <li>• <b>Seismicity and earthquake precursors</b></li> <li>• <b>Setting up a facility for geochronology</b></li> <li>• <b>Scientific deep drilling</b> in the Koynaintra plate seismic zone</li> <li>• <b>Indian Ocean:</b> Deep ocean observations and dynamics of lithospheric evolution</li> </ul>
<b>REACHOUT</b>	Raise awareness in general public about various schemes/mission of MoES in various scientific aspects related to Earth system science	<ul style="list-style-type: none"> <li>• <b>Research and Development in Earth System Sciences (RDESS)</b></li> <li>• <b>Knowledge Resource Center Network (KRCNet)</b></li> <li>• <b>BIMSTEC Centre for Weather and Climate (BCWC)</b></li> <li>• <b>International Training Centre for Operational Oceanography (ITCOcean)</b></li> <li>• <b>Development of skilled manpower in Earth system sciences (DESK)</b></li> </ul>

### Significance of integrated R&D efforts under PRITHVI

- **Improve understating of the Earth System Sciences** by holistically addressing all the five components of the Earth system.
- **Enable development of integrated multi-disciplinary earth science research** and innovative programs across different MoES institutes.
- **Boost research in earth system sciences** through increased fund availability and cross disciplinary integrative nature of scheme.
- **Address grand challenges** of weather and climate, ocean, cryosphere, seismological science and services.
- **Converted research into practical solutions for future disasters** arising from Climate change, Pollution, Sea level rise, etc.
- **Understand and predict weather accurately** due to increased cross-disciplinary coordination and increased observation data.
- **Explore the living and non-living resources** for their sustainable harnessing.
- **Nurture a skilled workforce** of Earth system scientists for the future.
- **Help MoES fulfil its mandate** to translate Science to Services for the Society.

### About the concept 'Science to service' for the Society

- It underscores **the importance of bridging the gap between scientific research and real-world applications** to create tangible benefits for individuals, communities, and society as a whole.
- **Some key aspects and examples of "Science to Services for the Society":**
  - **Research Translation:** Actionable solutions involve identifying relevant findings and using them for practical applications for economic/environmental/social benefit. E.g. **Disaster Early Warning Systems,**
  - **Technology Transfer:** Involves the process of transferring new discoveries from the laboratory to the marketplace or other sectors where they can be utilized for societal benefits. E.g. use of **CRISPR-Cas9** in treatment of cancer (CAR-T cell therapy), **Development of GM crops, etc.**
  - **Collaboration between Scientists and entrepreneurs:** To commercialize scientific discoveries and promote innovation in product designing and marketing. **E.g. Use of digital technology in marketing.**
  - **Education and Training:** Involves disseminating scientific knowledge and expertise to the broader society through education and training programs. **E.g. Skilling and training programs run by government.**



## 5.7. NEWS IN SHORTS

### 5.7.1. REPORT ON 'TRADE POLICY TOOLS FOR CLIMATE ACTION'

- Report titled 'Trade Policy Tools for Climate Action' released by **World Trade Organization (WTO)**.
- It **covers ten trade policy areas** that governments could consider as part of their strategies to **promote sustainability** and support **UNFCCC-COP28's climate mitigation efforts**.

Major Trade Policy Tools	Actions
Trade facilitation	Speed up <b>customs clearance</b> , <b>reducing Greenhouse Gas (GHG) emissions</b> associated with inefficient customs procedures, etc.
Regulations and certification	Use <b>international standards</b> to <b>avoid regulatory fragmentation</b> when upgrading energy efficiency regulations.
Import tariffs	Accelerate transition to <b>green economy</b> by rebalancing tariff policies that may inadvertently benefit carbon-intensive sectors
Subsidies	<b>Unlock additional resources</b> to assist climate action by reforming environmentally harmful support measures.
Sanitary and phytosanitary measures	<b>Protect economies from spread of disease and pests</b> exacerbated by climate change by strengthening sanitary and phytosanitary systems.
Internal taxation and carbon pricing	<b>Reduce policy fragmentation</b> and compliance costs by improving coordination of climate-related issues etc.

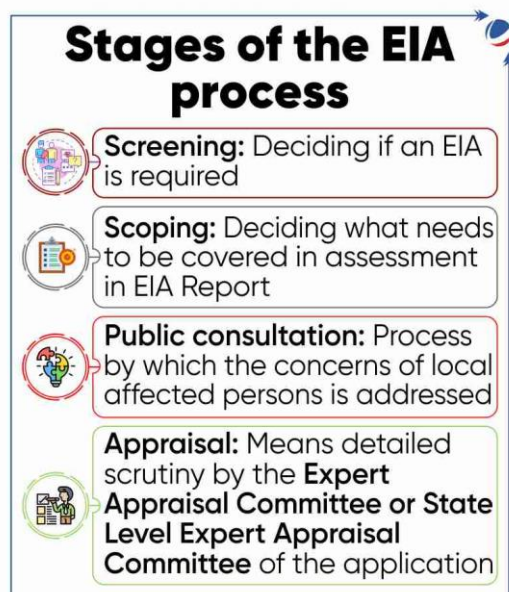
- **Impact of Trade on Climate**
  - About **20-30 percent of total CO<sub>2</sub> emissions**, which account for most GHG emissions, are estimated to be associated with **international trade**.
    - ✓ Sectors including **energy and transportation** account for more than **75 percent of GHG emissions embedded in international trade**.
  - Accelerate use of natural resources which in turn can **increase pressure on ecosystems**.
  - **Environmental damage** e.g. Rise in palm oil demand led to clearing of rainforest in Indonesia.

### 5.7.2. ENVIRONMENTAL IMPACT ASSESSMENT (EIA)

- Supreme Court Stays MoEF&CC's office memorandum on ex-post facto environmental clearance.
- Stay is imposed on orders issued by **Ministry of Environment, Forest and Climate Change (MoEF&CC)**

in 2021 and 2022 for ex-post facto clearance for mining projects.

- **Such ex-post facto clearance** provides projects to **carry out operations** without getting environmental clearances.
- **Earlier**, prior environmental clearance was **mandated under Environmental Impact Assessment (EIA) notification of 2006**.
- However, in 2017, government provided a **six-month window for alleged violators to apply for post facto clearances**. This was stayed by the Madras HC.
- **In 2021**, ministry issued **standard operating procedures** for processing EIA applications **allowing ex facto environment clearance**.
- **About EIA**
  - It is defined as a tool **used to identify environmental, social and economic impacts** of a project prior to decision-making.
  - Under **Environment (Protection) Act, 1986**, India notified its first EIA norms in **1994**, and subsequent amendments were made.
  - EIA aimed at **imposing certain restrictions and prohibitions on new projects**, or on expansion of existing projects etc. based on their potential environmental impacts, **unless prior environmental clearance has been accorded**.



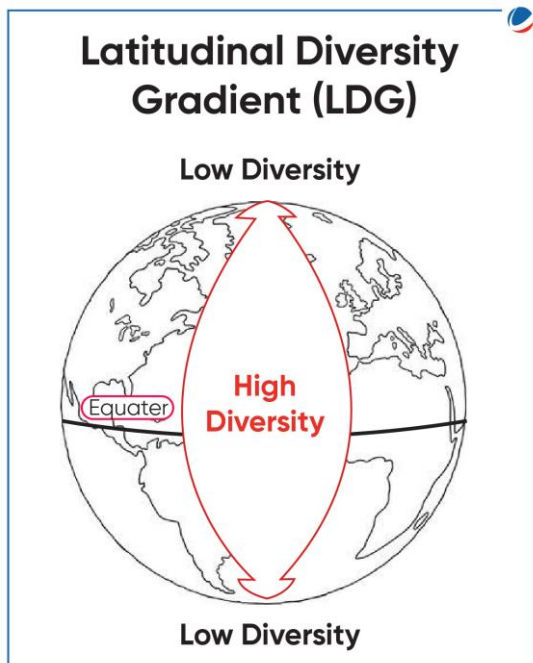
### 5.7.3. MEGALOSAURUS

- 2024 marks the **bicentennial** (200th year) of the first scientific naming of a dinosaur, the megalosaurus (**meaning great lizard**).
  - These **carnivorous dinosaur's** fossils were discovered in **Oxfordshire, England (UK)**.

- In 1824, they were named based on scattered **bones**, including vertebrae, and hip.
- Dinosaurs are a **diverse group of reptiles of the clade Dinosauria**.
- They belong to the **Mesozoic Era** ((252-66 million years ago) which includes **three consecutive geologic periods** (Triassic, Jurassic, and Cretaceous).
- They are believed to be **ancestors of modern Birds**.

#### 5.7.4. LATITUDINAL DIVERSITY GRADIENT (LDG)

- A recent study examined role of major classes of Mycorrhizal Fungi - arbuscular mycorrhizal and ectomycorrhizal in LDG.
- LDG refers to the pattern of having **lots of species at the equator with diversity reducing towards poles**.
- Study found that:
  - Mycorrhizal fungi form **mutually beneficial relationships** with majority of **plant roots** globally.
  - **Arbuscular** fungi, common near equator promote diversity.
  - **Ectomycorrhizal** fungi, common at higher latitudes support single tree species, reducing diversity.

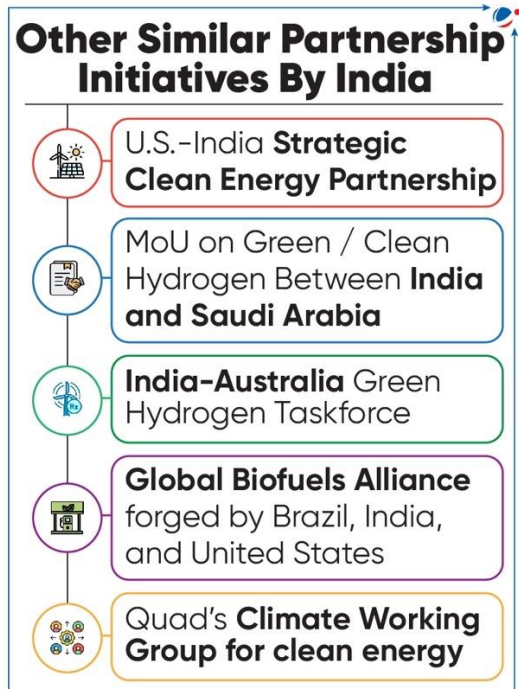


#### 5.7.5. GREEN FUELS ALLIANCE INDIA (GFAI)

- Denmark announces Green Fuels Alliance India (GFAI) initiative.
- It is part of **Green Strategic Partnership (GSP)** signed in **2020 between India and Denmark**.
  - Its **primary objective** is to **promote sustainable energy growth in India** by encouraging

collaboration among businesses, government entities, research institutions, etc. from both countries.

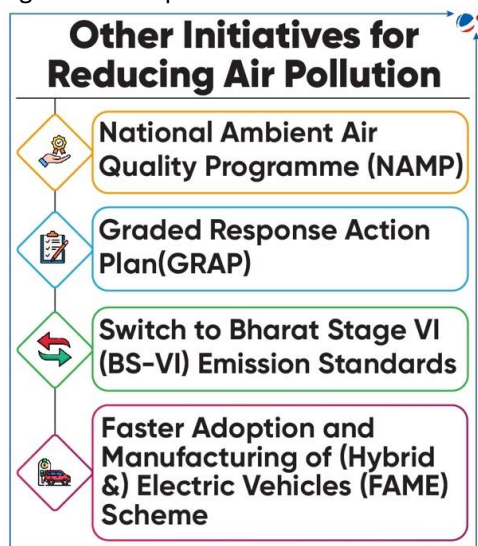
- It is inspired by initiatives like **India-Denmark Energy Partnership**, and joint R&D efforts on Green Fuels, etc.
- **Goals and significance**
  - Strengthen **collaboration in sustainable energy solutions**.
  - Advance **joint goals towards carbon neutrality**.
  - Enables renewable energy production in India towards ambition to be **global leader in green energy value chain**.
  - Help in **accelerating net zero emissions by 2070**.
  - **Foster innovation**, collaboration, and partnerships among firms, businesses, and government.
- Green fuels, also called green hydrocarbons, biofuels, are **fuel produced from biomass sources** through variety of biological and thermochemical processes.



#### 5.7.6. 5 YEARS OF NATIONAL CLEAN AIR PROGRAMME (NCAP)

- **Ministry of Environment, Forest and Climate Change (MoEFCC)** launched NCAP in 2019 in the backdrop of the rising air pollution in the country.
- **About NCAP:**
  - **About:** Aims to improve air quality in 131 cities (non-attainment cities (NAC) and Million Plus Cities) in 24 States by engaging all stakeholders.
    - ✓ The cities which are exceeding the **National Ambient Air Quality Standards (NAAQS)** for 5 consecutive years are identified as NAC by Central Pollution Control Board (CPCB).

- **Target:** To achieve reductions up to **40%** of Particulate Matter (PM10 and PM2.5) concentrations by **2025-26**, base year **2017**.
- **Implementation:** CPCB at the national level.
  - ✓ Under it, **City Action Plan's (CAPs)** are implemented by state government and its agencies at state and city level (Municipal bodies).
- **PRANA** (Portal for Regulation of Air-pollution in NAC) has been also launched monitor the implementation of NCAP.
- **NCAP's progress** in last 5 years reveals a mixed scenario.
  - As per studies, PM2.5 in 27 cities recorded improvements out of 49 cities.
  - Similarly, for PM10, 24 cities saw an improvement out of 46.
  - In terms of cities, Varanasi achieved a significant reduction in PM2.5 and PM10 levels, along with Agra and Jodhpur.



### 5.7.7. GLOBAL RISK REPORT 2024

- Report is **based on Global Risks Perception Survey** and **annually released by World Economic Forum**.
- **Key findings**
  - **India's top five risks:** Misinformation and Disinformation (MI); Infectious diseases; Illicit economic activity; Inequality (wealth and income); and Labour shortage.
  - **Global short-term risks:** MI; Extreme Weather Events (EWS); Societal polarization; Cyber insecurity; etc.
  - **Global long-term risks:** EWS; Critical change to Earth systems; Biodiversity loss and ecosystem collapse etc.

### 5.7.8. GLOBAL OCEAN HEAT CONTENT (OHC)

- In 2023, Global Ocean Heat Content (OHC) doubled or tripled since the late 1980s, shows study.
- **Key Findings:**
  - Amount of heat stored in the upper 2,000 metres of the global ocean **reached 286 Zetajoules (ZJ) in 2023** relative to the 1981–2010 average.
  - 2023 estimate of ocean heat content (OHC) represents around **4.6 billion Hiroshima nuclear bombs**.
  - As Oceans absorb 90% of heat from global warming, the Atlantic, North and Western Pacific, and Southern **Oceans are warming at a faster rate than the global average**.
- **About OHC:**
  - It is defined as **the total amount of heat absorbed by and stored in the oceans** and measurements of water temperature reflect the amount of heat in the water at a particular time and location.
  - It is **measured in Joules, the unit of energy**.
  - **Water has a higher heat capacity than air**, which means that it can store much larger amounts of heat.
- **Role of Ocean Heat Content:**
  - **Affects Earth's energy, water, and carbon cycles.**
  - Important **indicator of Climate change**.
  - When the ocean warms, it releases heat and moisture into the atmosphere **intensifying storms**, causing severe weather events.
  - Lowering the level of oxygen in the water.
  - Rising ocean temperatures **directly affect Corals**.

### 5.7.9. CONJOINED SILVERLINE (CIGARITIS CONJUNCTA)

- It is a **new butterfly species** identified in Karnataka's Kodagu district.
  - It is **first such find in Western ghats** in last **4 decades**.
- It consists of **fused spots and bands on underside of wings**, and **shiny silver lines** in centre of those bands.
- While **males have "dark shining blue" wings**, females have **"dark brown" wings**.
- Lower tips of their wings have a pattern of **orange dots that look like "false head" to protect them from predatory attacks**.

### 5.7.10. HUMBOLDT'S ENIGMA

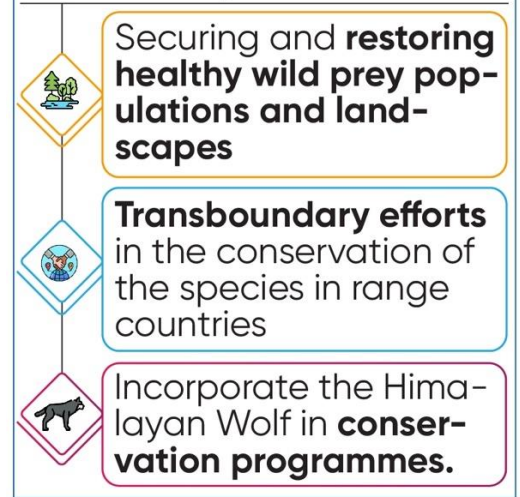
- It was proposed by **Alexander von Humboldt** stating that **mountain regions generally display higher diversity** than tropical regions.

- While the **conventional belief** is that the world's **tropical areas have greater productivity and diversity**.
- The proponents of **Humboldt's enigma** hold that many **areas outside the tropics are also highly biodiverse**. i.e., the Mountains
- Supporting this, scientists have also found that the **more heterogeneous the geological composition of mountains is, the more biodiverse they are**.

#### 5.7.11. HIMALAYAN WOLF

- **First-ever IUCN assessment** of the Himalayan Wolf published.
- **Major Findings:**
  - **Declining Population:** IUCN's assessment has flagged a 'continuing decline in area, extent and/or quality of habitat' of Himalayan wolves.
  - Estimated total **population of 2,275–3,792 (227–378 in India)** mature individuals.
  - **Major threats**
    - ✓ **Depredation Conflict:** Due to Habitat modification and encroachment and depletion of wild prey populations.
    - ✓ **Hybridization with Dogs:** Especially in Ladakh and Spiti where populations of feral dogs are increasing.
    - ✓ **Illegal Hunting:** For trade in its fur and body parts including paws, tongues, heads, etc.
- **About Himalayan Wolf (*Canis lupus ssp. chanco*)**
  - **Habitation:** **High altitude** (above 3,900m) in the Himalayas (**Nepal and India**) and the **Tibetan Plateau**.
  - Possess genetic **adaptations to cope with hypoxic conditions**.
  - **Characteristics:** Thick fur with brown coloration on the back and tail with paler yellows on the face, limbs, and underside.
  - **Larger than the Indian and European wolves**.
  - Prefer wild over domestic prey.
  - **Conservation Status**
    - ✓ IUCN's Red List: **Vulnerable**
    - ✓ Wildlife Protection Act, 1972: **Schedule I**
    - ✓ CITES: **Appendix I**

### Measures suggested for the protection of Himalayan wolves



#### 5.7.12. TIBETAN BROWN BEAR

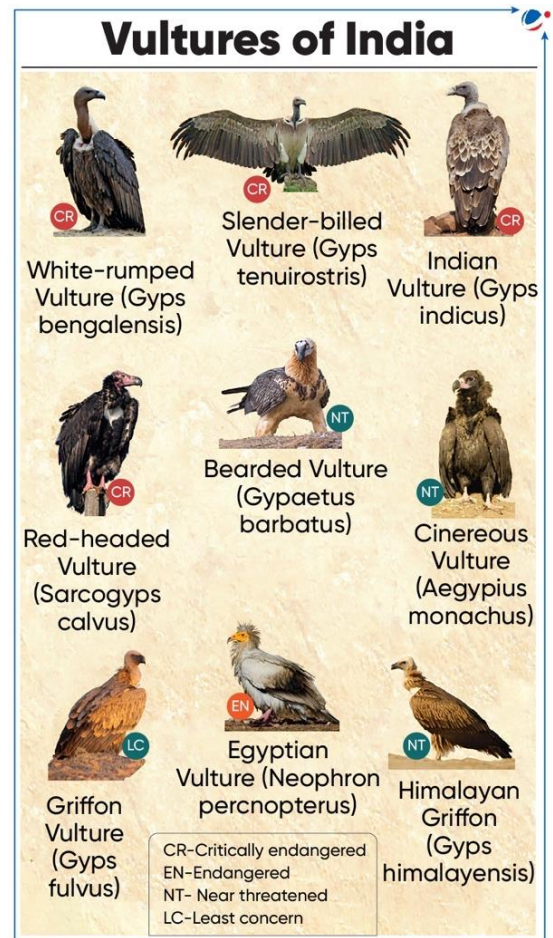
- India has recorded its first-ever confirmed sighting of a rare Tibetan brown bear (*Ursus arctos pruinosus*) in Sikkim.
- **About Tibetan Brown Bear**
  - It is also known as the Tibetan blue bear.
  - It is an omnivore (eat and survive on both plant and animal matter)
  - **Feature:** Has a distinctive 'V' shaped white chest mark
  - **Habitat:** Inhabits alpine forests, meadows, and steppe, at elevations from 2,000 to 4,500 metres.
    - ✓ Mainly found in Nepal, Bhutan and the Tibetan plateau.
  - **Status:**
    - ✓ Wildlife Protection Act, 1972 (Schedule 1)
    - ✓ CITES (Appendix 1)

#### 5.7.13. KUMKI ELEPHANTS

- The **Odisha government requested the deployment of kumki elephants from Tamil Nadu** to address escalating human-elephant conflicts.
- **Kumkis, trained captive elephants**, excel in trapping, rescuing, and tranquilizing wild elephants.
  - Their strategic deployment aims to **mitigate damage to crops, human settlements, and minimize the risk** to both human and elephant lives.
  - Additionally, kumki elephants prove valuable for **forest patrolling and rescue operations**.
  - **Tamil Nadu has used Kumkis successfully**.

### 5.7.14. VULTURE RESTAURANT

- Vulture restaurant set up in Jharkhand to conserve Critically Endangered species.
- A 'Vulture Restaurant' has been established in **Koderma** district, Jharkhand to **address adverse impact of livestock drugs, particularly diclofenac, on vultures**.
  - Vulture restaurant is an **undisturbed area** where **non-toxic, poison-free meat and carcasses are provided** for vultures and other scavengers.
    - ✓ There are other such restaurants in **Raigad, Gadchiroli** and **Nashik** district in **Maharashtra** and **Kangra** district in **Himachal Pradesh**.
  - **Diclofenac** is **Non-steroidal Anti-Inflammatory drugs**, used in veterinary practice **that has been proven toxic to vultures** and other birds of prey.
- **Vultures** are large **carion-eating birds** found mainly in **tropics** and **subtropics**.
  - **9 species of vultures** are found in India. Out of them, **3 species are migratory** (Cinereous vulture, Griffon vulture and Himalayan vulture).
  - They **maintain clean environment** by acting as nature's garbage collectors and **control spread of wildlife diseases** from rotting corpse.
- **Conservation status:** Protected under **Schedule (1) of Wildlife Protection Act 1972**.
- **Threats:** **Loss of natural habitats** due to human activities, **Food scarcity**, Population decline due to **exposure to drug diclofenac**, **Electrocution** by power lines etc.
- **Vulture Conservation Initiatives**
  - **Ban** on Veterinary use of **Diclofenac (2006)**, **Ketoprofen** and **Aceclofenac (2023)**.
  - **Action Plan for Vulture Conservation in India 2020-25**.
  - **Vulture Conservation Breeding Centre** in Pinjore, Haryana.



### 5.7.15. EURASIAN OTTER

- Recently, Eurasian otter was found in the **Chinnar Wildlife Sanctuary in Kerala**.
- **About Eurasian otter (Lutra lutra):**
  - **Features:** Shy, nocturnal, good swimmer and fish catcher etc.
  - **Habitat:** Semi-aquatic, lives in water bodies, marshes, swamp forests, coastal areas etc.
  - **Distribution:**
    - ✓ **World:** Europe, Asia and Africa.
    - ✓ **India:** Northern, northeast and southern India.
  - **Conservation Status:**
    - ✓ **IUCN List:** Nearly Threatened
    - ✓ **Wildlife Protection Act:** Schedule I
    - ✓ **CITES:** Appendix I
- **Threats:** Pollution, poaching, habitat loss, accidental trapping etc.

### 5.7.16. BINTURONG (*ARCTICTIS BINTURONG*) AND SMALL-CLAWED OTTER (*AONYX CINEREUS*)

- These two new mammalian species were added to list of fauna in Assam's Kaziranga National Park.
  - Both are listed under **Schedule I of Wildlife Protection Act 1972**.
- **Binturong** (Bearcat) largest civet in India.
  - **Native: South-East Asia.**
  - **Distribution: India** (Meghalaya, Sikkim), Indonesia, Thailand, Malaysia, etc.
  - **Conservation: Vulnerable** (IUCN); **Appendix III** (CITES).
- **Small-clawed otter** (Asian Small-clawed Otter) primarily found in **freshwater habitats**.
  - **Distribution: India** (West Bengal, Assam, Arunachal Pradesh, Karnataka, Tamil Nadu, and Kerala), Southeast Asia and Southern China.
  - **Conservation: Vulnerable** (IUCN); **Appendix I** (CITES).

### 5.7.17. INVASIVE MOSQUITOFISH SPECIES

- These two species of mosquitofish are **Gambusia affinis** and **Gambusia holbrooki**. Both are detrimental **Invasive Alien Species**.
  - Mosquitofish was **introduced into local water bodies to address mosquito** menace by states like Andhra Pradesh, Odisha and Punjab.
  - Their **feeding habits** and **aggressive behavior in habitats** have led to **extinction of endemic species**.
- **Invasive Alien Species (IAS)** are animals, plants or other organisms that are introduced from outside their natural range, **negatively impacting native biodiversity, ecosystem services or human well-being**. Example, Water hyacinth, Lantana, etc.
  - Globalization through **increasing trade, transport, travel and tourism** increases introductions of invasive species to new areas.
- **Impact of Invasive Alien Species**
  - **Economic Impact:** Global economic cost of IAS exceeded \$423 billion annually in 2019.
  - **Food Security:** Invasive species are major cause of **crop loss and degraded soil quality**.
  - **Ecological Impact:** 1 in 10 species on IUCN Red List are threatened by IAS.
  - **Health Impact:** They can serve as **vectors for infectious diseases**. Example, **Malaria, West Nile Fever** etc.

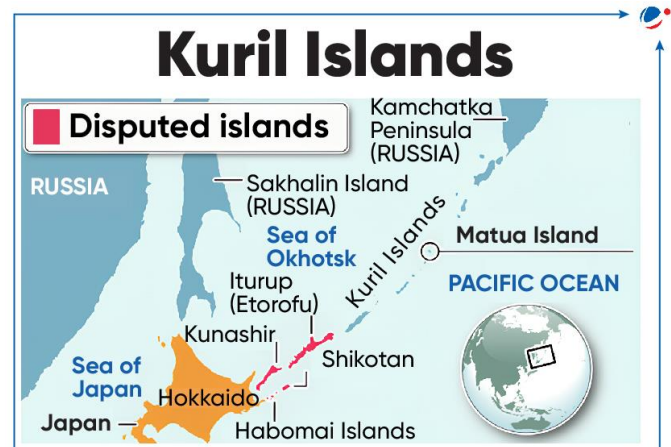
- **Efforts taken to control Invasive Species**
  - **Target 6 of Kunming-Montreal Global Biodiversity Framework** eliminates IAS impacts on biodiversity by 2030.
  - **Global Invasive Species Programme, 1997.**
  - **Ramsar Convention.**

#### About Gambusia

- **Native to U.S.**, it has been introduced as a **form of biological mosquito control**. It feeds on mosquito larvae.
- It lives in **Shallow waters and penetrates dense vegetation growth** where larvae and pupae hide.
- In 1928, Gambusia was first introduced in India during British rule.

### 5.7.18. KURIL ISLANDS

- **Earthquake** of magnitude 6.3 on the Richter scale occurred in Kuril Islands.
- **Kuril Islands** is an archipelago that extends from **Kamchatka Peninsula (Russia) to Hokkaido Island (Japan)**.
  - It separates the **Sea of Okhotsk from Pacific Ocean**.
  - Many of its islands are **geologically active**.
  - **Russia and Japan both assert sovereignty over four islands** (referred to as the Northern Territories in Japan and South Kurils in Russia).



### 5.7.19. WILLINGDON ISLAND

- The demand has been raised to revive Willingdon Island, which took on a deserted appearance following the relocation of container terminal operations to Vallarpadam (Kerala).
- **Willingdon Island**
  - It is one of the **largest man-made islands** in the country, **located near Kochi**.
  - The island was created in **1933** and named after the then British Viceroy of India, **Lord Willingdon**.

- The island was created with **soil trench produced during the deepening of the famous Vembanad Lake** for the construction of the modern Kochi Port.

### 5.7.21. WILDLIFE (PROTECTION) LICENSING (ADDITIONAL MATTERS FOR CONSIDERATION) RULES, 2024

- Ministry of Environment Forest and Climate Change (MoEFCC) notified Wildlife (Protection) Licensing (Additional Matters for Consideration) Rules, 2024
- These rules aim to **replace Wildlife (Protection) Licensing (Additional Matters for Consideration) Rules, 1983.**
- 1983 rules **prohibited issuing licences to trade in a wild animal categorised under Schedule I or Part II of Schedule II under Wildlife Protection Act (WPA) 1972.**
  - Licences were granted in **exceptional cases** with previous **approval of central government.**
  - This condition has been changed in 2024 rules.
- **New 2024 rules**
  - **No such licence shall be granted if it relates to any wild animal specified in Schedule I to the Act,** except with previous consultation of Central Government.
- **Chief Wildlife Warden or an Authorised Officer** issues the licence **based on parameters** like existing licences and implications of licence on hunting or trade of wild animals concerned etc.
- **Impact of New Rules:** Might **adversely affect mammals and birds enlisted in Schedule II**, as some of them are already endangered. Examples: Bulbuls, Falcons, Turtles, Geckos, Snakes, Bats etc.
- Earlier, **Wildlife Protection (Amendment) Act, 2022** has **reduced the number of Schedules from 6 (as of 1972 act) to 4.** (Refer Table)

<b>Schedule I</b>	Animal species with <b>highest level of protection.</b> <b>Example:</b> Blackbuck, Sloth Bear, Cheetah, Swamp Deer etc.
<b>Schedule II</b>	Animals with <b>lesser levels of protection.</b> <b>Example:</b> Nilgai, Indian Flying fox, Andaman Bulbul etc.
<b>Schedule III</b>	<b>Protected Plant species.</b> <b>Example:</b> Neel Kurinji, Pitcher plant, Tree turmeric etc.
<b>Schedule IV</b>	Specimens listed in <b>Appendices under Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES).</b> <b>Example:</b> River Dolphin, Spider Monkeys, etc.

### 5.7.22. WADGE BANK ECOSYSTEM

- Wadge Bank Ecosystem **may be impacted by proposed exploration and development of oil and gas blocks.**
  - These blocks will be explored under the **Hydrocarbon Exploration and Licensing Policy (HELP).**

### 5.7.20. DEEP-SEA CORAL REEF

- Scientists mapped largest deep-sea coral reef off the US Atlantic coast
- Underwater mapping technology enables to **construct 3D images of ocean floor**, facilitating the mapping of coral reef at depth 200 meters to 1,000 meters where sunlight doesn't penetrate.
  - More of **ocean floor is covered by deep-sea reefs** than by tropical reefs, which are found at 0-30 meters depth with light penetration.
    - ✓ **Great Barrier Reef in Australia** is the **biggest tropical coral reef system** in world.
- Deep-sea corals are **colonies of small animals** that build a **common skeleton, which grows into many shapes and colors.** They **provide habitat** for sharks, swordfish, shrimp, fish etc.
- **Corals** are **invertebrate animals** belonging to a **large group of colourful animals** called **Cnidaria.**
  - Coral reefs are made up of colonies of hundreds to thousands of tiny individual corals, called **polyps.**
  - These **marine animals** have **hard exoskeletons made of calcium carbonate.**
  - In India, Coral reefs are found in **Gulf of Kutch, Gulf of Mannar, Andaman & Nicobar, Lakshadweep Islands** and **Malvan** (Maharashtra).
- **Importance of Corals:** **Protect coastlines** from storms and erosion; **Provide jobs** for local communities; Offer **opportunities for recreation** etc.
- **Threats to Corals:** Disturbance from oil and gas drilling, Ocean acidification, Unsustainable fishing, Coral harvesting etc.

#### Difference between Deep Sea Corals and Shallow Water Corals

Specifications	Deep Sea Coral	Shallow-water corals
<b>Diversity of corals</b>	Rely either by <b>feeding on organic material</b> falling from surface or by <b>feeding on small plankton</b>	Rely on <b>photosynthetic algae</b> (tiny single-celled plants, known as <b>zooxanthellae</b> ) that live within corals and provide their hosts with nutrition
<b>Appearance</b>	<b>White</b> in coloration	<b>Brown and green</b> colors due to algae
<b>Structure formed</b>	Groves in form of tree, feather, column, or fan shapes, etc.	Rock-like reefs

- **About Wadge Bank Ecosystem**
  - It lies **south of Cape Comorin in the Kanyakumari** district in Tamil Nadu.
  - It is part of **Indian continental shelf**.
  - It is one of the most **productive coastal areas** in the world.
  - In this region, seas (**Bay of Bengal and Arabian Sea**) meet with a distinct pattern of water currents in different seasons (**southwest and northeast monsoon**).

### 5.7.23. KUNO NATIONAL PARK (KNP)

- Recently, a **Namibian cheetah translocated to KNP** under **Project Cheetah**, gave birth to 4 cubs.
- **About Kuno National Park**
  - **Location:** In **Madhya Pradesh** and is a part of **Central Indian Vindhyan Hills**.
  - **Forest:** **Dry Deciduous**.
  - **River:** **Kuno river** is main source of water.
  - **Flora:** Mainly dominated by **Kardhai, Salai, Khair trees**, along with **vast grasslands**.
  - **Fauna:** Spotted deer, Chousingha, Nilgai, Black buck, Leopard, Wild dog or Dhole, etc.



**SMART QUIZ**

You can scan this QR code to practice the Smart Quiz of Environment at our open test online platform for testing your understanding and recalling of the concepts.



# Lalshya

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# 6. SOCIAL ISSUES

## 6.1. SOCIALISM IN INDIA

### Why in the News?

Eminent Socialist leader and former Chief Minister of Bihar Karpoori Thakur has been conferred with Bharat Ratna, posthumously.

#### Contribution of Karpoori Thakur towards Socialism in India

- **Social Justice**
  - Implemented **Mungerilal Lal Commission's recommendations** to provide for **reservations for backward castes** in public employment and government educational institutions.
    - ✓ **Split backward castes in two blocs** (sub-categorization) to ensure social justice within backward communities (popularly known as '**Karpoori Formula**').
    - ✓ It set the stage for implementation of **Mandal Commission report**.
  - Implemented **3% reservations for women and another 3% for poor segments of upper castes** which was later struck down by the judiciary.
  - Conducted **Panchayati Raj elections in 1978**, to reconfigure upper caste hegemony in rural power structure. (Next Panchayati Raj elections in Bihar were held only in 2001.)
- **Education**
  - **Abolished English language being compulsory for school students**, to enable deprived people to move up.
  - Made teaching of **Hindi mandatory for Christian missionary schools**.
  - **Did away with fee for children from a weaker economic background**.
- Credited with enforcing **total prohibition of alcohol in Bihar in 1970**.

### About Socialism

- Socialism deals with **principles which envisage the establishment of a society** where **all individuals enjoy equality** in different walks of life – economic, political, social, etc.
- **Two types** of socialism: **Revolutionary** (Marxian) socialism and **Evolutionary** socialism.
  - **Revolutionary**: Holds that socialism can be brought about only by violent revolution by abolishing private property and establishing the dictatorship of the proletariat.
  - **Evolutionary**: Believes social forces wishing to bring socialism should help organs of the state to form policies which are socialistic and should get them implemented.
- **Prominent Indian socialist leaders** include Acharya Narendra Dev, Jaya Prakash Narayan, and Ram Manohar Lohia, among others.
  - **Acharya Narendra Dev's** visit to address a peasant rally at Waini motivated **Karpoori Thakur** to join the freedom movement and Socialist politics.

### Contributions of Socialist politics in India

- **Pre – independence**
  - Socialist ideals like anti-colonialism, equality, social justice, etc., provided an **ideological framework for freedom struggle**.
  - Socialist leaders and organizations played a prominent role in **grassroots mobilization** and organizing workers, peasants, and marginalized communities in the nationalist movement.
- **Post – independence**
  - **Constitutional**: Ideals of equality and social justice enshrined in the Constitution are inspired by socialist principles.
  - **Strengthening democracy**: Socialist leaders, parties, and movements led to the emergence of regional political parties which played a crucial role in strengthening the Indian democratic system.
    - ✓ Socialist parties and movements consistently **critiqued dominant socio-economic structures** holding the state accountable and pushing for reforms.

- **Economic policy:** Socialist policies emphasized on **role of the state in the development of key sectors** like steel, energy, heavy industries, etc.
  - ✓ This led to the development of the **Mahalanobis Plan under the Second Five-Year Plan (1956 - 61)** and creation of **Public Sector Enterprises (PSEs)**.
- **Social welfare:** Socialist principles influenced establishment of different **welfare programmes** for weaker and marginalized sections such as Public Distribution System, reservation policies, etc.
  - ✓ Different **socialist movements** like the **Bhoodan movement by Acharya Vinobha Bhave** not just directly benefitted the underprivileged but also **affected the country's policies and schemes such as land reforms**.

### Contemporary Relevance of Socialism in India

- **Economic inequality:** Addressing stark economic equality needs emphasis on socialist principles such as wealth redistribution, guaranteed access to basic necessities, etc.
  - e.g., **Mandatory Corporate Social Responsibility and Progressive taxation policy** are, in essence, a reflection of socialist ideals in the economic sphere.
- **Issues with Capitalism:** Market-driven model of growth is associated with different sets of issues such as **exploitation of labour, environmental degradation**, etc.
  - In such a context, socialism can prove to be an **alternative to promote collective well-being** over individual profits.
- **Social justice imperative:** Persistent social issues such as caste discrimination, disparity in access to basic amenities like health and education, etc., call for the inclusion of socialist principles in state policies.

### Contemporary Challenges for Socialism

- **LPG reforms:** Economic liberalization under LPG (Liberalization, Privatization, and Globalization) reforms in the early 1990s resulted in a shift socialist policy of the past towards a more **market-oriented approach**.
  - **Integration of the Indian economy with the Global economy** resulted in greater emphasis on the need to participate in global trade and attract foreign investment.
- **Adverse economic precedents:** Stagnant growth rate (around 4% - termed by some scholars as '**Hindu Rate of Growth**') during the pre-LPG reforms era.
  - Economic and business activities during that era were characterized by **License-Quota-Permit Raj** which resulted in **rent-seeking activities, and inefficient performance of PSEs**, among others.
- **Political:** Fragmented political ecosystem with the emergence of stronger regional parties and deviation from ideologies for electoral gains.
- **Socio-cultural:** Growing middle-class aspirations for material prosperity make individual aspirations as incompatible with the collective well-being advocated by socialism.

### Way Forward

- **Balancing socialism with market economy:** Strike an effective balance between state intervention and market mechanisms to achieve inclusive and sustainable development.
  - Promote a **socially responsive market economy** by ensuring effective implementation of concepts like Corporate Social Responsibility, ESG, etc., in corporate governance.
- **Strengthen public sector efficiency:** By enhancing transparency, improving accountability, and reducing the bureaucratic red tape to curb corruption and enhance the effectiveness of service delivery to citizens.
- **Encourage democratic socialism:** Through participatory decision-making and civic engagement in policymaking to reflect diverse needs and aspirations in policies of the State.
  - **Harness technology**, such as digital platforms, for efficient governance, citizen engagement, and empowering marginalized communities.

## 6.2. PRADHAN MANTRI ADI ADARSH GRAM YOJANA (PMAAGY)

### Why in the news?

The **Parliamentary panel on Social Justice and Empowerment** has highlighted slow pace of implementation of the Pradhan Mantri Adi Adarsh Gram Yojana (PMAAGY).

### About PMAAGY

- **Vision:** Aims to achieve integrated **development of 36,428 villages with more than 500 tribal populations and 50% or more ST persons** in them.
  - It is a **revamped version of the Special Central Assistance to Tribal Sub-Scheme (2017)**, under which funds were provided to the States with notified STs for the development and welfare of tribal people.
- **Objectives:**
  - Preparation of **Village Development Plans**.
  - **Maximizing the benefit of the schemes of the Centre and States** to the Scheduled Population.
  - **Improving the infrastructure in vital sectors** like health, education, connectivity and livelihood.
- **Ministry:** Ministry of Tribal Affairs
- **Convergence:** **Converges with 58 schemes of the Centre and the States** that have Schedule Tribe Component to bridge various gaps.

*To know more about the scheme, refer Appendix at the end of the document.*





### Challenges in the implementation of the Scheme

- **Delay in allocation of funds:** In 2 years of its implementation **funds have been released only for less than 40%** of the number of villages approved.
- **Lack of a fixed time limit:** There is no time limit fixed for the integrated development of each village.
- **Low rate of approval of Village development plans:** **Only 24% of the villages** identified under the **Integrated Plan were approved** by the Project Appraisal Committee in 2 years.
- **Lack of implementation guidelines/Standard Operating Procedure (SOP):** The Ministry of Tribal Affairs is yet to come up with a clear implementation guideline to streamline the process.
- **Lack of Specific data:** The specific **data on the population of Particularly Vulnerable Tribal Groups (PVTGs) in several States/UTs is not available.**

### Way forward

- **Lay down guidelines/SOPs:** Clear guidelines concerning the integrated development of tribal villages along with a specified time limit.
  - As a corollary, **standardise Village Development Plans** to reduce the delays in approval and fund allocation.
- **Review the criteria for selection of villages:** Steps can be taken to **include villages that have less than 50% ST population** for a more holistic and inclusive implementation of the scheme.
- **Monitoring of the implementation:** Necessary **support systems need to be created at the District/Division level** to help the Project Monitoring Unit in coordination with the District Level Committee.
- **Creation and maintenance of a reliable database:** The **database related to the status of PVTGs** in various states and **implemented development plans** can be **maintained centrally** by the Ministry of Tribal Affairs.

### Quick Facts

-  **Period: 2021-26**
-  **Nature: Centrally Sponsored Scheme**
-  **Coverage: All States and UTs having notified ST population**
-  **Implementing Agency: Respective State Government**

Scan the QR code to know more about **Tribal Development**.

**Weekly Focus #77:** Tribals in India- Charting a Development Path



## 6.3. NEWS IN SHORTS

### 6.3.1. GENDER-BASED VIOLENCE

- National Workshop on Role of Panchayati Raj Institutions (PRIs) in Addressing Gender-Based Violence Organised.
- During workshop “Panchayats Free From Gender-Based Violence (GBV) – A Handbook for Elected Representatives” was released.
- **Need to address GBV in rural India**
  - **Wide prevalence** of sensitive issues like Child Marriage, Human Trafficking, Domestic Violence etc. in rural areas.
  - **Commitments under International Conventions** like **Convention on Elimination of All forms of Discrimination against Women and Convention on Rights of Child.**
  - **Promote SDG 5:** Gender-based plan addressing GBV will promote gender equality.
  - Localization of **Sustainable Development Goals (LSDGs) Theme 9** aims **Women Friendly Villages**, ensuring protection, economic & inclusive growth etc. of women.

Role of PRIs in Addressing GBV	
	Integration of women's issues in <b>Gram Panchayat Development Plan</b> , ensuring Gender Based Plan.
	<b>Promote Legal Literacy</b> , Counselling Services etc. To vulnerable people.
	<b>Organize Mahila Sabha</b> to ensure women's participation in decision-making process.
	Promote <b>skill development and livelihood opportunities</b> for women.
	<b>Leadership Training Program</b> for Elected Women Representatives.
	<b>Safety Audits</b> to create safe spaces.
	<b>Strengthen the Convergence</b> with Civil society/SHGs for addressing GBV.

### 6.3.2. ALLIANCE FOR GLOBAL GOOD-GENDER EQUITY AND EQUALITY

- India announced a **new alliance for Global Good, Gender Equity and Equality** at the **World Economic Forum (WEF) Annual Meeting** in Davos, Switzerland.
  - It aims to **bring together global best practices, foster knowledge sharing, and attract investments** in key areas such as women’s health, education, and enterprise.
  - **It builds on commitments of G20 Leaders’ Declaration** and India’s dedication to women-led development.
  - Supported by **Bill and Melinda Gates Foundation**, and anchored by **Confederation of Indian Industry Centre for Women Leadership**.
  - WEF will be a **‘Network Partner’** and **Invest India** an **‘Institutional Partner’**.

### 6.3.3. PRERANA PROGRAM

- **Ministry of Education (MoE)** launched the **“Prerana: An Experiential Learning program”** to empower participants with leadership qualities
- It is a **week-long residential program** for selected students of class IX-XII.
  - **20 Students** are selected for each batch (10 boys and 10 girls)
- It is to **run from a Vernacular School**, established in 1888, in **Vadnagar (Gujarat)**
- The **curriculum was prepared by IIT Gandhi Nagar** based on **nine value-based themes**.
- It aims to embody the **spirit of "Vasudhaiva Kutumbakam"** and **foster unity in diversity**.

### 6.3.4. DENOTIFIED, NOMADIC AND SEMI-NOMADIC TRIBES (DNTS)

- **National Human Rights Commission** stresses on the need for implementation of **Idate Commission** report.
- **Idate Commission** or the **National Commission for Denotified, Nomadic and Semi-Nomadic Tribes** was constituted in **2014** under **Bhiku Ramji Idate**.
  - The commission was mandated to **compile a state-wise list** of Denotified Nomadic and Semi-Nomadic Tribes (DNTs), **identify DNTs** not included in **SCs/STs** or **OBC lists**, recommend **measures for their welfare, etc.**
- **About DNTs**
  - **These communities** were **notified as criminals** under the **Criminal Tribes Act 1871** by British to prevent their future engagement with criminal activities.

- ✓ They were forcibly **alienated from their traditional occupations and habitations** through other subsequent legislation.
- The act was **repealed by the Indian Government in 1952** and they were declared DNTs.
- **Challenges faced by DNTS**
  - There is **no Central list** for these communities **neither are they recognised as a separate group** (like SC/STs) under the **Constitution**.
  - They are **mostly outside the purview** of government **welfare initiatives**.
  - They are mostly **uneducated and suffer form lack of basic infrastructure** facilities like drinking water, shelter, healthcare.
- **Welfare initiatives:**
  - **Development and Welfare Board for DNTs** established in 2021 for a period of 3 years (extendable up to 5 years).
  - **Scheme for Economic Empowerment of DNTs (SEED)** for educational empowerment, health insurance, livelihoods and housing.

### Major Recommendations of Idade Commission



Establish a permanent commission for the DNTs, SNTs and NTs with statutory status



Establish a separate department for their welfare in states with their seizable populations



Detailed survey of the families of DNTs to work out their estimated population and their concentration



Enable legal and Constitutional protection by including a third schedule in Prevention of Atrocities Act, 1989



DNTs not included in SCs/STs/OBCs list should be listed as OBCS



**SMART QUIZ**

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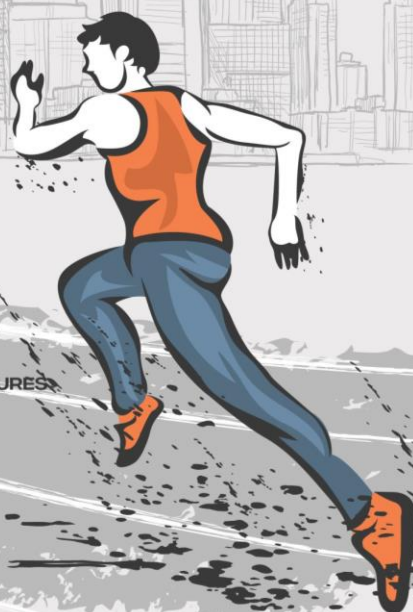


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# 7. SCIENCE AND TECHNOLOGY

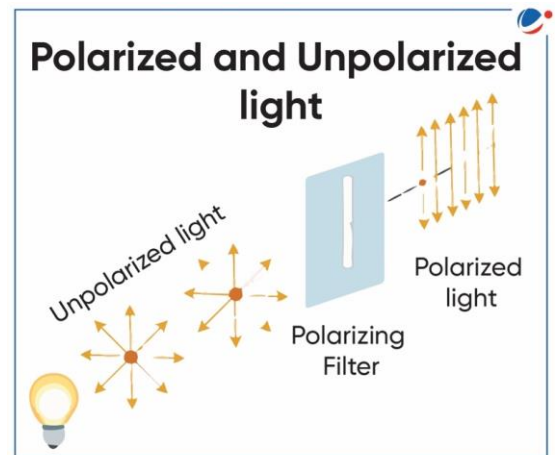
## 7.1. X-RAY POLARIMETER SATELLITE (XPOSAT)

### Why in news?

ISRO successfully launched the **X-ray Polarimeter Satellite (XPoSat)** by Polar Satellite Launch Vehicle (PSLV) -C58.

### More on news

- PSLV-C58 was the **60th flight of ISRO's Polar Satellite launch Vehicle**.
  - PSLV is a 4-stage launch vehicle propelled by Solid fuel at first and third stages and Liquid fuel at second and fourth stages.
  - It has multiple satellite launch capability and multiple orbit capability.
- After Placing XPoSAT at orbit of 650 km altitude, **Fourth stage of PSLV** was brought to a **lower altitude** (about 350 km) for conducting the **PSLV Orbital Experimental Module-3 (POEM-3) experiment**.
  - POEM-3 experiment will be executed to meet the objective of 10 identified payloads, supplied by ISRO and IN-SPACe.



### What is Polarization and X-ray polarimetry?

- Normal light (**unpolarized light**) consists of electric field and magnetic field vectors which **vibrate perpendicularly to each other**. (refer to figure)
- Light waves that travel **in a single plane** are known as **polarized light waves**.
- The process of transforming unpolarized light into polarized light is known as **polarization** and can be achieved through **Scattering, reflection, refraction or use of Polaroid/ polarizing filter**.
- Studying/measuring the **polarization of X-rays** is **X-Ray polarimetry**.
  - X-rays are high-energy electromagnetic waves.
- It involves studying:
  - **Angle of the polarization** i.e the direction of electric field vector with respect to a reference direction.
  - **Degree of polarization** i.e Portion of an electromagnetic wave from a light source, which is polarized.

### About XPoSat (X-ray Polarimeter Satellite)

- XPoSat is the **first dedicated satellite from ISRO** to carry out research and **measure X-ray emission** from celestial sources like black holes and neutron stars.
- It is the **second satellite** in the world to **study X-ray polarization**, first being NASA's **Imaging X-ray Polarimetry Explorer (IXPE)**, launched in **2021**.
- **XPoSat payloads**:
  - **POLIX (Polarimeter Instrument in X-rays)**: To **measure polarization of X-rays** in the energy band 8-30keV.
    - ✓ It is expected to observe about 40 bright astronomical sources during the mission's lifetime of about 5 years.
  - **XSPECT (X-ray Spectroscopy and Timing)**: To provide fast timing and good spectroscopic resolution in soft X-rays.
    - ✓ It will carry out **long-term spectral and temporal studies of cosmic X-ray sources**, e.g. pulsars, black hole binaries, magnetars, etc.

### Know the term

- **Scattering of light**: It is the phenomenon in which **light rays deviate from their original path** upon striking an obstacle like dust, gas molecules, or water vapors.
- **Spectroscopy**: It is the study of the **interaction between electromagnetic radiation and matter**.
  - ▷ It is used in astronomy and remote sensing to **measure the chemical composition and physical properties of astronomical objects**.

### Significance of the Mission

- **Understanding the nature of radiations**: Polarization measurements lead to better understanding of the emission processes from astronomical sources.

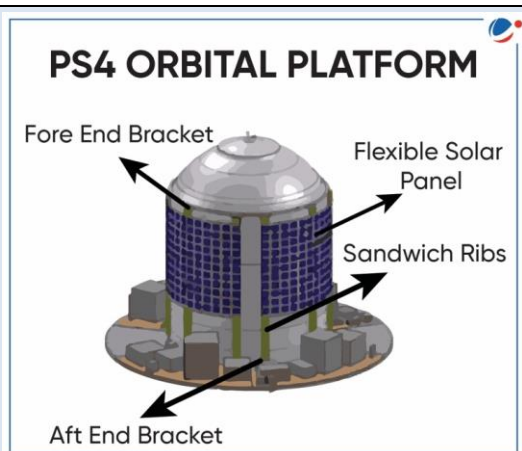
- **Advanced data collection:** Polarization study of celestial sources was done either in the optical or radio bands before. X-ray polarimetry in medium energy band is being done for the first time.
- **Chemical Composition of celestial bodies:** X ray polarimetry reveals the physics and elemental composition of celestial bodies like Pulsars, Magnetars etc. and can provide insights into interaction of matter with magnetic fields.
- **Better understanding of Universe:** X-ray polarization measurements, especially on celestial objects like black holes, neutron stars, and active galactic nuclei, hold the potential to significantly improve the understanding of their physics.

### Conclusion:

XPoSAT is a crucial step forward in quest to understand the intricate workings of complex universe; mission has implications for various scientific disciplines and technological developments.

#### About PSLV Orbital Experimental Module (POEM)

- Orbital Platform Experiments in PSLV (PS4-OP) is a novel idea, which **uses the spent PS4 stage (fourth stage of PSLV)** as a 3-axis stabilized microgravity environment for short duration scientific experiments.
- This is intended to **carry out in-orbit scientific experiments** for an extended duration of 4-6 months **for small scientific payloads**.
- The advantage of the platform is that the stage has standard interfaces & packages **for power generation, telemetry, tele-command, stabilization, orbit keeping & orbit manoeuvring**.
- **Earlier POEM experiments:** POEM 1 and POEM 2 were launched in June 2022 and April 2023 respectively.



#### Related News

- India's space telescope AstroSat has for the **first-time measured X-ray polarization** from the Cygnus X-1 black hole.
  - Cygnus X-1 is one of the first **confirmed black hole systems** in our galaxy.
- **About AstroSat**
  - Launched by ISRO in 2015 using PSLV-C30 in Low Earth Orbit.
  - **First dedicated Indian astronomy mission** with a multi-wavelength space observatory.
  - **It has five payloads** - Ultraviolet Telescope (UVIT), Cadmium Zinc Telluride Imager (CZTI), Scanning sky motor etc.
  - **Objectives:**
    - ✓ To understand high energy processes in binary star systems containing neutron stars and black holes.
    - ✓ Estimate magnetic fields of neutron stars.
    - ✓ Study star birth regions and high energy processes in star systems lying beyond our galaxy.
    - ✓ Detect new briefly bright X-ray sources in the sky.
    - ✓ Perform a limited deep field survey of the Universe in the Ultraviolet region.

## 7.2. INTERNATIONAL SPACE STATIONS

### Why in news?

Russia has extended its cross-flight programme with NASA transporting astronauts to the International Space Station (ISS) until 2025.

### More on News

- Cross-flights have been extended **to maintain the reliability of the ISS operation** and will be carried out on Russian and U.S. spacecraft.
  - Cross-flights involve sending **one Russian cosmonaut as part of an American crew to the space station**, and vice versa- one American astronaut to the ISS as part of the crew of a Russian spacecraft.

#### Key Facts about ISS

- > Travels at a speed of **5 miles/second**, orbiting Earth about **every 90 minutes**.
- > **Weights almost 400 tonnes**.
- > **Covers an area as big as a football pitch**.
- > **Largest artificial body in orbit**.
- > **Has been continuously inhabited for more than 20 years** beginning with Expedition 1 in 2000.
- > **Orbital inclination** is 51.6°, permitting it to fly over 90% of inhabited Earth.





## About the International Space Station (ISS)

- It is a **habitable artificial satellite**, in low Earth orbit (at an altitude of between 370–460 km).
- **Key partners for ISS:**
  - European countries (**represented by European Space Agency**)
  - United States (**National Aeronautics and Space Administration**)
  - Japan (**Japan Aerospace Exploration Agency**)
  - Canada (**Canadian Space Agency**) and
  - Russia (**Roscosmos**)
- Its **first component was launched into orbit in 1998** and new modules were added as recently as 2021.
  - It will continue to be a working laboratory and outpost in orbit **until at least 2030**.
- ISS **was taken into space piece-by-piece** and gradually built in orbit, with its **assembly requiring more than 40 missions**.

## Significance of ISS

- **Research and Science:** It provides opportunities to conduct meaningful studies on topics such as **DNA sequencing, robotics, and satellites in microgravity environment** which is not possible on Earth.
  - Research also includes **studying effects of long-term space radiation exposure** on the human body.
- **International Cooperation:** International partnership of space agencies has led to global collaboration in **developing space facilities; communications networks, and scientific research**.
- **Human health:** Research is being carried out to **study disease formation, testing drugs and diagnostic tools, and examining the inner workings of the human body**.
- **Low Earth Orbit Economy:** ISS is **used by small businesses and entrepreneurs** to test their technology in space.
  - It supports development of new and improved products, and provides growth for commercial ventures.
- **Long duration Spaceflight and human habitation:** It serves as a **testing ground to study how to keep astronauts safe and healthy on long-duration missions**.

### Other Space stations

- **Russia: Salyut 1** was world's first space station launched by the Soviet Union on April 19, 1971. Then Russia launched various space stations from **Salyut 2 to Salyut 7, and Mir**.
- **China: Tiangong 1** launched in 2011, **Tiangong -2** launched in 2016 were test space labs and **Tiangong space station was launched in 2021** (fully operational since late 2022).
- **USA: Skylab:** USA's first space station, launched by NASA in 1973.
- **Future missions:**
  - **NASA's** Artemis Base Camp on the moon's surface and the Gateway in lunar orbit.
  - **India's Bharatiya Antariksha Station.**

### About Bharatiya Antariksha Station: India's own Space Station

- Prime Minister of India directed that India should now aim for setting up '**Bharatiya Antariksha Station**' (**Indian Space Station**) **by 2035**.
- ISRO is planning to carry out the **first tests of the proposed Bharatiya Space Station next year** and talks are on with the industry to **manufacture, test and launch its first module by 2028**.
- **Challenges regarding Indian space station:**
  - **Station building is costly endeavor:** India's R&D expenditure-GDP ratio is low (0.7%).
  - **Need of expertise in human spaceflight:** India will have to train a team of astronauts and ensure their safety and well-being in space.
  - **Upgrade needed in ISRO's technological infrastructure:** For components like **life support, radiation protection, structural integrity and orbital maintenance etc.**
- **Benefits:** Advancing scientific knowledge, enhancing the nation's prestige, promoting global co-operation & peace etc.

## 7.2.1. SPACE HABITATION

### Why in news?

NASA's plans to **create homes and habitable colonies on the moon by 2040** have opened up the debate about the habitation of the moon as well as other heavenly bodies.

## About space habitation

- Space habitation refers to **setting up of habitation for humans beyond earth** such as on Moon, Mars etc.
- It could be done in **two ways**:
  - **Habitation of the celestial bodies** such as Mars which come in the **goldilocks zones**.
  - **Building space habitats in form of capsule** modules which can be located anywhere in the solar system. **For example: International Space Station**
- **Stanford Torus and O'Neill Cylinder have been proposed as self-sustaining habitats in space** which can support agriculture and various activities in a **microgravity environment**.
  - **Stanford Torus** proposed by NASA envisions a **toroidal (doughnut-shaped) space station** with a central hub and a rotating outer ring.
    - ✓ The **rotation would create artificial gravity** on the inner surface of the ring, allowing for human habitation.
    - ✓ **O'Neill Cylinder**, named after physicist Gerard K. O'Neill, consists of a pair of **large cylinders rotating in opposite directions** to create **artificial gravity** on their inner surfaces.
- **Different countries** such as USA, China, and India have been taking initiatives to send their astronauts to moon and to **explore the possibilities of space habitation**.
- Additionally, private space entrepreneurs such as **Elon Musk** has expressed his desire of building and supporting a **permanent human settlement on Mars**.

## Know the term

- **Goldilocks zone:** The Goldilocks zone or the **habitable zone** is the area around a star where it is **not too hot** and **not too cold** for **liquid water** to exist on the surface of surrounding planets.

## Benefits from Space Habitation



### Scientific

- We might find **answer to** the question on existence of **extraterrestrial life**.
- **Inspiration to scientific community as well as kids** to generate interest in science and future space exploration.



### Economic

- **Raw materials** such as gold, silver, platinum, etc. could be harnessed from space bodies.
- **Development of habitation technology** opens up new sectors such as life support, radiation shields, etc. which can generate employment opportunities.



### Address global challenges

- Enhanced global partnerships and exploration capabilities may help advance **international preparedness for protecting the Earth from catastrophic** events such as some asteroid strikes.
- Advancing collaborative research on **space weather and protecting spacecraft by developing new means for space debris removal**.



### Spinoff benefits

- **Inventions of new materials** for space habitation can help people in other aspects of life (eg. Nitinol used for satellites are being used by orthodontists now)

## Issues associated with the space habitations

- **Enormous Costs:** The development of essential technology and infrastructure for space exploration incurs significant costs.
  - Additionally, the **extended gestation period** of such technology adds to the financial burden.
- **Execution:** Managing oxygen, food, medical supplies, power sources, communications, and transportation to and from Earth poses technical and operational challenges.
- **Health Implications:** Cosmic radiation, lack of a breathable atmosphere, reduced gravity, isolation, and psychological stress pose health risks to inhabitants.
- **Environmental Modification:** Altering other planets' environments may harm their landscapes and contribute to space debris, with a possibility of triggering the **Kessler syndrome**.
  - The Kessler syndrome envisions a situation where a **single collision between two space objects** generates **debris**, and this debris, in turn, increases the **likelihood of further collisions**.
- **Legal and Political:** It includes issues regarding the ownership of resources, governance, and regulation of space activities.
- **Ethical issues:** Potential damage to the intrinsic value of alien planets raises ethical concerns.

## Way ahead

- **Resource Utilization:** Reduce Exploration Costs by relying on space resources rather than launching everything from Earth.
- **Technological development:** Develop advanced technologies for **mining and processing space resources**.
  - For example, robots designed to scoop icy soil on the Moon, and machines that are capable of thermally extracting water from the clay minerals of planets.
- **Ownership of Habitable Planets:** Global collaboration is needed to devise legal framework to address questions of territorial claims and private property if a country or company makes a planet habitable.
- **Ethical Considerations:** Engage in ethical discussions around space habitation, addressing issues of commons rights, risk burden, and justice.
- **Collaborative approach:** Global collaboration and sharing of knowledge and best practices among stakeholders is also critical to expand the reach of humanity in the space.
  - This collaboration should align with international treaties established by the **United Nations Committee on the Peaceful Uses of Outer Space (UNCOPUOS)**.

### International treaties under UNCOPUOS for governing Outer Space

- **Outer Space Treaty:** Deals with principles governing the activities of states in the **exploration and use of outer space**, including the Moon and other celestial bodies.
- **Rescue Agreement:** Deals with the **agreement on the rescue and return of astronauts**, and the return **of objects** launched into outer space.
- **Moon Agreement:** It is also known as Agreement Governing the Activities of States on the Moon and Other Celestial Bodies. It governs the activities of states on the Moon and other celestial bodies.
- **Liability Convention:** Deals with the liability **for damage** caused by **space objects**.
- **Registration Convention:** Deals with the registration of objects launched into outer space.

## Conclusion

For space habitation, humans should adhere to the trusteeship principle, taking responsibility for the well-being of non-human animals and the environment, both on Earth and beyond, including in space.

## 7.3. NATIONAL QUANTUM MISSION (NQM)

### Why in News?

The 1<sup>st</sup> meeting of Mission Governing Board (MGB) of **National Quantum Mission (NQM)** discussed **implementation strategy and timelines of NQM** as well as the formation of Mission Coordination Cell (MCC).

### About Mission Coordination Cell (MCC)

- The MCC will be set up as a **coordinating agency for the NQM** and will **work in coordination with the Mission Secretariat**, Department of Science of Technology (DST).

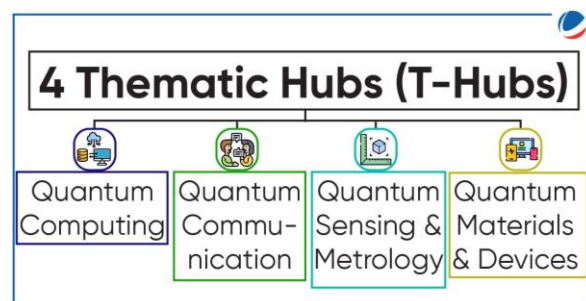
- The MCC will be **set up in an institution identified by DST**, based on merit and existing infrastructure.
- It will **function under** the overall supervision and guidance of **Mission Technology Research Council (MTRC)**.
  - MTRC is responsible for providing guidance and oversight to the NQM, and for selecting the proposals that will be funded under the mission.

### About National Quantum Mission (NQM)

- NQM is a **flagship initiative** launched by the Government of India for **period of 2023-2031** with an aim to make India a global leader in quantum technologies.
- **Aim:** To seed, nurture and scale up scientific and industrial R&D and create a vibrant & innovative ecosystem in Quantum Technology (QT).
- **Mission objectives: The mission focuses on achieving specific milestones within its eight-year timeframe:**
  - **Quantum Communication Network:** Establishing a secure and high-bandwidth communication infrastructure spanning 2,000 kilometres.
  - **Quantum Computing Power:** Developing quantum computers with a processing capacity of 1,000 qubits, unlocking immense computational capabilities.
  - **Magnetometry and Atomic Clocks:** Advancing the development of highly sensitive magnetometers for precision measurements and reliable atomic clocks.
  - **Quantum Materials Design:** Synthesizing and characterizing novel quantum materials with tailored properties for cutting-edge device fabrication.
- **Mission also plans to establish four thematic hubs (T-Hubs)**

#### Quantum Technology

- It is a novel technology that **exploit the principles of quantum mechanics** (the physics of sub-atomic particles).
- It includes **quantum entanglement and quantum superposition**.
  - **Entanglement:** A physical phenomenon where **two (or more) quantum systems share a special correlation** such that **measuring one system instantly determines the state of the other**, even if they are separated by vast distances.
  - **Superposition:** A fundamental property of quantum systems where a **particle exists in multiple states simultaneously** instead of just one definite state.



### Significance of the Mission

- **Global Leadership:** Positions India as a major player in the burgeoning quantum technology landscape.
- **R&D Boost:** Accelerates research and development in quantum computing, communication, sensing, and materials.
- **Secure Communication:** Develops quantum networks for unbreakable, high-bandwidth communication.
- **Powerful Computing:** Creates 1,000-qubit quantum computers to tackle complex problems beyond classical reach.
- **Precision Measurement:** Advances magnetometers and atomic clocks for groundbreaking scientific applications.
- **Innovation Ecosystem:** Establishes thematic hubs fostering collaboration and expertise across diverse sectors.

### Challenges in NQM

- **Poor Expenditure on Research:** While government provides fund for NQM but spending on R&D in India remained about 0.64 % of GDP which is very low. Most of the developed countries spent more than 2% of their GDP on R&D.
- **Lack of Private Investment:** India's **private sector** lags behind advanced nations in R&D investment, **contributing less than 40% compared to over 70% in developed countries**. This funding gap hinders access to crucial resources and slows down progress in the National Quantum Mission.
- **Lack of Skilled Workforce:** NQM requires a critical mass of trained professionals across various disciplines, including quantum physics, computer science, and engineering. However, India currently faces a significant skill gap due to inadequate training programs and Industry-academia disconnect.
- **Availability of Infrastructure:** Building and maintaining sophisticated labs, specialized equipment, and high-performance computing facilities require significant resources and continuous upgradation.
- **Intellectual Property Rights:** Establishing clear ownership and licensing frameworks for quantum-related intellectual property remains a work in progress, creating uncertainty for commercialization and innovation.
- **Regulatory Landscape:** Adapting existing regulations and developing new frameworks to govern quantum technologies, considering ethical and security implications, requires careful consideration and timely action.
- **Cybersecurity Threats:** Ensuring the development and adoption of quantum-resistant cryptography is crucial to mitigate potential threats to existing encryption methods.

## Way Forward

- **Attract private investment:** Implement tax breaks, grants, and public-private partnerships to incentivize private companies to invest in quantum research and development.
- **Create specialized training programs:** Partner with universities, research institutions, and industry to design and implement curriculum focused on quantum science, engineering, and technology.
- **Promote regional infrastructure development:** Allocate resources to develop quantum research infrastructure in various regions across India, fostering broader participation and talent distribution.
- **Develop clear IP guidelines:** Establish transparent and efficient frameworks for ownership, licensing, and technology transfer of quantum-related intellectual property.
- **Establish a dedicated regulatory body:** Create a central regulatory body focused on quantum technologies, responsible for drafting and implementing relevant regulations.
- **Facilitate technology transfer:** Develop mechanisms to bridge the gap between academic research and commercialization, allowing private companies to access and utilize cutting-edge quantum technologies.
- **Invest in quantum-resistant cryptography research:** Fund research and development of quantum-resistant encryption algorithms to safeguard sensitive data against potential threats from quantum computers.

## 7.4. FOURTH INDUSTRIAL REVOLUTION

### Why in news?

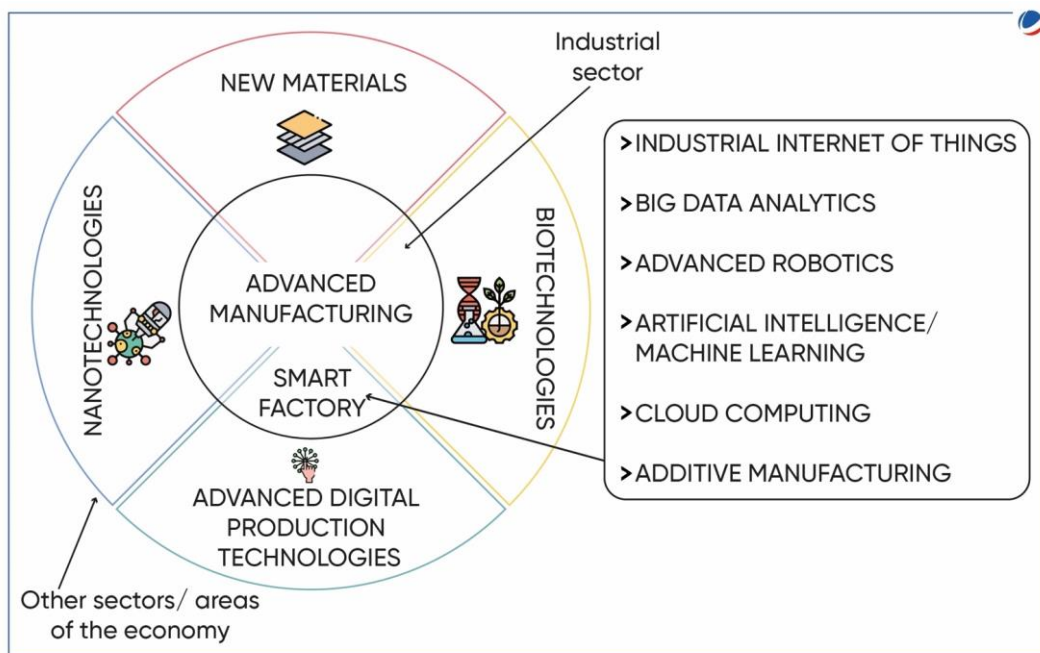
Telangana signs agreement with World Economic Forum for setting up Centre for Industrial Revolution (C4IR) in Hyderabad.

### Fourth Industrial revolution (4IR)

- The term was coined by **Klaus Schwab, founder of the World Economic Forum (WEF) in 2016.**
- 4IR means **the digital transformation of the manufacturing industry by new technologies such as artificial intelligence, additive manufacturing, augmented/virtual reality, and the Internet of Things (IoT).**
- It is also used to refer to concept of “**smart factories**”—which are **fully connected cyber-physical systems that merge the physical and digital aspects.**

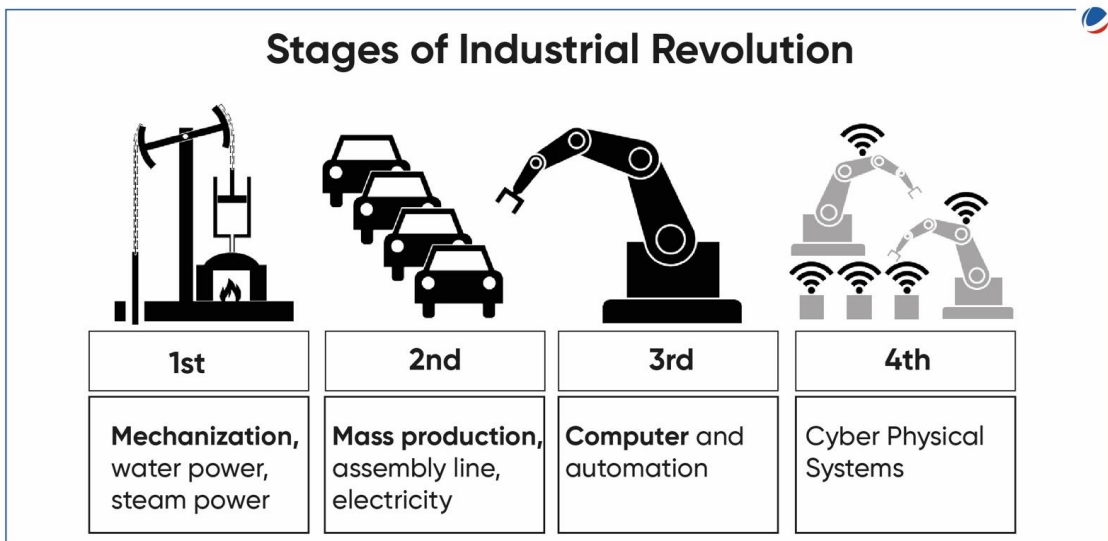
### Benefits of 4IR for India

- **Better digital infrastructure and massive Productivity boom due to:**
  - **Digital communication:** connecting billions of people and things opening new ways of interaction
  - **Digital energy:** combining smart power grids dynamically matching energy generation and demand.
  - **Digital health:** remotely enabling connected health care from anywhere.
- **Global manufacturing hub India can develop itself as a global manufacturing hub** by harnessing factors like demography, demand and decisive governance in the field of 3D printing, machine learning, data analytics and IoT.
- **Creation of Future Workforce** India can use advanced technologies and processes for skilling, re-skilling and up-skilling and emerge as largest providers of skilled workforce in the world



- **Resilient and efficient supply chain:** successfully scaling 4IR technology makes supply chains more efficient reduction in factory waste and increased productivity.
- **Spill-over effects:** acceleration in the digitalization of industries will create opportunities across nearly every segment of the economy, from health care to transport, energy etc.
- **Easier accessibility of products and services for businesses, consumers, and stakeholders all along the value chain.**

### Challenges for India in harnessing advantages of Fourth Industrial revolution



- **Economic Challenges:**
  - **Exacerbating Inequality with low-skill low-pay and high-skill high-pay giving rise to social tensions.**
  - **Fear of mass unemployment:** Increased deployment of capital-intensive equipment in manufacturing activities may disrupt labour markets.
    - ✓ It may harm economies like India by cutting their cheap labour advantage.
    - ✓ Further, the net displacement of workers by machines might exacerbate the gap between returns to capital and returns to labour.
- **Environmental Impacts** due to increased digital environment footprint.
- **Cyber challenges** include loss of privacy, fast spread of fake news. **Fear of corporate takeover as it may be difficult to regulate big tech companies.**
- **Lack of Skilled Workforce** for future Industry demand which requires specialized skilling based on Internet of things, artificial intelligence, 3D printing.
- **Ethical issues:** Discontent can also be fueled by the pervasiveness of digital technologies.
  - It can create and propagate unrealistic expectations as to what constitutes success for an individual or a group.
  - It may also offer opportunities for extreme ideas and ideologies to spread.
- **Privacy Concerns: Tracking and sharing of information is likely to intensify the debates about fundamental issues such as loss of control over one's data.**

### Measures India has taken

- **The Centre for the Fourth Industrial Revolution (India)** is collaboration between the WEF and the Government of Maharashtra, coordinated by the National Institute for Transforming India (NITI) Ayog.
- **Artificial Intelligence for Agriculture Innovation (AI4AI)** initiative is supporting India's agricultural transformation.
  - Lives of small landholders and women farmers can be improved by using AI.
  - ~7,000 chilli growing farmers in Khammam district (Telangana) are using digital solutions to transform value chains.
- **Urban transformation:** India Hub for Urban Transformation in partnership with Smart City Mission is using emerging technologies for future sustainable cities.
- **Education 4.0 in partnership with UNICEF**, is creating roadmap for foundation literacy and numeracy, school to work transition etc.
- **FIRST Cancer Care on the lines of FIRST Healthcare (Fourth Industrial Revolution for Sustainable Transformation of Healthcare)** has been developed in Meghalaya.
  - >700,000 residents of East Khasi Hills in Meghalaya will be impacted through the initiative.

- **Smart Advanced Manufacturing and Rapid Transformation Hub (SAMARTH) - Udyog Bharat 4.0** is an initiative of Ministry of Heavy Industry to enhance competitiveness in capital goods sector by raising awareness about Industry 4.0 through demonstration centres.

## Conclusion

The Fourth Industrial Revolution is about more than technology-driven change. It is an opportunity to help everyone create an inclusive, human-centered future. However exponential and disruptive nature of technology demands long-term decision making to ensure that they are governed in a way that maximizes societal benefit whilst minimizing potential misuse or harm.

## 7.5. LITHIUM

### Why in the News?

Recently, India and Argentina signed agreement for Lithium **exploration & mining Project** in Argentina.

### More in News

- The agreement was signed between **Khanij Bidesh India Ltd (KABIL)** and **CAMYEN**, a state-owned mining and energy company in the **Argentina**.
- The deal will be bringing in **technical and operational experience** for **brine** (or concentrated solution of saltwater) type lithium exploration for India.

### Other Important initiatives for supply of Lithium in India

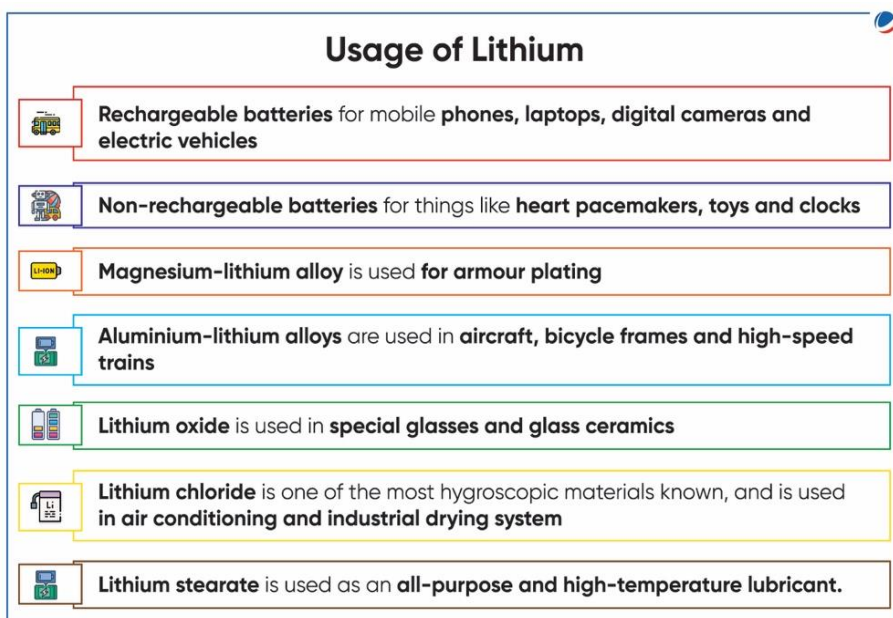
- **KABIL**, established in 2019, is **Joint Venture Company** of the National Aluminium Company Ltd. (NALCO), Hindustan Copper Ltd. (HCL) and Mineral Exploration and Consultancy Ltd.
  - It identifies, acquire, develop, process and make commercial use of **strategic minerals including Lithium in overseas locations for supply in India**.
- **Australia - India Critical Minerals Investment Partnership** identified **five target** projects (two lithium and three cobalt) to further explore in Australia.
- **Geological Survey of India (GSI)** is exploring Lithium reserves in various parts of the country.

### About Lithium

- Often called 'white gold', lithium is a **soft, silvery-white alkali metal** and has the **lowest density of all metals**. It reacts **vigorously with water**.
- Lithium metal is made into alloys with **aluminium and magnesium**, improving their **strength and making them lighter**.

### Harnessing Lithium (Instead of india's map, Lithium sites can be shown)

- Lithium **does not occur as the metal in nature**, but is found combined in **small amounts in nearly all igneous rocks** and in the **waters of many mineral springs**.
  - **Spodumene, petalite, lepidolite, and amblygonite** are important minerals containing lithium.
- The metal is produced by the **electrolysis of molten lithium chloride and potassium chloride**.
- **Most lithium** is currently produced in **Chile, Bolivia, Argentina (Lithium Triangle), Australia and the USA**.
- **More detail about global distribution of lithium could be provided, I have added a map for it below article.**
- **Lithium in India**
  - Lithium have been identified as **critical and strategic minerals** under Mines and Mineral (Development and Regulation) (Amendment) Act 2023.



- ✓ **Critical Minerals** are elements that are **building blocks of essential modern-day technologies**, and are at risk of supply chain disruptions.

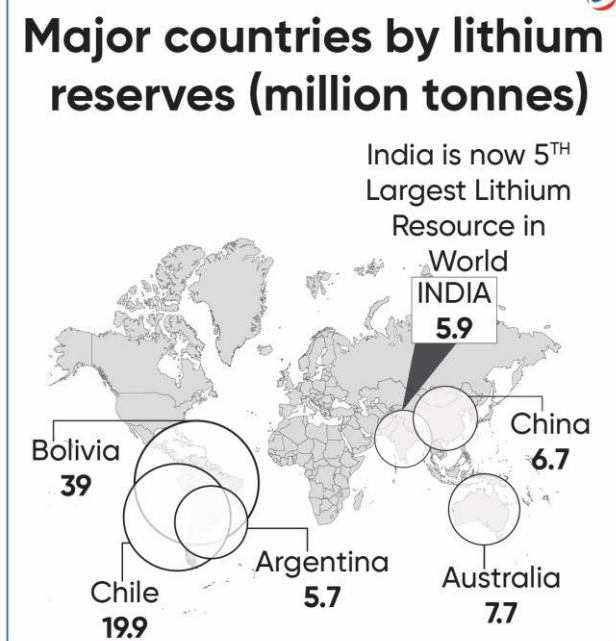
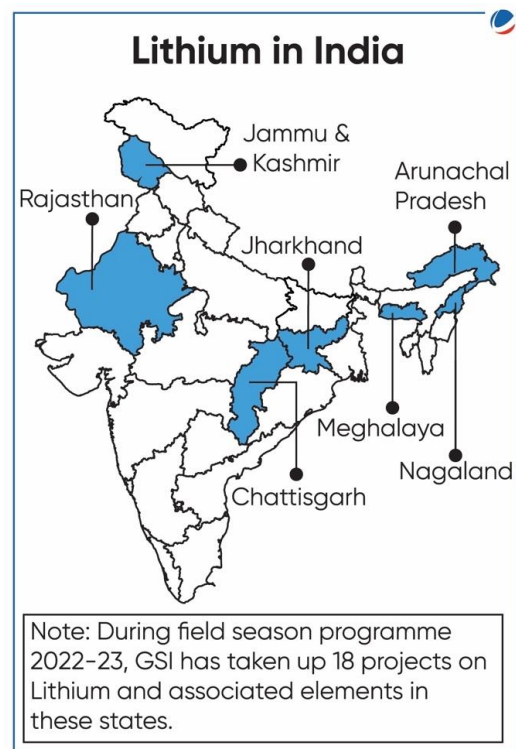
- Currently, India meets the lithium demand through **100% import mostly from (China and Hong Kong)**.
- Government is exploring reserves of Lithium for Indigenous production.

### Challenges in harnessing Lithium reserves

- **Long gestation period:** Most of the lithium reserves being **explored** can take **6-8 years** to bring the mines to **full capacity commercial** production.
- **Extraction Challenge:** Extraction of Lithium require specialized **mining techniques**.
- **Environment pollution:** Open-pit-mining, refining, and waste disposal can further pollute water and soil, affecting local inhabitants, agriculture, and biodiversity.
- **Human rights issues:** Displacement of indigenous community due to mining projects.
- Technical challenges: India has yet to gain experience
- Social challenges in Indian mining: e.g. Radicalism in Jammu and Kashmir

### Way forward

- **Diversify International collaboration:** Collaborate with the US, Japan, Indonesia, and South Korea, Indo-Pacific Economic Framework, etc. to enhance the management of the global lithium supply chain and mitigate strategic vulnerabilities.
- **Public-Private partnership:** To speed up process of **commercial production**, need more involvement of private sector. Recent decision of allowing the **auction** of lithium mines is right step in this direction.
- **Technology:** Environment-friendly technology transfers from **Australia** regarding hard rock mineral extraction could be utilized in earthquake-prone regions like J&K and Uttarakhand.
- **Involvement of local communities:** Prioritize transparent communication and engagement with local communities to address concerns, providing jobs for locals etc.
- **Capacity Building:** skill, state of the art technology



## 7.6. GRAPHENE

### Why in News?

MeitY Secretary launched a Centre of Excellence (CoE) in Intelligent Internet of Things (IIoT) Sensors and **India's first graphene centre - India Innovation Centre for Graphene (IICG) in Kerala.**

### More on News

- IICG is **India's first Graphene Centre.**
- IICG is a joint venture of the **Digital University of Kerala, Centre for Materials for Electronics Technology (C-MET)** and **Tata Steel Limited funded by MeitY.**



- IICG aims to foster Research and development, product innovation and capacity building in the area of Graphene and two-dimensional materials (2DM).
  - It will also support the **Graphene-Aurora program** of the MeitY.
    - ✓ This programme aims to fill the gap between R&D and commercialization by providing a complete facility to startup and industry.

### About Graphene:

- Graphene is **derived from graphite**, the material found in pencil lead.
  - 1mm of graphite contains some 3 million layers of graphene
- It is a **one-atom-thick layer of carbon atoms** arranged in a hexagonal lattice like a honeycomb.
- It is a **two-dimensional form** (allotrope) of carbon.
- Graphene is prepared by heating either **Intercalated Graphite, Coal tar or Shellac or a mixture of these three** in inert atmosphere
- **Properties of Graphene:**
  - **Strongest material:** 200 times stronger than steel, yet six times lighter.
  - **High Thermal Conductivity:** Graphene has a thermal conductivity of up to 5000 W/m/K at room temperature, which is much higher than most other materials.
  - **High Electrical conductivity:** Graphene exhibits incredibly high electrical conductivity surpassing even copper.
  - **High Surface Area:** Graphene has an exceptionally high surface area due to its two-dimensional structure.
  - **Impermeable:** It is impermeable to gases, even those as light as hydrogen or helium,
  - **Transparent:** Almost perfectly transparent since it only absorbs 2% of light. Even more transparent than glass and plastic.
  - **Flexible:** This wonder material is incredibly flexible. Ideal for wearable electronics.
  - **Large surface area:** Enables efficient chemical reactions and sensors.
  - **Chemical Stability:** Graphene is chemically stable and inert. It does not easily react with other chemicals.
  - **Biocompatibility:** This property makes Graphene suitable for biomedical applications.

### Applications of Graphene

Graphene has been hailed as the **Wonder Material of the 21st century**, owing to its vast potential to revolutionize various industries. Noteworthy applications include

- **Electronics:** Graphene-based transistors, circuits, and conductive elements for faster and more efficient electronic devices.
- **Energy Storage:** Graphene-based batteries and supercapacitors with high energy density and rapid charging capabilities.
- **Conductive Films:** Transparent conductive films for applications in touchscreens, flexible displays, and solar cells.
- **Materials Reinforcement:** Reinforcement of composites and materials to enhance mechanical strength and reduce weight in aerospace and automotive industries.
- **Thermal Management:** Heat sinks and thermal interface materials for efficient heat dissipation in electronic devices.
- **Sensors:** High-sensitivity sensors for detecting gases, chemicals, and biological molecules.
- **Biomedical Devices:** Drug delivery systems, biosensors, and imaging devices due to graphene's biocompatibility and unique properties.
- **Water Filtration:** Graphene-based membranes for water filtration, desalination, and purification processes.
- **Coatings and Films:** Anti-corrosion coatings, anti-fogging films, and protective layers for various surfaces.
- **Lightweight Materials:** Lightweight and strong materials for use in sports equipment, automotive parts, and structural components.

Ongoing graphene research promises continual breakthroughs. The India Innovation Centre for Graphene (IICG) will position India as a global leader in Graphene research, showcasing a commitment to innovation and the strategic utilization of graphene's transformative potential across diverse applications.

#### Related News

- Along with IICG, Centre of Excellence in Intelligent **Internet of Things** Sensors was also launched.
  - It aims at creating incubation facilities, build capacity in intelligent IoT sensors, promote research and innovation.
  - **IoT** is the **interconnection of computing devices** in everyday lives with **the internet**.

## 7.7. ADVANCED DRIVER ASSISTANCE SYSTEMS

### Why in news?

As per various reports there has been a surge in demand of Advanced Driver Assistance Systems (ADAS) from India and India is becoming a growing market for the same.

### What is ADAS?

- ADAS are a **set of electronic systems which are integrated into vehicles** to enhance driver safety, improve vehicle performance, and provide convenience.
- This is made possible with use of **sensors, cameras, radar, and other advanced technologies** to monitor the vehicle's surroundings and detect potential hazards.
- There are different levels of ADAS in the market as per the customers' demand.

### Types of ADAS

There are two types of ADAS:

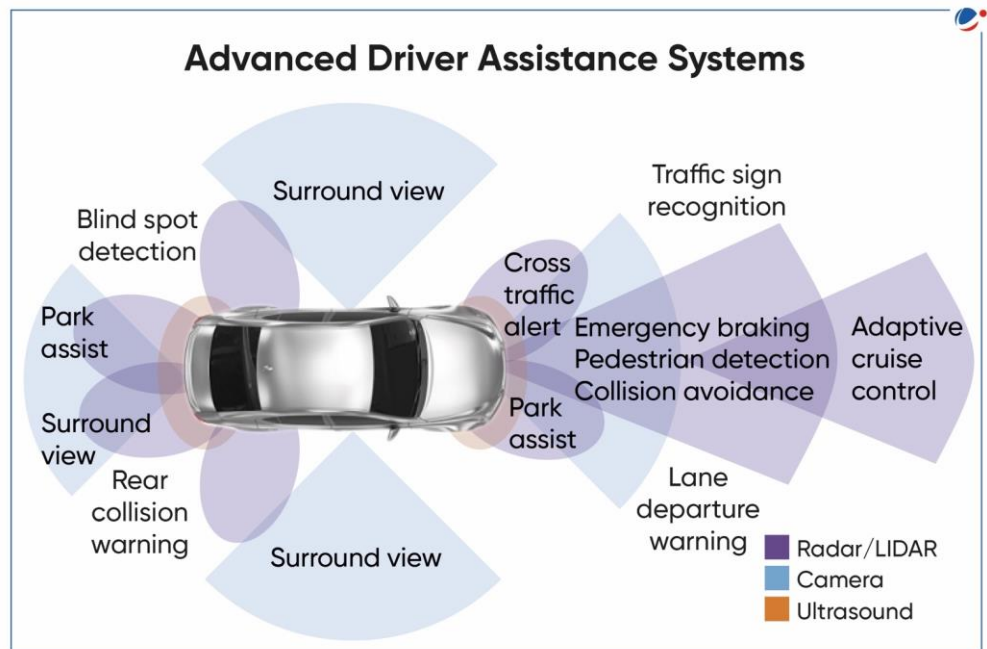
- **Active ADAS:** These systems **actively intervene** and assist in critical driving situations and can even perform automatic corrective actions
  - E.g. collision avoidance systems, lane keep assist systems, and automatic emergency braking.
- **Passive ADAS:** These systems are mainly limited to **provide information and alerts to the driver without directly intervening** in the driving process.
  - E.g. blind spot monitoring systems, lane departure warning and traffic sign recognition.

### Benefits of ADAS

- **Improve Overall Road Safety:** ADAS can reduce the number of fatalities by providing assistance in emergency braking, and avoiding collisions in events of fog etc.
- **Improved Traffic Management:** It can optimise traffic flow, minimise congestion, and enhance the overall efficiency of road networks.
- **Increased Comfort and Convenience:** Features such as adaptive cruise control and automated parking can make drivers less stressful.
- **Environmental Impact:** ADAS can help in reducing fuel consumption and greenhouse gas emissions through optimization in driving patterns.

### Equipment used in ADAS

- **Radar-** Uses radio waves to detect objects & measure their distance, speed, and direction.
- **Lidar-** Uses laser light to create a 3D map of the vehicle's surroundings
- **Camera -**Uses inbuilt optical sensors to capture images and provides information about lane markings, traffic signs
- **Ultrasonic-** uses high-frequency sound waves to detect objects and measure their distance.
- **Infrared-** uses heat-sensitive sensors to detect objects in low-light situations
- **GPS-** determines location, speed and informs about traffic management.



### Different levels of Autonomous Driving

- **Level 0 (No Automation)** The driver has full control of the driving tasks.
- **Level 1 (Driver Assistance)** The vehicle features a single automated system.
- **Level 2 (Partial Automation)** The vehicle can perform steering and acceleration.
- **Level 3 (Conditional Automation)** The vehicle can control most driving tasks.
- **Level 4 (High Automation)** The vehicle performs all driving tasks under certain conditions.
- **Level 5 (Full Automation)** The vehicle performs all driving tasks under all conditions.

### Reasons behind increasing demand of ADAS in India

- Progressive democratisation of autonomous driving tools with car manufacturers offering advanced driver assistance systems in their mid-segment range.
- **Increasing demand for safer vehicles among Indian consumers as people are increasingly** becoming safety-conscious and are willing to stretch their budget to buy safer cars.
- **Government's push for increased road safety** through Education, Engineering (both of roads and vehicles), Enforcement and Emergency Care
- **Availability of more affordable ADAS technology with time.**

### Challenges in adoption of ADAS

- **Non-Standardised Road Infrastructure** India's diverse road conditions, from good highways to poorly constructed rural roads, pose challenges due to inconsistent road markings.
  - Indian roads have a mix of pedestrians, cyclists, and other non-motorized vehicles making ADAS systems adaptation more complex.
- **Affordability issues:** ADAS is prevalent in premium and luxury cars due to its high cost. Making these features affordable for the majority of Indian consumers remains a challenge.
- **Connectivity and Data:** ADAS systems require real-time data updates and reliable connectivity, which might be an issue in remote or poorly networked areas of India.
- **Cyber Threats** It includes flaws in hardware and software which may lead to attempt of hacking, malware, and unauthorized system access.
  - These attacks may deceive or undermine the functionality of systems and pose risks to passengers and drivers' safety.
- **Error and Malfunctions** may be caused due to hardware or software faults, sensor failures, calibration mistakes, or improper data processing or outside influences like bad weather.
  - These flaws could result in the ADAS system making poor decisions or failing to recognize dangers, which could cause accidents
- **Human Factors** may present obstacles for the safe and efficient use of the system, including attention, overreliance, complacency, and incorrect interpretation of ADAS.
  - Too heavy reliance on ADAS may lead to complacency or distraction and raise the possibility of accidents.
- **Supply Chain Security Issues related to non-proper** safeguarding of the components and processes may create vulnerabilities and threaten the system's operation and safety.
- **Consumer Trust** is essential for successful adoption of the technology. If consumers believe them to be risky, they might be reluctant to trust them.

### Steps to be taken

- **Government Regulations** , focussed at establishing clear regulations and standards for ADAS implementation, incentivizing manufacturers to produce vehicles with ADAS features, and providing financial support.
- **Building of Consumer Trust** by persistent investment in research and development and open and consistent communication from manufacturers and authorities about the technology's potential and constraints.
- **Defence against ADAS attacks** are essential to ensure the safety and security of the people inside the vehicle
  - Software updates and patches, secure coding techniques, encryption of critical data, and network segmentation are a few defence mechanisms.
- **Driver Behavior:** The success of ADAS systems depends on responsible driving behavior, which may require significant efforts in driver education and awareness campaigns.

## 7.8. INDUCTION CHARGING

### Why in news?

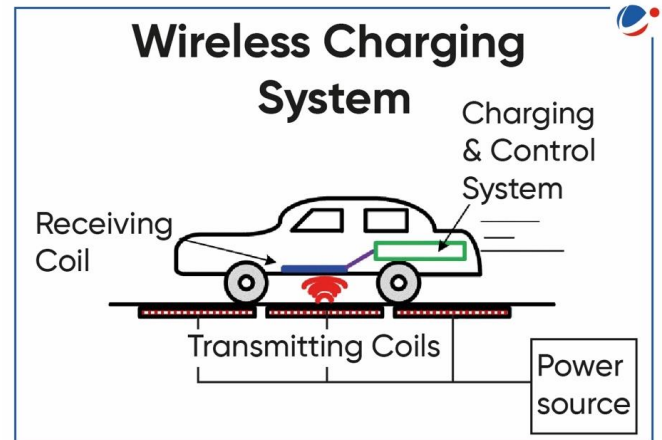
In a bid to boost e-mobility, India plans to transform the Golden Quadrilateral into a network of electric vehicles (EV) ready highways using **induction charging** technology.

## What is Induction/Wireless charging?

Induction Charging (IC) also known as **wireless charging is method of charging in which electromagnetic fields** are used to transfer energy between two coils without the need of a physical connection.

### Processes Involved/Working

- The transmission of electricity generally takes place by either of the two methods:
  - **By electric fields** using capacitive coupling between metal electrodes (capacitive charging) or
  - **By magnetic fields** using inductive coupling between coils of wire (inductive charging).
- The most extensively utilised wireless technology is **inductive charging**.
- The operating principle is similar to that of a transformer and is **based on the laws of magnetic induction**.
- One coil is in the charging station and the other is in in the EV and the energy is transferred from transmitting coils to the receiving coils.
- **A primary circuit**, called a transmitter, generates a time-varying magnetic field.
- **A secondary circuit** receives this field, called the receiver, which is connected to the device to be powered.
- To start charging, drivers only need to park their EV above the charging pad.



### Types of Inductive charging

IC is mainly classified into three types:

- **Static or stationary charging (used at homes, office)**
  - In this method of charging, **the EV does not move while being charged**. It is used when EV is parked for a long time.
  - Used at homes, workplaces, public parking, garages etc.
- **Quasi-dynamic or opportunistic charging**
  - This process **permits an EV to get charged while traveling at low speeds and during momentary pauses**.
  - Used at intersections, traffic signals, bus stops etc.
- **Dynamic EV Charging (Roads and Highways)**
  - In this method, owners can charge their EVs continuously as they go. It allows owners to drive long distances without having to stop for charging or risk running out of power
  - Used for long distances, inter-city trips, highways, expressways with restricted accessibility to stops etc.

### Benefits of Induction charging

- **Reduces time and efforts:** The technology enables EV owners to simply park their vehicles over a charging pad, reducing the time and effort required to plug in and charge.
- **Convenience:** It eliminates the need to handle charging cables, making the process more user-friendly and less time-consuming.
- **Reduced Maintenance:** With no physical connectors, there's less wear and tear on charging equipment, leading to lower maintenance costs in the long run.
- **All-Weather Charging:** As there are no exposed electrical connections, wireless charging is suitable for all weather conditions, ensuring uninterrupted charging experiences.
- **Help in meeting CO<sub>2</sub> emission reduction targets** by accelerating the adoption of e-mobility and supporting the deployment of e-buses.
- **Supports the development of autonomous driving technology:** Wireless charging is well suited for autonomous electric vehicles, as it allows for seamless charging without human intervention

## Challenges in adoption of the technology

Although, wireless EV charging offers various benefits, there are some challenges which need to be overcome before its widespread adoption and implementation. These are:

- **High costs:** Wireless charging systems are currently more expensive than conventional charging stations.
- **Efficiency:** Wireless charging systems typically experience lower efficiency than traditional wired charging due to **energy losses during induction**. This could lead to **longer charging times and higher energy consumption**.
- **Interoperability issues:** Additional efforts are needed to bring in fully scale interoperable operation among various kinds of transmitter and receiver pad designs with the roads
  - In addition, the method of pad integration with both the vehicle and road is an open question that requires extensive engineering effort.
- **Durability:** As these charging systems will be implemented outdoor for general use, so they need to be robust to withstand the harsh environmental and extreme operating conditions.
- **Safety Concerns associated with shielding designs,** heat produced in metallic objects next to the system.
  - Also, living object detection method is required to prevent pets and animals accessing the hot region during operation.
- **Technologies concerns:** It is necessary to achieve the development of the sensor systems and controllers that are used to detect EVs on the highways to charge batteries without errors to increase total system efficiency.

## Way Forward

- **Proper research is required to assess impacts on health** caused due to long-term exposure to weak electric and magnetic fields,
- **Mechanisms to detect living and foreign objects** in the proximity of induction charging systems needs to be built.
- **Collaboration between government agencies, automakers, and tech companies** will be crucial to drive innovation, reduce costs, and improve efficiency, making wireless charging a viable solution for India's EV landscape.


## 7.9. ANTIMICROBIAL RESISTANCE

### Why in news?

The First **Multicentric Point Prevalence Survey of Antibiotic Use** was released recently by the National Centre for Disease Control under the Union Health Ministry.

### About the survey

- The survey has mapped the patients treated across 15 States and two Union Territories between November 2021 and April 2022.
- **Key Findings:**
  - **Empirical prescriptions:** 94% of patients surveyed were given antibiotics before medical diagnosis of cause of infection.
  - **Preventive usage:** 55% of patients were prescribed antibiotics for preventive indications, while 45% for therapeutic indications.
  - **High prevalence of antibiotic usage:** At 71.9%.
  - **Classification of prescriptions based on AWaRe groups:** 57% from watch groups, 38% from access group and 2% from reserve group.
    - ✓ 3% of the prescription from not recommended group.
  - **Only 8 out of 20 institutes** surveyed have an antibiotic policy in place.
- The high use of watch group antibiotics raises concern as these antibiotics have a **higher potential to develop antibiotic resistance**.



**National Centre for Disease Control (NCDC)**  
HQ  
New Delhi

**Genesis:** Established to function as a national center of excellence for control of communicable diseases, later transformed into NCDC.

**Ministry:** Ministry of Health and Family Welfare

**Functions:**

- ◆ Undertaking investigations of disease outbreaks
- ◆ Provides referral diagnostic services for various communicable diseases of microbial origin.
- ◆ **Quality Control of Biologicals**
- ◆ **Storage and supply of vaccines and other biological materials**
- ◆ Trained health man-power development
- ◆ **Applied integrated research** in various aspects of communicable and non-communicable diseases.

## About Antimicrobial resistance (AMR)

- AMR happens when germs like **bacteria and fungi** develop the **ability to defeat the drugs** designed to kill them.
  - While some microorganisms are naturally resistant to a certain type of antimicrobials, they can also acquire resistance genes, whether by spontaneous mutation or through genetic exchange.
- **Reasons behind increasing incidence of Antimicrobial resistance**
  - **Overuse and misuse of antimicrobials** among humans and in poultry and farm animals.
  - **Poor infection prevention and control practices in healthcare settings**
  - **Effluents discharge from hospitals, industries, and urban settlements**
    - ✓ Over 75% of administered antibiotics are excreted unmetabolized in urine and faeces and enter into sewage systems and water bodies.
  - **Confusion over treatment guidelines.**
    - ✓ E.g., the optimal duration of antibiotic therapy for common infections like pneumonia was not established for decades.

## Implications of the Spread of Antimicrobial Resistance

- **Healthcare Impact:** Increased mortality and morbidity, and prolonged illness because infections caused by resistant microorganisms are often more difficult to treat.
- **Increased Healthcare Costs:** Longer hospital stays, additional diagnostic tests, and more expensive second-line or third-line antibiotics leads to increased expenditure.
- **Economic impact:** Working hours lost due to prolonged illness and increase in out-of-pocket expenditure.
  - If not controlled, antimicrobial resistance will result in **US\$ 1 trillion to 3.4 trillion annual losses to gross domestic product (GDP)** by 2030. (World Bank)
- **Increased risk of outbreaks:** As current medicines become ineffective, infections persist in the body, increasing the risk of spreading to others.
- **Limited new options for treatment:** There are limited new antibiotics in the research and development pipeline.

## WHO Access, Watch, Reserve (AWaRe) classification of antibiotics



### Access

- > Work against a wide range of **commonly encountered susceptible pathogens**
- > Comparatively **lower resistance potential**
- > E.g., Amikacin, Doxycycline



### Watch

- > **Highest priority agents** among Critically Important Antimicrobials
- > **Relatively high risk** of selection of bacterial resistance
- > E.g., Cefbuperazone, Levofloxacin



### Reserve

- > To be treated as **"last resort" options**
- > **Reserved for treatment** of confirmed/ suspected infections due to **multi-drug-resistant organisms.**
- > E.g., Telavancin, Colistin\_IV

**\*Not recommended:** Use not recommend in clinical practice



## Data Bank

- > **1.27 million Global deaths in 2019** directly caused by bacterial AMR.
- > **US\$ 1 trillion additional healthcare costs** by 2050 due to AMR (World Bank).
- > **AMR among Top 10 public health threats** as identified by World Health Organization (WHO).

## Measures taken to address AMR

### National

- **National Program on AMR containment:** Launched during 12<sup>th</sup> FYP in 2012-17 to carry out surveillance of antimicrobial usage in healthcare settings.
  - It is coordinated by National Centre for Disease Control.
- **National Action Plan on AMR (NAP – AMR), 2017:** Focuses on One Health approach and involving various stakeholder ministries/departments.

- **National AMR surveillance network of state medical college labs (NARS-Net):** To generate quality data on AMR for priority bacterial pathogens of public health importance.
- **Red Line awareness campaign:** Urging people not to use medicines marked with a red vertical line, including antibiotics, without a doctor's prescription.
- **Drugs and Cosmetics Rules, 1945:** Antibiotics included in Schedule H1 of the rules are required to be sold by retail only under the prescription of a Registered Medical Practitioner.
- **Ban on inappropriate fixed dose combinations (FDCs).**
- **Operation AMRITH** (AMR Intervention For Total Health) launched by Kerala to detect the over-the-counter sales of antibiotics without a doctor's prescription.
  - **In 2018,** Kerala became the first state in India to come up with the Kerala Anti- Microbial Resistance Strategic Action Plan (KARSAP), which is aligned with India's **NAP – AMR.**

#### Global

- **Global Antimicrobial Resistance and Use Surveillance System (GLASS):** Launched in 2015, it is a comprehensive global system designed to monitor antimicrobial resistance and support appropriate use of antibiotics worldwide.
- **World Antimicrobial Awareness Week (WAAW):** A global campaign to raise awareness, understanding and best practices with the public, One Health stakeholders, and other policymakers.

#### Way forward

- **Promote the judicious use of drugs:** For instance, Union Health Ministry has called on doctors in medical colleges and medical associations to make it mandatory to mention the indication and reason for prescribing antibiotics.
- **Strict implementations of Drugs and Cosmetics Rules, 1945:** Recently, the Director General of Health Services (DGHS) has urged all pharmacist associations to adhere to the rules and sell antibiotics only with valid prescriptions.
- **Adherence to standard treatment guidelines and infection control practices:** To mitigate antibiotic resistance.
- **Defined Antibiotic Use Policy in medical institutes:** It should encourage use of access group antibiotics and keep the consumption of reserve group antibiotics at low levels.
- **Surveillance and Monitoring of Pathogens:** For early detection of resistant strains.
- **Robust Immunisation Programmes:** The incidence of bacterial and viral infections can be reduced by the adoption of strategies and programmes on the prevention and control of infectious diseases.
- **Curbing the Production and Sale of Poor Quality and Sub-standard Antimicrobials:** Continuous exposure of bacteria to a sub-therapeutic level of drugs, which is achieved with the use of substandard antimicrobials, always triggers the development of resistance.
- **Promote use of alternatives to Antibiotics:** In the animal feed industry.
- **Educational and Awareness Programme:** Strengthen information and resources by involving all stakeholders i.e., policymakers, pharmaceutical industries, medical and veterinary professionals, producers and consumers.

## 7.10. FIXED-DOSE COMBINATIONS (FDCS) DRUGS


#### Why in news?

The Central Drugs Standard Control Organization (CDSCO) has allowed companies to manufacture and market five fixed dose combinations (FDCs) that were banned last year.


#### More on News

- These five drugs are **allowed to manufacture and sale with certain conditions** which include
  - **Providing safety and efficacy data** on three drugs within one year.
  - Two need their **dosage and information labels adjusted.**
- Earlier, in a similar move, Central **government banned 344 combinations in 2016**, citing public interest.


**Example of Fixed-Dose Combination HIV Drug**




**Efavirenz**  
(600 mg)



**+** **Emtricitabine**  
(200 mg)



**+** **Tenofovir DF**  
(300 mg)



**= Atripla**

## About Fixed Dose Combinations (FDCs) Drugs

- As per Rule 122-E of Drugs & Cosmetics Rule 1945, FDCs refer to **products containing two or more active ingredients** used for a particular indication(s).
- **An FDC is a new drug when it meets two conditions**
  - It **combines two or more drugs already approved** for individual use in a fixed ratio.
  - It **alters the ratio of drugs in an already approved FDC**, along with making changes to its claims
- Mostly FDCs are in **combinations of cough, cold, and fever preparations; antimicrobials; vitamins and minerals** etc.
- In 2015, out of 376 entities, 24 entities were FDCs in National List of Essential Medicine.

### Rationale for Usage of FDCs:

- **Enhanced efficacy:** In some cases, combining specific drugs in a fixed ratio can achieve better therapeutic outcomes than using them individually.
- **Cost-effectiveness:** FDCs can sometimes be more affordable than purchasing individual medications separately, particularly in developing countries.
- **Reduced pill burden:** Taking fewer pills can improve convenience and patient compliance, especially for those with multiple chronic conditions.
- **Improved adherence:** Combining multiple medications into one pill can simplify treatment regimens, leading to improved medication adherence, especially for chronic conditions.
- **Improved patient convenience:** Taking fewer pills can improve convenience and quality of life for patients, especially those with multiple chronic conditions who might otherwise struggle with complex medication regimens.

### Issues associated with FDCs:

- **Lack of individual dose flexibility:** FDCs offer a fixed dose of each component, which may not be suitable for all patients, especially those requiring different dosages due to age, weight, or other factors.
- **Unapproved and Banned FDCs:** The easy access to untested and unlicensed FDCs in countries like India creates a potentially hazardous situation for public health.
  - **For example, a study conducted in Ahmedabad**, revealed that FDCs containing banned or controversial ingredients are prescribed widely.
- **Increased risk of Anti-microbial Resistance (AMR):** Combining medications in FDCs raises the risk of adverse events and AMR due to potential interactions and overuse.
- **Reduced transparency and affordability concerns:** In some cases, FDCs may be priced higher than their individual components, raising concerns in resource-limited settings.
- **Ethical concern:** India imposed ban on certain FDCs, however, there is no ban on same drugs being exported to African or SAARC countries. Their export is deemed legal if the importing country has no objections.
- **Limited choice for patients:** The fixed combination may not always be the most suitable for individual patient needs, limiting treatment options.



## Central Drugs Standard Control Organisation (CDSCO)



**About:** It is the **Central Drug Authority** for discharging functions **assigned to the Central Government under Drugs and Cosmetics Act 1940.**

**Ministry:** Ministry of Health and Family Welfare.

**Headed by:** Drug Controller General of India (DCGI).

**Major Functions:**

- **Regulatory control** over the import of drugs.
- **Approval of new drugs** and clinical trials.
- **Meetings of Drugs Consultative Committee** and **Drugs Technical Advisory Board.**



## Way Forward

- **Regulatory Stringency:** CDSCO should enforce stringent guidelines for FDC approval to protect public health and ensure the efficacy and safety of drugs.
- **Evidence-Driven Authorization:** Require robust scientific evidence of FDC efficacy and safety to prevent unjustifiable combinations and enhance regulatory scrutiny.
- **Therapeutic Justification:** Grant approval for FDCs only when individual components offer clear therapeutic benefits, avoiding unnecessary amalgamations.
- **Surveillance Systems:** Establish vigilant post-market monitoring mechanisms for prompt detection and resolution of FDC-related adverse effects, prioritizing public safety.
- **Export Control Stringency:** Harmonize export policies with domestic regulations to prohibit the overseas export of domestically banned or restricted FDCs.
- **Advocate Transparency and Affordability:** Promote openness and cost transparency, facilitating generic availability of FDCs to enhance affordability, particularly in resource-constrained regions.
- **Public Awareness:** Educate healthcare professionals and the public on the judicious use of FDCs, promoting responsible medication practices.

## 7.11. NEWS IN SHORTS

### 7.11.1. SQUARE KILOMETRE ARRAY OBSERVATORY (SKAO) PROJECT

- Union Cabinet approves Rs 1,250 cr for India's participation in Square Kilometre Array Observatory (SKAO) Project.
- SKAO is an **intergovernmental organisation** dedicated to **radio astronomy, headquartered in United Kingdom.**
  - SKAO will consist of one global observatory, operating two telescopes, across three sites.
    - ✓ Two SKA telescopes will be at radio-quiet sites in South Africa and Australia.
    - ✓ They will operate as one large unit.
  - They are expected to be **operational by 2029.**
- **Objectives of SKAO:**
  - Understand about the **birth of Universe.**
  - Detect **Gravitational Waves.**
    - ✓ A gravitational wave is an invisible ripple in space.
  - Understand the evolution of **Galaxies, Dark matter and Cosmic Magnetism.**
- India **joined SKAO in 2012 as an Associate Member** and has actively participated in the pre-construction phase of the SKA telescopes.
  - In 2022, the **National Centre for Radio Astronomy, Pune** and SKAO signed cooperation agreement.
  - **Giant Metre wave Radio Telescope (GMRT)** is **playing** role in SKAO.
- **Significance for India:** Will allow Indian astronomers direct access to the best radio astronomy facility in the world in the future.
  - Also, it will drive growth of technologies several key areas, ranging from antennas and electronics

to data and software, including areas like **artificial intelligence.**

#### Steps taken in India

- **Sin Tax on demerit goods:** It is placed on goods and services that are seen to be socially detrimental. Thus, **Tobacco, gambling ventures, alcohol, cigarettes, and other things** are examples of products that are subject to a sin tax.
  - Presently, the **aerated beverages in India**, irrespective of the quantum of “added sugar” in them, **are taxed at the highest tax bracket of 28% GST.**
  - **High-Fat Sugar Salt (HFSS)** foods in India attract **12% tax rate.**
- **Fat Tax of Kerala:** Kerala had also introduced a fat tax way back in 2016, which later **got incorporated into Goods and Services Tax in 2017.**

### 7.11.2. OSIRIS-APEX

- **OSIRIS REX** (Origins, Spectral Interpretation, Resource Identification and Security-Regolith Explorer) is embarking on a new mission as **OSIRIS-APEX (Apophis Explorer)**
  - Recently, **OSIRIS REX** delivered a sample from **asteroid Benu.**
- **OSIRIS-APEX**
  - It will study **Apophis** when it will be closest to Planet Earth i.e. 20000 miles.
    - ✓ Apophis is an **S-type asteroid** made of **silicate materials and nickel-iron.**
  - The mission aims to **observe the physical changes** in asteroid Apophis **induced by Earth's gravitational pull.**
  - **Space Agency:** NASA

### 7.11.3. PEREGRINE MISSION 1 (PEREGRINE LUNAR LANDER)

- NASA launched Peregrine Lunar Lander to explore **Moon's Bay of Stickiness**.
- Mission is part of Nasa's **Commercial Lunar Payload Services initiative**, which partners with commercial entities to deliver payloads to Moon.
- **Scientific goals of mission include:**
  - To **analyze lunar exosphere**.
  - **Assess thermal properties and hydrogen content** of lunar regolith.
  - Study **magnetic fields etc.**
- **Bay of Stickiness** (also known as **Sinus Viscositatis region**), an area on moon, lies adjacent to Gruithuisen Domes near Oceanus Procellarum, or Ocean of Storms.

### 7.11.4. SMART LANDER FOR INVESTIGATING MOON (SLIM)

- Japanese spacecraft SLIM landed on the moon, making **Japan the fifth country to reach the lunar surface**.
  - The other four countries are **India, United States, Russia, and China**.
- **About SLIM**
  - It successfully demonstrated **pinpoint technology** for landing.
    - ✓ This technology enables landing within 100 m of a target.
    - ✓ Because of achieving this feat, it is also referred as **Moon Sniper**.
  - **Objective:** Acceleration of the study of the Moon and planets using lighter exploration systems.
  - **Agency:** Japanese Aerospace Exploration Agency (JAXA)

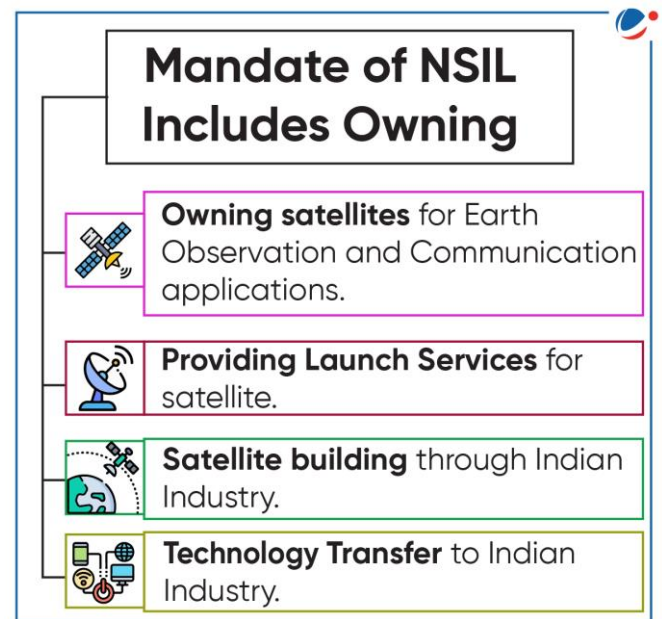
### 7.11.5. GSAT-20

- India to use SpaceX Falcon-9 Rocket to Launch Communications Satellite GSAT-20 in 2024
- For the first time, **NewSpace India Limited (NSIL)** will launch a communication satellite on a SpaceX rocket.
- **About GSAT -20 (Renamed as GSAT-N2)**
  - GSAT-20 is a high- throughput **Ka-band Satellite** which will be fully **owned, operated and funded by NSIL**.
  - **The satellite, weighing 4700 kg**, has been specifically designed to meet the **demanding service needs of remote and unconnected regions**.
    - ✓ **It is much heavier** than launch capacity of ISRO's most powerful rocket; **LVM-3** (which can launch spacecraft weighing **up to 4000 kg** into Geosynchronous Transfer Orbit).

- **GSAT-20** will be the **second "demand driven" satellite launch** enabled by NSIL.
  - ✓ Previously, NSIL successfully undertook its **1st Demand-driven satellite mission**, GSAT-24, with **TataPlay purchasing** its capacity for Direct-To-Home broadcasting.
- **According to India's 2020 space sector reforms**, NSIL is required to build, launch, own, and operate satellites in a **"Demand-driven mode."**
  - In the **"Demand-driven" mode**, when a satellite is launched, it is known in advance who the end customers will be.
  - **Previously, the mode was more "supply-driven,"** where capacity was leased after the satellite launch.

### NewSpace India Limited (NSIL)

- **NSIL (incorporated in March 2019)** is commercial arm of ISRO.
- It is a **Central Public Sector Enterprise** under the **Department of Space**.
- Presently, NSIL owns and **operates 11 communication satellites in orbit**.



### 7.11.6. FEAST (FINITE ELEMENT ANALYSIS OF STRUCTURES)

- Vikram Sarabhai Space Centre (VSSC), ISRO developed FEAST, a **Finite Element Analysis (FEA) software**.
  - FEA is a **computerized method for predicting how a product reacts to real-world forces**.
- FEAST will be used to perform **FEA of various types of structures** including **rockets, aircraft, satellites, buildings, etc.**

- So far, users have mostly **depended on expensive software versions** from **foreign firms** for this function.
- **VSSC, Thiruvananthapuram (Kerala)**, is the lead centre of ISRO responsible for the **design and development of launch vehicle technology**.

#### 7.11.7. KILONOVA EXPLOSION

- A team of researchers have developed a method to model the **kilonova explosion**.
- **About Kilonova Explosion:**
  - A **kilonova** is a bright blast of **electromagnetic radiation** that happens when **two neutron stars or a neutron star and a stellar-mass black hole** collide and merge.
  - A **neutron star** is formed **when** a star having a mass more than **1.44 times that of the Sun** (as per **Chandrasekhar limit**) blows off its gaseous envelope in a supernova explosion.
    - ✓ They are among the **densest objects in the cosmos**.

#### 7.11.8. CHAMELEON TROJAN

- Cyber security researchers have issued a warning about this **new malware**.
- Chameleon Trojan **attaches itself to legitimate Android apps** to avoid detection and runs code in the background.
  - It uses '**Accessibility service**' on **Android devices to disable biometric authentication** methods like fingerprint and face unlock to steal the phone's PIN.
  - It uses stolen PIN to unlock the device and **steal more sensitive information** like credit card passwords, login credentials, etc.

#### 7.11.9. DIRECT-TO-CELL

- **SpaceX**, an American company, launched the first batch of Starlink satellites with **"Direct-to-Cell" capabilities**.
- **Direct-to-Cell** satellites have an advanced **eNodeB modem** onboard that **acts like a cellphone tower in space**.
  - Current communication system is based on the land based tower for transferring signals.
- It allows Starlink to **deliver direct satellite broadband** connectivity on smartphones anywhere on Earth.
- It will also connect **Internet of Things (IoT)** devices with common LTE (Long-Term Evolution) standards.
  - **IoT** refers to a network of physical **devices embedded with sensors, software and network connectivity** that allows them to **collect and share data**.

#### 7.11.10. REVISED PHARMA MANUFACTURING RULES

- Ministry of Health and Family Welfare (MoHFW) notified revised pharma manufacturing rules.
- Rules will **ensure good manufacturing practices (GMP)** and requirements of premises, plant, and equipment for pharmaceutical products.
  - Revised rules are **notified under Schedule M of the Drugs and Cosmetics Rules, 1945** and will be called **Drugs (Amendment) Rules, 2023**.
  - Schedule M **prescribes GMP for pharmaceutical products** and includes **requirements of facilities and their maintenance, personnel, manufacture, control and safety testing**, storage and transport of material, written procedures and records, traceability, etc
- **Key highlights of the revised rules**
  - **Include new categories of drugs:** pharmaceutical products containing hazardous substances such as sex hormones, steroids, cytotoxic substances; biological products; radiopharmaceuticals; phytopharmaceuticals; and investigational pharmaceutical products for clinical trials for humans.
  - **Implementation:** 6 and 12 months for large manufacturers (over Rs 250 crore turnover) and MSMEs (less than Rs 250 crore turnover) respectively.
  - **Provision for informing** the licensing authority **about drug recall** (presently no such mechanism for informing).
  - **Other changes introduced:** A pharmaceutical quality system, quality risk management, a computerised storage system for all drug products etc.

#### About GMP

- GMP ensures that **products are consistently produced and controlled** according to **set quality standards**.
- **WHO has established detailed guidelines for GMP**.
- In India, **GMP system was first incorporated in 1988 in Schedule M** of Drugs and Cosmetics Rules, 1945, and were **revised in 2018**, bringing them **on par with WHO standards**.

#### 7.11.11. HAVISURE: INDIGENOUSLY DEVELOPED HEPATITIS A VACCINE

- Havisure-India's first indigenously developed Hepatitis A vaccine launched.
- Havisure was **developed by Indian Immunologicals Ltd (IIL)**, a wholly-owned subsidiary of National Dairy Development Board (NDDB).

- Havisure is a **two-dose vaccine** wherein **first dose is administered at above 12 months of age** and **second dose is given at least after 6 months of the first dose.**
  - It is also recommended for individuals who are at risk of exposure or travel to the regions with high hepatitis A prevalence.
- **Hepatitis** is an **inflammation of liver** that is **caused by a variety of infectious viruses** and **non-infectious agents.**
  - There are five **main strains of hepatitis virus** i.e. **A, B, C, D** and **E.**

5 main strains of hepatitis virus		
Hepatitis	How it spreads?	Treatment
A	→ <b>Ingestion of contaminated food or water.</b>	Vaccine
B	→ <b>Contact with infected body fluids</b> like blood, saliva, semen etc. → <b>Mother to child</b> during birth and delivery. → <b>Unsafe injections</b> or exposures to sharp instruments.	Vaccine
C	→ <b>Contact with infected blood through sharing needles</b> or syringes, or from unsafe medical procedures like <b>blood transfusions with unscreened blood products.</b>	<b>No Vaccine available.</b> Current treatment is <b>only through antiviral medicines</b>
D	→ People <b>already infected with hepatitis B (HBV).</b>	Vaccine
E	→ <b>Fecal-oral route,</b> principally via <b>contaminated water.</b>	Vaccine

- **Initiatives taken to prevent Hepatitis**
  - **National Viral Hepatitis Control Program 2019** to eliminate **Hepatitis C in India by 2030.**
  - **Mission Indradhanush 2014** provides **vaccination against Hepatitis B** along with 7 other infections.
  - **World Hepatitis Day** (28 July every year).

### 7.11.12. 'SMART 2.0' FOR AYURVEDA TEACHING PROFESSIONALS


- Two prominent institutions under Ministry of Ayush namely **National Commission for Indian System of Medicine (NCISM)** and **Central Council for Research in Ayurvedic Sciences (CCRAS)** have launched 'SMART 2.0'.
- **SMART 2.0** (Scope for Mainstreaming Ayurveda Research in Teaching Professionals) Program
  - It aimed to promote **robust clinical studies in priority areas of Ayurveda** with Ayurveda academic institutions/ hospitals across the country through mutual collaboration.
- Earlier launched SMART 1.0 aimed to **boost scientific research in priority healthcare research areas through Ayurveda colleges and hospitals.**

### 7.11.13. WHO'S INTERNATIONAL CLASSIFICATION OF DISEASES 11 (ICD-11)


- WHO's **International Classification of Diseases 11 (ICD-11)** now introduced **Module 2 (ICD 11 TM 2).**
- **Module 2** of the supplementary chapter on traditional medicine conditions under ICD 11 is **dedicated to Ayurveda, Siddha, and Unani (ASU) data and terminology.**
  - It encompasses more than **500 codes.** Infectious diseases like **Malaria** and lifestyle diseases like **chronic insomnia** are also included.
- ICD is the **international standard** for **systematic recording, reporting, analysis, interpretation, and comparison of mortality and morbidity data.**
  - It also includes a **dedicated chapter on traditional medicine.**
  - Previously, **ICD-11 included Module-1** which covers **traditional medicine conditions originating in ancient China,** which is now **commonly used in Japan, Korea** etc.
  - **ICD-11** came into effect in **January 2022.**
- **Significance of ICD-11**
  - Provides a list of diagnostics categories to collect and report on traditional medicine conditions in an **internationally comparable manner.**

- Link traditional medicine practices with global conventional medicine's norms and standard development.
- Enable integration of traditional medicine into insurance coverage and reimbursement systems, in line with WHO objectives relating to universal health coverage.

## India's initiatives for Interoperability of health data on traditional medicines



**National Ayush Morbidity and Standardized Terminologies Electronic (NAMSTE) portal:**  
Provides standardized terminologies & morbidity codes for Ayurveda, Siddha and Unani systems of medicine.




**Ayush Health Information Management System (A-HIMS):**  
A comprehensive IT platform to effectively manage all functions of health care delivery systems and patient care in Ayush facilities.

- **Key findings of report**
  - **Decline in tobacco use** with about **1 in 5 adults worldwide consuming** tobacco in 2022 compared to 1 in 3 in 2000.
  - At least **37 million adolescents aged 13–15 years** are current **users of some form of tobacco** – 25 million boys and 12 million girls.
- **Impact of Tobacco use**
  - **Kills more than 8 million people each year** due to risk of heart disease, lung disorders, cancer etc., including an **estimated 1.3 million non-smokers** who are exposed to second-hand smoke.
  - As per WHO, **smoking costs** world's economies **more than US\$ 1 trillion annually** in healthcare expenditure and **lost productivity**.
  - **Deforestation** due to its cultivation.
- **India's initiatives to control Tobacco use:** National Tobacco Control Programme, Prohibition of Electronic Cigarettes Act, 2019, Cigarette and Other Tobacco Products Act 2003, National Tobacco Quit Line Services etc.


### Global Initiatives to control tobacco use

- **WHO Framework Convention on Tobacco Control (FCTC)** adopted in 2003.
  - **India ratified it in 2004.**
- **MPOWER** measures introduced by WHO.


## MPOWER




**Monitor** tobacco use and prevention policies




**Protect** people from tobacco smoke




**Offer** help to quit tobacco use



**Warn** about the dangers of tobacco



**Enforce** bans on tobacco advertising, promotion and sponsorship



**Raise** taxes on tobacco

### 7.11.14. WHO REPORT ON PREVALENCE OF TOBACCO USE

- World Health Organization (WHO) Global report on Trends in prevalence of Tobacco use 2000–2030 released.
- India is **world's second biggest tobacco producer** after China.
  - Globally, there are **1.25 billion adult tobacco users**.
  - **Nearly 267 million adults** (15 years and above) in India are users of tobacco.
  - **Major tobacco producing states:** Gujarat, Andhra Pradesh, Uttar Pradesh, Karnataka, West Bengal, Telangana, and Bihar.
  - Tobacco is a **drought-tolerant, hardy and short-duration crop** which can be grown on soils where other crops cannot be cultivated profitably.

### 7.11.15. DISEASE X

- **World Economic Forum** is set to begin session on novel 'Disease X'.
- **About 'Disease X'**
  - It is a **theoretical term** and "X" refers to "unexpected".
  - WHO introduced **Disease X in 2018** to represent an **unknown pathogen** that could cause a **serious international epidemic**.
  - WHO has placed Disease X alongside other **high-priority diseases** such as Ebola and Zika virus in its awareness campaigns.

### 7.11.16. BIO-IMAGING BANK (BIB)

- Mumbai's Tata Memorial Hospital (TMH), has established a 'Bio-Imaging Bank' for cancer.
  - Through it, the hospital is utilizing **deep learning and artificial intelligence (AI)** to craft a cancer-specific tailored algorithm that aids in **early-stage cancer detection**.
- BIB aims at creating a robust repository encompassing **radiology and pathology images**.
  - It will be linked with **clinical information, treatment specifics** etc.
  - This will be also used for **training, validation, and rigorous testing** of AI algorithms for early detection of cancer.

### 7.11.17. NEW TREATMENT REGIMEN FOR LEPROSY

- Ministry of Health and Family Welfare announced new treatment regimen for Leprosy.
- **About Leprosy (Hansen's disease)**
  - **Cause:** It is a chronic infectious disease which is caused by a type of **bacteria** called **Mycobacterium leprae**.
  - **Affects:** Skin, peripheral nerves, mucosa of upper respiratory tract, and eyes.
  - **Transmission mode:** Droplets, from the nose and mouth, due to close contact with untreated cases.
  - **Treatment:** **Curable** with **multidrug therapy**.
  - **Classification:** into two types for treatment purposes,
    - ✓ **Pauci-Bacillary (PB) cases** have fewer bacteria visible and show no signs of advanced disease in biopsies.
    - ✓ **Multibacillary (MB) patients** have visible bacteria and may show signs of more advanced disease in biopsies

- **About new treatment regimen announced**
  - Ministry has decided to introduce a **three-drug regimen for Pauci-Bacillary (PB) cases of leprosy** in place of a two-drug regimen for six months.
  - **Multi-drug therapy (MDT)**, as recommended by WHO, consists of three drugs - **dapsone, rifampicin and clofazimine**.
- **Recent Steps Taken**
  - **National Strategic Plan (NSP) & Roadmap for Leprosy (2023-27)** to achieve zero transmission of leprosy by 2027.
  - **National Leprosy Eradication Programme** a centrally sponsored scheme under **National Health Mission**.
    - ✓ **Nikusth 2.0 Portal**, an integrated portal for leprosy case management.

#### Status of leprosy in India

- **India has achieved elimination of leprosy as a public health problem** as per WHO criteria of less than 1 case per 10,000 population at **National level in 2005**.
- **Prevalence Rate at national level** has decreased to **0.45 per 10,000** population in **2021-22** as compared to **0.69 per 10,000** population in **2014-15**.

### 7.11.18. BUBBLE BABY SYNDROME (BBS)

- A two-month old girl, diagnosed with BBS, became the **youngest to receive bone marrow transplant** from a voluntary donor.
- BBS, also known medically as **Severe Combined Immunodeficiency (SCID)**, is a **rare genetic disorder** affecting the immune system.
  - A baby with SCID completely **lacks a functional immune system** and is extremely vulnerable to severe and life-threatening infections.
  - Babies born with SCID **lack white blood cells**, including lymphocytes (T-cells and B-cells), which fight infections.
  - Most common treatment is a **stem cell transplant (bone marrow transplant)**.

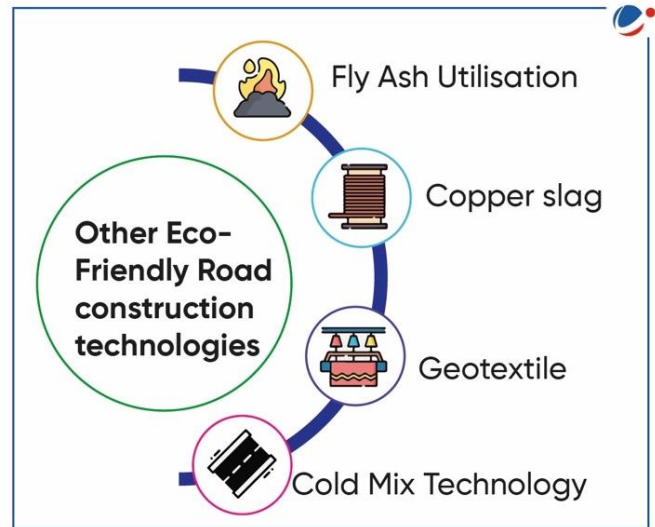
### 7.11.19. STEEL SLAG ROAD TECHNOLOGY (SSRT)

- JSW Steel has constructed **1 km long** four lane steel slag road section on **NH-66 (Mumbai-Goa)**.
  - Earlier, **Border Roads Organization** has also constructed a steel slag road in **Arunachal Pradesh**.
- This project falls under the initiative of the **Waste to Wealth and Clean India Campaign**

- **Steel Slag Road Technology**
  - The **slag is generated from a steel furnace** burning in the form of molten flux material as an impurity.
  - Steel slag is a **non-metallic, glassy material** consisting of **calcium, magnesium, manganese, and aluminium silicates and oxides** in various combinations.
  - During the road construction, **steel slag is processed to remove impurities and metal content.**
  - These processed steel slag aggregates exhibit **superior mechanical properties** compared to natural aggregates.
  - The road includes **bituminous and cement concrete steel slag** sections on both the right-hand and left-hand carriageways.



- **Benefits**
  - **Cost Efficiency:** Steel slag roads offer **approximately 30% cost savings** compared to traditional road construction.
  - **Durability:** Steel slag's robust properties ensure roads built with it **surpass the lifespan of conventional roads.**
  - **Abundant Availability:** India, as the **world's second-largest steel producer**, has abundant access to steel slag, facilitating widespread use in infrastructure projects.
  - **Environmental Friendliness:** The innovative process significantly **reduces greenhouse gas emissions**, contributing to a greener approach in road construction.
  - **SDG 9 Contribution:** Embracing steel slag roads contributes to achieving Sustainable Development Goal 9, **promoting resilient infrastructure and sustainable industrialization.**

- **Temperature Resilience:** With a melting point over 200 degrees Celsius, steel slag is **resistant to temperature variations**, suitable for diverse climates.



### 7.11.20. ANEEL (ADVANCED NUCLEAR ENERGY FOR ENRICHED LIFE)

- **An American company** has developed a **fuel ANEEL** (named after India's scientist, Dr Anil Kakodkar).
- ANEEL is a mix **Thorium and Uranium** of a certain level of enrichment, called **HALEU (High Assay Low Enriched Uranium)**.
  - **HALEU has an enrichment level of 5-20%**, whereas most current reactors are enriched up to 5%.
- **Potential Benefits**
  - ANEEL can be used in the **existing Pressurized Heavy-Water Reactors (PHWRs)** of India's nuclear fleet.
  - Reduction in nuclear waste etc.

 <p><b>SMART QUIZ</b></p>	<p>You can scan this QR code to practice the Smart Quiz of Science &amp; Technology at our open test online platform for testing your understanding and recalling of the concepts.</p>	
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# 8. CULTURE

## 8.1. MITAKSHARA LAW

### Why in the News?

Supreme Court ruled that **children born from void or voidable marriages** are **legitimate for property inheritance** under the **Hindu Succession Act (HSA), 1956** which recognizes **Mitakshara Law**.

### More on News

- The court held that such children be **treated as an extended family of a common ancestor** to decide a valid share in the property of the common ancestor.

### Mitakshara Law

- It is one of the two major Hindu law schools (the other being Dayabhaga) that governs the succession of property in Hindu families.
- It is based on the commentary on the **Yajnavalkya Smriti**, written by **Vijnaneswara in the 12th century**.
- It recognizes the concept of **coparcenary**, which means that **ancestral property is jointly held by all male members of the family**, and they have equal rights in the property.
- Coparcener has **no absolute right to transfer his share** because his **share is not definite or ascertainable** as their shares fluctuate with the births and deaths of the coparceners.
- According to this school, a **woman could never become a coparcener**.
  - However, the **Hindu Succession (Amendment) Act, of 2005 empowered women to become a coparcener** like males in ancestral property.
- It is **prevalent throughout India, except in some eastern parts** where Dayabhaga School is followed.
- There are **4 sub-schools of Mitakshara Law**:
  - Dravidian/Madras school of thought,
  - Maharashtra school of thought,
  - Banaras school of thought,
  - Mithila school of thought.
  - Punjab School

### Dayabhaga School of Thought

- It is based mainly on the Yagnavalkya Smriti commented by **Jimutvahana**.
- **Inheritance is based on the principle of spiritual benefit**. It arises by **pinda offering**, i.e., rice ball offering to deceased ancestors.
- Followed in **Bengal and some parts of Assam** only.
- It has **no sub-school**.

### Mitakshara vs. Dayabhaga schools in coparcenary rights

Mitakshara Schools	Dayabhaga School
Mitakshara is an orthodox School	Dayabhaga is Reformist School
Right of a son by birth in the ancestral property equals to the interest of his father.	Son is entitled to his ancestral property only on the death of his father.
Son becomes coparcener right after his birth.	Son becomes coparcener by death of his father.
Coparcenary right is applicable to the property of grandfather and great-grandfather.	Father is the absolute owner of his property in his lifetime.
One cannot transfer his share to the third party as their share is not definite or ascertainable.	One can transfer his share as they are defined.



## Related News

### Sapinda Marriages

- Delhi High Court upheld the constitutional validity of the prohibition of marriage between 'Sapindas' under the Hindu Marriage Act (HMA), 1955.
- The court also said that **if the choice of a partner in a marriage is left unregulated, an incestuous relationship may gain legitimacy.**
- **Section 5(v) of the HMA, 1955 prohibits** marriages between Sapindas, unless custom or usage governing each of them permits a marriage between the two.
- **Sapindas**
  - **Under the HMA, 1955, Sapinda relationship** with any person extends as far as
    - ✓ **3<sup>rd</sup> generation (inclusive) in the line of ascent through the mother**, and
    - ✓ **5<sup>th</sup> generation (inclusive) in the line of ascent through the father.**
    - ✓ The line is **traced upwards in each case from the person concerned**, who is to be counted as the first generation.
  - **Two persons are said to be sapindas** of each other if –
    - ✓ **one is a lineal ascendant of the other** within the limits of the **sapinda relationship**, or
    - ✓ they have a **common lineal ascendant who is within the limits of the sapinda relationship** with reference to each of them.

## 8.2. NEWS IN SHORTS

### 8.2.1. GEOGRAPHICAL INDICATIONS (GI) TAG

- 17 products from different states bagged the Geographical Indications (GI) tag

States/UTs	GI tagged Products
Odisha	Lanjia Saura paintings, Dongaria Kondh shawl, Khajuri Guda, Dhenkanal Magji, Similipal Kai Chutney, Nayagarh Kanteimundi Brinjal, Koraput Kalajeera Rice
Arunachal Pradesh	Handmade Carpets, Wancho Wooden Craft, Adi Kekir (Ginger)
West Bengal	Tangail Saree, Garad Saree, Korial Saree, Kalonunia Rice, Sundarban Honey
Jammu and Kashmir	Ramban Anardana
Gujarat	Kachchi Kharek

### 8.2.2. SRI VEERABHADRA TEMPLE (OR LEPAKSHI TEMPLE)

- **About Lepakshi temple**
  - Located in **Anantapur district of Andhra Pradesh** and **built-in 16th century** during **Vijayanagar empire.**
  - Built in **trikutastyle** with **three shrines - Veerabhadra (Lord Shiva Presiding deity), Papanaseswara and Raghunatha.**
  - Noted for **largest monolithic Nandi (bull) statue** and **Naga-siva-linga** with seven-hooded snake.
  - **Fresco paintings** (painting in lime on plaster) on walls and ceilings of mandapas and pradakshinapada **depict illustrations from Ramayana and Mahabharata, gods and legendary stories like Parvathi's marriage, etc.**

- Placed in **UNESCO's tentative World Heritage Sites list.**

### 8.2.3. GURUVAYUR TEMPLE

- **Guruvayur Temple** also known as the **Dwarka of the South**, and is dedicated to **Lord Vishnu.**
  - The presiding deity is depicted in a **standing posture with four hands** holding **Shankh, Sudarshana Chakra, Lotus and Mace.** It is carved out of stone named **Patala Anjana.**
  - Temple is erected in such a way that **first rays of Sun descend directly at the feet of Vishnu.**
  - In **1931-32, Sathyagraha** was launched under Kelappan (Kerala Gandhi) to secure entry of untouchables into the temple.
    - ✓ It led to **Travancore Temple Entry proclamation in 1936.**
  - Temple is also known for **Elephant festival.**

### 8.2.4. SHREE KALARAM MANDIR

- Prime Minister **visited the Kalaram Mandir** on the banks of the **Godavari, Nashik (Maharashtra).**
- **About the Temple:**
  - It was built in **1782 by Sardar Rangrao Odhekar** on the site of an old wooden temple.
    - ✓ It is supposed to stand on the spot where Lord Ram lived during his exile.
  - It derives its name from a **black statue of the Lord Ram.**
- The temple is also the **site of a landmark agitation led by Babasaheb Ambedkar demanding temple entry rights** for Dalits more than 90 years ago.

### 8.2.5. SRI RANGANATHASWAMY TEMPLE

- **About Sri Ranganathaswamy Temple**
  - Also known as **Thiruvarama Tirupati**, is dedicated to **Ranganatha (reclining form of Lord Vishnu)**.
  - It is constructed in **Dravidian style** and temple Complex has **21 sculpted Gopurams, 50 sub-shrines, and 9 sacred pools (tanks)**.
  - It is not just a temple but a temple-town, unique in its **Sapta-Prakaram formation** and **one of 108 Divya Desams** dedicated to Lord Vishnu.
  - Situated on **island of Srirangam** bounded by **Cauvery and Kollidam (tributary of Cauvery) Rivers**.

### 8.2.6. VADNAGAR

- A joint study by **Indian Institute of Technology (Kharagpur)** discovered **evidence of human settlement** in Vadnagar (**Gujarat**) dating back to **800 BCE**.
  - This aligns with **late-Vedic/pre-Buddhist Mahajanapadas** or **oligarchic republics era**, shedding light on the town's ancient origins.
- **About Vadnagar**
  - Included in the **tentative list of UNCESO World Heritage Sites**.
  - It was a **multicultural and multi religious** (Buddhist, Hindu, Jain and Islamic) settlement.
  - It is in proximity to **Modhera, which is famous for Sun Temple**.
  - **Historical sites**
    - ✓ Hatkeshwar Temple
    - ✓ Sharmishtha Lake

### 8.2.7. PUNGANUR COWS

- **Punganur Cows** are a rare breed of cattle native to **Punganur village** in Chittoor district of Andhra Pradesh.
- Due to their declining numbers, in 2020, Andhra Pradesh government launched '**Mission Punganur**'.
  - Indian Council of Agricultural Research (ICAR, National Bureau of Animal Genetic Resources) has cryo-preserved their semen doses in the gene bank.
- **Key characteristics**
  - **One of the world's smallest humped cattle breeds:** Mere 70-90 cm tall and weigh around 115-200 kg.
  - Ideal for small-scale dairy farming and organic farming.
  - **Known for high-quality milk which is rich in fat:** Their milk may contain up to 8% fat content (Normal cow milk has a fat content of 3%-3.5%).
  - **Adaptable and Drought-resistant:** Can survive on dry fodder such as grass, straw, etc.

- **Cultural significance:** Many temples of Andhra Pradesh, including the Tirupati Thirumala Temple, use its milk for *Ksheeraabhishekam* (milk offering to the deity)

### Other Indigenous Cattle Breeds of India

Breed	Location
 <b>Sahiwal</b>	Punjab and Rajasthan
 <b>Red Sindhi</b>	Orissa, Tamil Nadu, Karnataka
 <b>Gir</b>	Gujarat
 <b>Deoni</b>	Maharashtra and Karnataka
 <b>Tharparkar, Sanchori, Rathi, Nagori</b>	Rajasthan
 <b>Ongole</b>	Andhra Pradesh
 <b>Kankrej</b>	Gujarat and Rajasthan
 <b>Malvi, Nimari</b>	Madhya Pradesh
 <b>Hallikar, Malnad Gidda, Amrit Mahal</b>	Karnataka

### 8.2.8. WARLI TRIBE

- Warli Tribe has set up an example of peaceful coexistence with leopards near **Sanjay Gandhi National Park in Maharashtra**.
  - They worship the **leopard (or Waghoba)** as a deity.
- **About Warli Tribes**
  - The Warli tribe is among the **largest tribes of Maharashtra region**.
    - ✓ They live on the outskirts of Mumbai, in the North Sahyadri region.
  - They are renowned for **Warli wall paintings**.
    - ✓ This art form can be traced back to **10th century AD**.
    - ✓ Generally takes inspiration from **normal life routine and surroundings**.
    - ✓ **Natural materials and colors** are used in paintings with bamboo brushes

### 8.2.9. BRU TRIBE

- **Last batch of Mizoram Bru refugees permanently settled in Tripura** as per an agreement signed between Ministry of Home Affairs, Tripura, and Mizoram in 2020.
- **About Bru Tribe (also known as Reang)**
  - Indigenous to Northeast India, living mostly in **Tripura (recognized as Particularly Vulnerable Tribal Group), Mizoram, and Assam.**
  - Belongs to **Tibeto-Burman family** and speak **Kaubru language.**
  - Practice **Jhum cultivation** and engage in food-gathering activities.
  - Perform **Hozagiri dance.**

### 8.2.10. MADHIKA LANGUAGE

- Currently, it has only **2 speakers** and is on the brink of extinction.
- **About Madhika**
  - Spoken by **Chakaliya Community** and has no script.
  - It is **largely influenced by Havyaka Kannada** (old form of Kannada).
  - It is a **blend of Telugu, Tulu, Kannada, and Malayalam.**

### Initiatives to Protect Endangered Languages



Scheme for Protection and Preservation of Endangered Languages (SPPEL).



Establishment of Centres for Endangered Languages in Central Universities.

### 8.2.11. WEST BENGAL NOTIFIED STATE DAY & STATE SONG

- West Bengal government notified **Poila Boisakh** as State Day and **Banglar Mati Banglar Jal** as State Song.
- **Poila Boisakh** is the **first day of the month of Boisakh of the Bengali calendar year** and is named as **Bangala Divas.**
  - **Poila Boisakh** is an important festival celebrated by **Bengali communities** across **West Bengal, Tripura, Jharkhand, and Assam.**
  - **In 2023 it was celebrated on April 15th.**
- **Banglar Mati Banglar Jal** song is written by **Rabindranath Tagore.**

### 8.2.12. STATUE OF SOCIAL JUSTICE

- **Statue of Social justice** was unveiled in **Vijayawada, Andhra Pradesh.**
  - It is a **206 foot Bronze Statue of Dr. B.R. Ambedkar** and is currently **the world's tallest Ambedkar statue.**
- Other important Statues
  - **Statue of Unity (Kevadia, Gujarat):** Sardar Patel.
  - **Statue of Equality (Hyderabad's Shamshabad, Telangana):** Ramanuja.
  - **Statue of belief (Nathdwara, Rajasthan):** Lord Shiva.

### 8.2.13. 'RASHTRIYA VIGYAN PURASKAR (RVP)'

- **Ministry of Science and Technology** called for nominations of the first-ever National Science Award, known as "**Rashtriya Vigyan Puraskar**".
  - It will replace over 300 previously existing awards.
- It recognizes outstanding and inspiring scientific, technological and innovation contributions of researchers, technologist and innovators.
- Awards will be given across four categories:
  - These awards include **Vigyan Ratna, Vigyan Shri, Vigyan Yuva: Shanti Swarup Bhatnagar and Vigyan Team.**
  - Posthumous awards will be given only in exceptional cases.
- Award will be conferred on August 23rd (National Space Day- Chandrayaan-3 mission's soft landing).

### 8.2.14. NATIONAL SPORTS AWARDS (NSA) 2023


- President of India conferred NSA 2023.
- Administered by: **Ministry of Youth Affairs & Sports.**
- **It includes following six core awards:**
  - Major **Dhyan Chand Khel Ratna** (Highest sporting honour).
  - **Arjuna Award** (For consistent performance over 4 years).
  - **Dronacharya Award** (Highest sports honour for coaches).
  - Major **Dhyan Chand Award** (For lifetime achievement).
  - **Maulana Abul Kalam Azad Trophy** (Top performance in inter-university tournaments).
  - **Rashtriya Khel Protsahan Puruskar** (sports promotion by organisations or corporates).

### 8.2.15. PRADHAN MANTRI RASHTRIYA BAL PURASKAR (PMRBP)

- The President conferred PMRBP to 19 children.
- The PMRBP awarded annually by the Ministry of Women and Child Development.
  - It honors children aged 5–18 for excellence in Bravery, Art & Culture, Environment, Innovation, Science & Technology, Social Service, and Sports that deserve national recognition.
  - Awards include a medal, certificate, and citation booklet, presented the week before Republic Day.
  - Awardees must receive the accolades personally, with posthumous exceptions for bravery in Bal Shakti Puraskar.
  - Eligibility: Limited to Indian citizens residing in India


### 8.2.16. SUBHASH CHANDRA BOSE AAPDA PRABANDHAN PURASKAR (SCBAPP)-2024

- 60 Parachute Field Hospital in Uttar Pradesh has been selected for SCBAPP - 2024.
- About Award:
  - Announced every year on 23rd January (Parakram Diwas) - birth anniversary of Netaji Subhash Chandra Bose.
  - Recognises and honors invaluable contributions and selfless services rendered by individuals and organizations in Disaster Management.
  - Only Indian nationals and Indian institutions are eligible to apply for the award.
  - Any individual/institution can nominate an individual or institution for the award.



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# 9. ETHICS

## 9.1. BUDDHA'S TEACHINGS

### Why in the news?

Recently, the Vice President of India stressed the importance of Buddha's teachings while addressing the **12th General Assembly of the Asian Buddhist Conference for Peace (ABCP)**.

#### Important Teachings of Buddha

- In the 6th century BC, **Buddha preached** that life brings sorrow. To find freedom, one must **overcome desire**.
- His teachings encompass **'Four Noble Truths'** and **'Eight-Fold Path'** or **Ashtangika Marg**.
- **Four Noble Truths:**
  - There is **suffering** and the entire world is inflicted by it
  - There is a **cause for suffering**, which is not one entity, but a cycle of twelve links, with ignorance being the root cause.
  - There is **end of suffering** if the root cause of suffering, i.e., ignorance is dispelled.
  - There is a **path that leads to the end of suffering**, known as the eight-fold path.
- **'Eight-Fold Path'** (Path to the end of suffering): Right- Views, Aspiration, Speech, Action, Livelihood, Effort, Mindfulness and Concentration.
- He advocated a **'Middle Path'**, a **simple, virtuous life** between extreme austerity and luxury.
- Further, Buddhist ethics, the expansion of the fourth noble truth, prescribes **three gems (Triratna)-Knowledge, conduct and meditation** as the means of liberation.
- The five conducts that are very important for a Buddhist monk include: **Non-violence, Non-stealing, Celibacy, Truthfulness and not taking any intoxicating things like liquor**.

### Contemporary Relevance of Buddha's Teachings

- **Addresses Consumerism and Materialistic Greed:** Buddha acknowledged the relationship between attachment and sorrow and inspired to follow the pursuit of inner contentment.
  - This can address mindless consumerism and promote sustainable consumption as envisioned in India's **Mission LiFE (Lifestyle for Environment)**.
- **Promoting Scientific temper:** Encouraging mindfulness, concentration, and right understanding can facilitate a **spirit of inquiry**.
- **Citizen-centric governance: Right Speech, conduct, and livelihood** can help make administration more responsive and service-driven, prioritizing citizen welfare and inclusivity.
  - Also, the incorporation of 'Right conduct' among public servants can help address concerns related to corruption.
- **Forest Conservation:** Buddhist monastic rules prohibit the cutting of plants and trees which recognizes sufferings associated with deforestation to habitat and indigenous communities.
  - Such recognition can help address contemporary forest degradation through **Community based forest management**.
- **Sustainable development:** Pursuit of the **'Middle Path'** can offer a **path of sustainability, simplicity and moderation and be a solution to climate change, over-exploitation of resources**, etc.
  - **Pursuance of just and egalitarian society:** Buddha preached non-discrimination by opening the **institution of Sangha** to all persons (including **courtesans like Amrapali**) above fifteen years of age.
    - His teachings can help eliminate discrimination against vulnerable sections like sex workers, women, transgender, etc.
- **Peace, harmony, and coexistence: Spirit of love** towards all living and emphasis on the **law of karma** can curb wars, **terrorism, extremism and violence**.
- **Inter-faith harmony:** Buddha **neither accepted nor rejected the existence of God**. He was more concerned about the **individual and his actions**.
- **Ethical guide:** There is **rise of frontier technology** like Artificial Intelligence, biotechnology etc.
  - Buddha's teachings of **simplicity, moderation, middle path and reverence for all life**, guide us to **deal with ethical ambiguity** associated with these advances.
- **Peaceful resolution of conflict:** Buddha **rejected violence and taught dialogue** as best way to resolve conflicts. In his lifetime, **Buddha resolved tensions between rulers of neighboring kingdoms**.

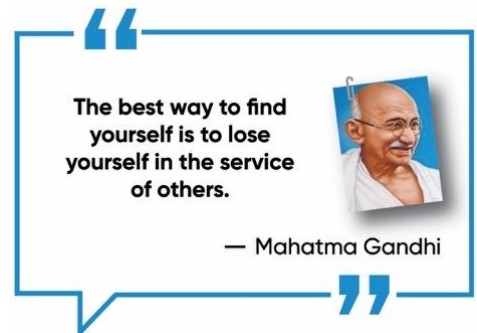
## Conclusion

Buddha's teachings have a **non- anthropocentric approach** which focuses not only on human liberation by practicing moral disciplines but also **on wellbeing of all creatures and the natural world.**

## 9.2. GOOD SAMARITANS

### Introduction

In a case related to Good Samaritan, the Delhi High Court observed that a person who chooses to help a person in distress should not be harassed for showing kindness. Further, HC said that helping an injured on a public road/highway is the prime duty of everyone.



Stakeholders and their Interests	
Stakeholder	Interests
Good Samaritan	<ul style="list-style-type: none"> <li>• <b>Responsibility and duty to help</b> living beings in distress.</li> <li>• Expect that in lieu of helping others they will be <b>not harassed by authorities or bear prolonged legal formalities</b></li> </ul>
Person in need	<ul style="list-style-type: none"> <li>• Expect that <b>every person shall show the qualities of Good Samaritan</b> showering compassion and empathy.</li> </ul>
Government	<ul style="list-style-type: none"> <li>• Government <b>benefits from the act of Good Samaritans</b> as it leads to saving of life of citizens. <ul style="list-style-type: none"> <li>○ According to the Law Commission, 50% of the road accident victims could have been saved if they had received care on time especially during Golden hour. Golden Hour refers to time period of one hour following an accident.</li> </ul> </li> <li>• It will help government <b>in reducing the road accidents by 50% by 2030.</b></li> </ul>
Police/Other authorities	<ul style="list-style-type: none"> <li>• Collects all the <b>relevant information from the Good Samaritan.</b></li> <li>• Also, makes effort that <b>Good Samaritan are not harassed</b> by involving them in investigation, seeing them as suspect, forcing them to become eyewitness etc.</li> </ul>

### Issues which hinder acts of Good Samaritan

- **Indifference:** In times of need, people give priority to their interests in comparison to the urgency of saving a human life.
  - For instance, if an individual is going for an important business deal and s/he encounters an accident, the indifference can be reflected here.
- **Selfishness/unsympathetic:** In modern times, self-centric tendencies have increased. E.g. In a recent accident, people were taking selfies and making videos instead of helping them.
- **Bystander apathy: leads to diffusion of responsibility** that occurs when multiple people are present believing that someone else will take the action.
- **Unfavourable public judgment: Fear of unfavourable public judgement wherein people feel they would be considered the culprit.**
- **Legal Issues:** Fear of being trapped in legal matters creates resistance among people to come forward and help others.
  - In many cases, it has been found that police harass Good Samaritans through different means such as asking them to take care of injured people, pay hospital bills, become eyewitnesses etc.



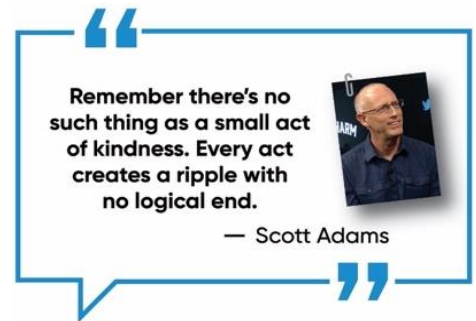
### Good Samaritan and Legal Provision in India

- A person who **comes forward to administer immediate assistance** or emergency care to a person injured in an accident, or crash, or emergency medical condition, or emergency situation. Such act is performed voluntarily without **expectation of payment or reward** and without any duty of care or special relationship.

- Based on a PIL filed by **Save LIFE Foundation**, **Supreme Court** directed the centre to issue guidelines. **Ministry of Road Transport and Highways** accordingly issued guidelines:-
  - **Good Samaritan may take an injured person to the nearest hospital** and should be allowed to leave immediately.
  - He/she shall not be liable for any civil and criminal liability.
  - **Hospitals should publish a charter stating that they shall not detain Samaritan or ask for depositing money for the treatment.**
  - **Action against public officials** who coerce Good Samaritan for revealing personal details.
- **In 2016, Supreme Court** made these guidelines **legally binding for all states and Union Territories.**
- **Section 134A** was inserted in **Motor Vehicles (Amendment) Act, 2019** providing protection to Good Samaritans

#### How we can promote the culture of Good Samaritan in India?

- **Reforms in Law:** Stringent provisions in Motor Vehicles Act, 1988 can be added for the protection of the Good Samaritan.
  - It will motivate people to come forward and help others.
- **Display ‘Charter of Rights’ for Good Samaritans in the hospitals and police stations,** as mandated by the Supreme Court.
- **Rewards/Recognition for Good Samaritans:** Operant conditioning, also referred to as **instrumental conditioning** or Skinnerian conditioning, can be used in this regard.
  - It is a method of learning that uses rewards and punishment to modify behaviour.
- **Public Awareness:** It will help in promoting values like empathy, **kindness**, and the importance of helping others from a young age.
  - Familiarise Health Workers and Police about the Good Samaritan Law, court decisions, guidelines and standard operating procedures
  - Different mediums can be adopted for it such as cinema, theatre etc.
- **Adoption of Best Practices:** Canadian states have provisions of no liability for emergency aid by Samaritans unless gross negligence is observed.



#### Check Your Ethical Aptitude

You are aspiring to become an IAS officer and you have cleared various stages of the examination and now you have been called for the personality test. On the day of the interview, on the way to the venue you saw an accident where a mother and child were badly injured.

**On the basis of the case, answer the following questions:**

What would you have done in such a situation? Justify your action.

## 9.3. BEYOND BITES: ETHICAL CONSIDERATIONS IN STRAY DOGS CONTROL

### Introduction

India has a nearly **1.5 crore stray dog population (2019 livestock census)** and carries the dubious distinction of being the **world's dog-bite-and-rabies-capital**. According to the National Crime Records Bureau, there were **4,146 reported cases of dog bites leading to human deaths** in India in 2019. Thus, there is a growing concern regarding stray dog management.

Stakeholder	Interest/Role
Animal welfare organizations/activists	
Pet owners	
Local authorities	
Government	

## Ethical aspects surrounding control of stray dogs

- **Abandonment:** Abandonment of pets is a moral challenge, which is often considered as **moral bankruptcy and irresponsibility**.
  - Socio-economic changes in human societies have rendered the historical roles of hunters and herders largely obsolete.
  - Thus, the **utilitarian component has weakened significantly** in the human-dog bond that has evolved over thousands of years.
- **Differential treatment:** There are concerns regarding the differential treatment of different categories and breeds of dogs. **Why do some well-bred animals are seen as status symbols, and treated like family members, while others living on the streets are seen as social outcasts?**
- **Companionship and responsibility:** Dogs have a unique relationship with man's evolutionary history — one of companionship. This poses a moral dilemma of being **responsible for their welfare** but also confronting the vagaries of their evolution from wolves and their **territorial instincts**.
- **Public Health:** The concern is raised for both human health and the health of dogs.
  - Also, India has committed to eliminating rabies by 2030, but it is not possible without first addressing threats from stray dogs.
- **Ecological concerns:** Carrying capacity of the environment is the population of a species that can be supported by a particular environment given the limited resources.
  - Some believe that humans are directly **increasing the capacity of stray dog population** by regularly feeding them, thus aggravating the problem.
- **Animal control methods:** The use of capture, mass killing and euthanasia methods raises ethical concerns, as it involves taking the lives of animals. Ethical alternatives, such as trap-neuter-return (TNR) programs, should be considered.

## Present Policy Framework

- **Prevention of Cruelty to Animals Act (PCA), 1960:** Killing of stray dogs is **punishable** under the PCA, 1960, which classifies torture and transporting them in a manner which causes them suffering, as cruelty.
- **Animal Welfare Board of India (AWBI):** A statutory advisory body, established in 1962 under PCA 1960, to promote animal welfare.
- **Animal Birth Control (ABC) Program:** It aims to control population of stray dogs through sterilization and vaccination. The program is regulated as per the **Animal Birth Control Rules, 2023** under PCA 1960, other provisions of which include:
  - ABC programme is to be carried out by the respective **local bodies/municipalities/Municipal Corporations and Panchayats**.
  - **Incurably ill and mortally wounded dogs shall be euthanized** in a humane manner.
  - Responsibility of **feeding the community animals** lies with the Resident Welfare Association or Local Body's representative of that area.
- **Judicial View:** Supreme Court has in various orders specifically mentioned that **relocation of dogs cannot be permitted**.
  - Supreme Court in AWBI vs Nagaraja case (2014) declared that **every species has a right to life and security**, subject to the law of the land, which includes depriving its life out of human necessity.

### Different ethical perspectives for building a way forward

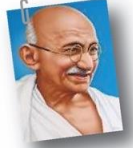
- **Utilitarianism:** Utilitarian views of greater benefit to society would support a pro-human strategy for dog management.
- **Deontology:** Deontology involves approaches that prioritize fulfilling responsibilities toward animals, such as providing proper care and respecting the inherent value of life.
- **Virtue Ethics:** It involves promoting virtues such as empathy, compassion, and encouraging responsible pet ownership.
- **Rights-based Ethics:** Stray dogs would be considered as having certain rights, and ethical actions would involve respecting and protecting those rights.
- **Libertarian view:** Removal of dogs from our surroundings and dumping them in garbage mounds violates their fundamental right to life and dignity.



## Way Forward

- **Animal control measures:** Government alongside Civil Society needs to formulate and implement policy measures including proper vaccination and sterilization drives and manage animal waste.
  - Effective laws to prevent the abandonment of pets and ensure their welfare can also be enacted.
  - A **national policy aiming to solve the human-dog conflict** with a focus on block and district levels should be designed with consultation from all relevant stakeholders.
- **Infrastructural support:** Creation of dedicated feeding spots, veterinary healthcare facilities, and support to civil society organizations involved in animal welfare.
- **Training and Education:** Potential/present pet owners shall be educated and trained regarding pet behaviour, their development cycle and managing their health and hygiene.
- **Developing new relationships:** Dogs have highly developed cognitive and social communication abilities, which enable them to perform various functions in the roles of service dogs, drug-detecting, and bomb-sniffing dogs and so on.
  - Also, many studies demonstrate that the company of dogs can lead to reduced stress, anxiety, and symptoms of depression.

“  
Roving dogs do not indicate the civilization or compassion of the society; they betray, on the contrary, the ignorance and lethargy of its members  
”



— Mahatma Gandhi

### Check your ethical aptitude

Bengaluru, a metropolitan hub, is grappling with the escalating number of stray dogs. Incidents of dog bites, conflicts with residents, and concerns about safety have become commonplace. The rage amongst the dogs is increasing among some groups of the citizens and caregivers who feed stray dogs are becoming common target of violence. The administration is under pressure of clearing the streets of stray dogs.

#### On the basis of case, answer the following questions:

- How can the administration strike a balance between ensuring public safety, especially in cases of dog bites and conflicts, and upholding the compassionate treatment of stray dogs?
- What ethical considerations should guide the administration in engaging with the community to address their concerns and seeking collaborative solutions to the stray dog issue?

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# 10. SCHEMES IN NEWS

## 10.1. SUKANYA SAMRIDDHI YOJANA (SSY)


### Why in the News?

Finance Ministry recently increased the interest rate for the Sukanya Samriddhi Account Scheme from 8% to 8.2% for January-March (2024) quarter.


Objectives	Salient features
<ul style="list-style-type: none"> <li>Aim is to provide a small investment for the girl, which is to be used to facilitate payment of education and marriage expenses</li> </ul>	<ul style="list-style-type: none"> <li><b>Ministry:</b> Ministry of Finance</li> <li><b>Background:</b> SSY is a <b>small deposit scheme</b> for a girl child and was launched in 2015 as a part of the <b>Beti Bachao Beti Padhao campaign</b>.</li> <li><b>Account Opening:</b> Account can be opened in <b>Post Offices and notified branches of Commercial Banks</b>.</li> <li><b>Account Name:</b> Opened in the name of a <b>girl child</b> and an account under this Scheme may be opened <b>for a maximum of two girl children in one family</b>.</li> <li><b>Account portability:</b> The account can be <b>transferred anywhere in India</b> from one post office/Bank to another</li> <li><b>Interest Rate:</b> Interest on balance (at rate notified by the government from time to time) will be <b>calculated on yearly compounded basis</b> and credited to the account.</li> <li><b>Maturity of scheme:</b> The account shall mature after <b>21 years from the date of opening or on marriage</b> of the girl child under whose name the account is opened, <b>whichever is earlier</b>.</li> <li><b>Premature closure of account:</b> In the event of <b>death of the account holder</b> or where the Central Government is satisfied that continuation of the account is causing <b>undue hardship to the account holder</b>.</li> <li><b>Premature withdrawal:</b> Once the girl child is <b>18 years old</b>, she can make an early withdrawal of <b>up to 50% of the balance for higher education</b>.</li> <li><b>Other benefits of Sukanya Samriddhi Account Scheme</b> <ul style="list-style-type: none"> <li>Even girl child can operate the account after she attains the age of 10 years.</li> <li>Payment on maturity to girl child.</li> <li>Interest payment even after maturity if account is not closed.</li> <li>Transferable anywhere in India.</li> <li>Deposits may be made in the account till the completion of a period of fifteen years from the date of opening of the account.</li> </ul> </li> <li><b>Documents required for opening an account</b> <ul style="list-style-type: none"> <li>Sukanya Samriddhi Account Opening Form.</li> <li>Birth certificate of girl child</li> <li>Identity proof (as per RBI KYC guidelines)</li> <li>Residence proof (as per RBI KYC guidelines)</li> </ul> </li> </ul>

**SUKANYA SAMRIDDHI YOJANA**


Save for your girl child's educational and marriage expenses




Attractive interest rates



Gain tax benefits under Section 80C



Premature withdrawal allowed



Gain tax benefits under Section 80C

**Minimum Deposit-** Rs.250  
**Maximum Deposit -** Rs.1.5 Lakh per year  
**Eligibility -** Girl Child under 10 years of age

# APPENDIX

## Pradhan Mantri Adi Adarsh Gram Yojana (PMAAGY)



### Ministry

- ▶ Launched by the **Ministry of Tribal Affairs** for a period of **5 Years (2021-2026)**
- ▶ It is a **revamped version of Special Central Assistance to Tribal Sub-Scheme (2017)**



### Objective

- ▶ Preparation of **Village Development Plans** based on the needs.
- ▶ **Maximizing the coverage of the schemes of Centre and States** to the Scheduled tribes Population.
- ▶ **Improving the infrastructure in vital sectors** like health, education, connectivity and livelihood.



### Coverage

- ▶ All **States and UTs with notified ST population**.
  - ▶ A total of **36,248 villages** having **at least 50% ST population and 500 ST persons** are identified to be covered in the given period (2021-2026).



### Implementing Agency

- ▶ Respective **State/UT administration**
  - ▶ The **department dealing with the matters of tribal welfare** in the State/UT will act as the **nodal department**.



### Type

- ▶ It is a **Centrally Sponsored Scheme** with 100% grant from the Centre.



### Provision of Fund

- ▶ A sum of **20.38 Lakhs** is provided to each selected village as **"Gap filling fund"** for approved activities including administrative expenses.
  - ▶ An amount of **2% of the allocated budget** is to be **utilised for administration** and monitoring expenses.



### Selection of Villages

- ▶ The **identified villages (36,248)** are to be covered in 5 years, with 1/5th of the villages selected every year.
- ▶ **Selection** from among the identified villages is to be **done by the Ministry of tribal affairs**.
  - ▶ Villages in a selected district are most likely to be considered together.
  - ▶ Release of grant will be in accordance with number of villages approved.



Types of projects included under the scheme

- ▶ Road Connectivity (Internal and Inter village)
- ▶ Telecom Connectivity
- ▶ School
- ▶ Anganwadi centres
- ▶ Health sub-centre
- ▶ Drinking water facility
- ▶ Drainage and Solid waste management

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3 JAN

**HYDERABAD**  
6 MAR

**JAIPUR**  
21 FEB

**JODHPUR**  
21 FEB

**LUCKNOW**  
16 FEB

**PUNE**  
15 MAR

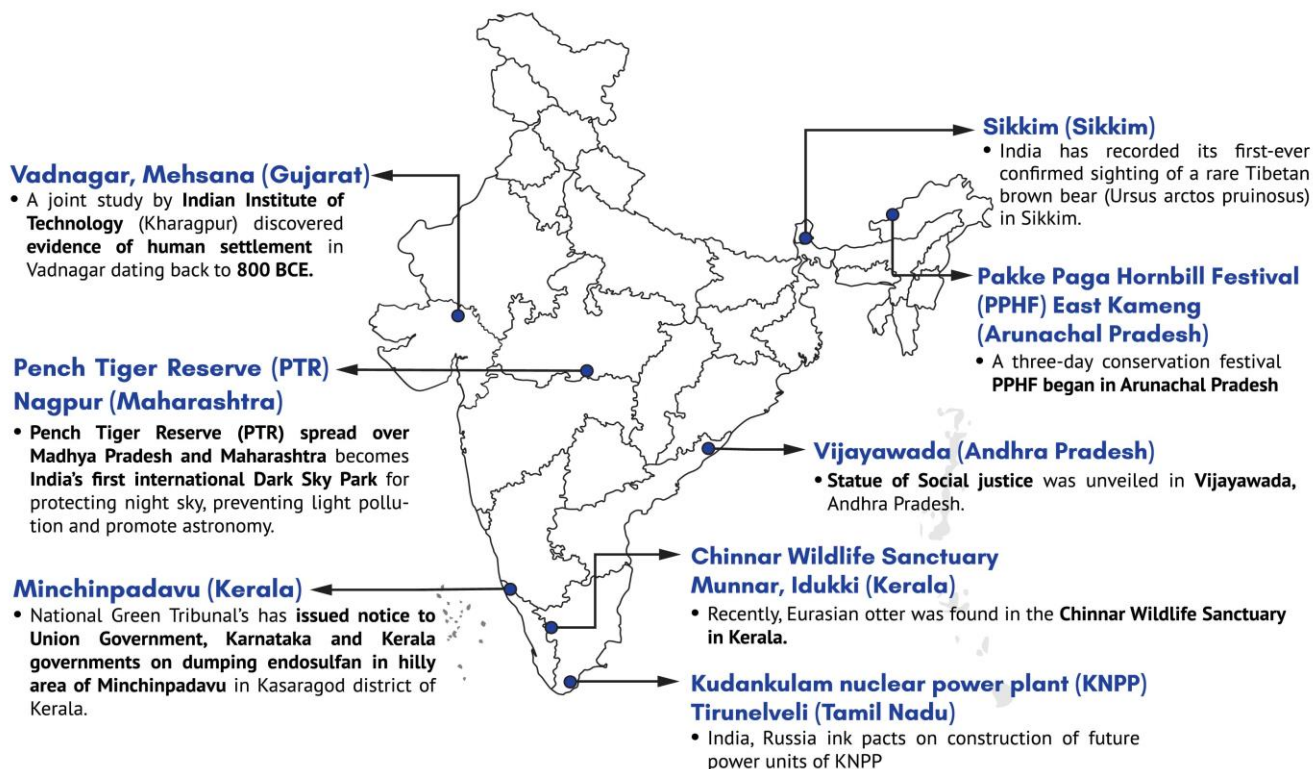


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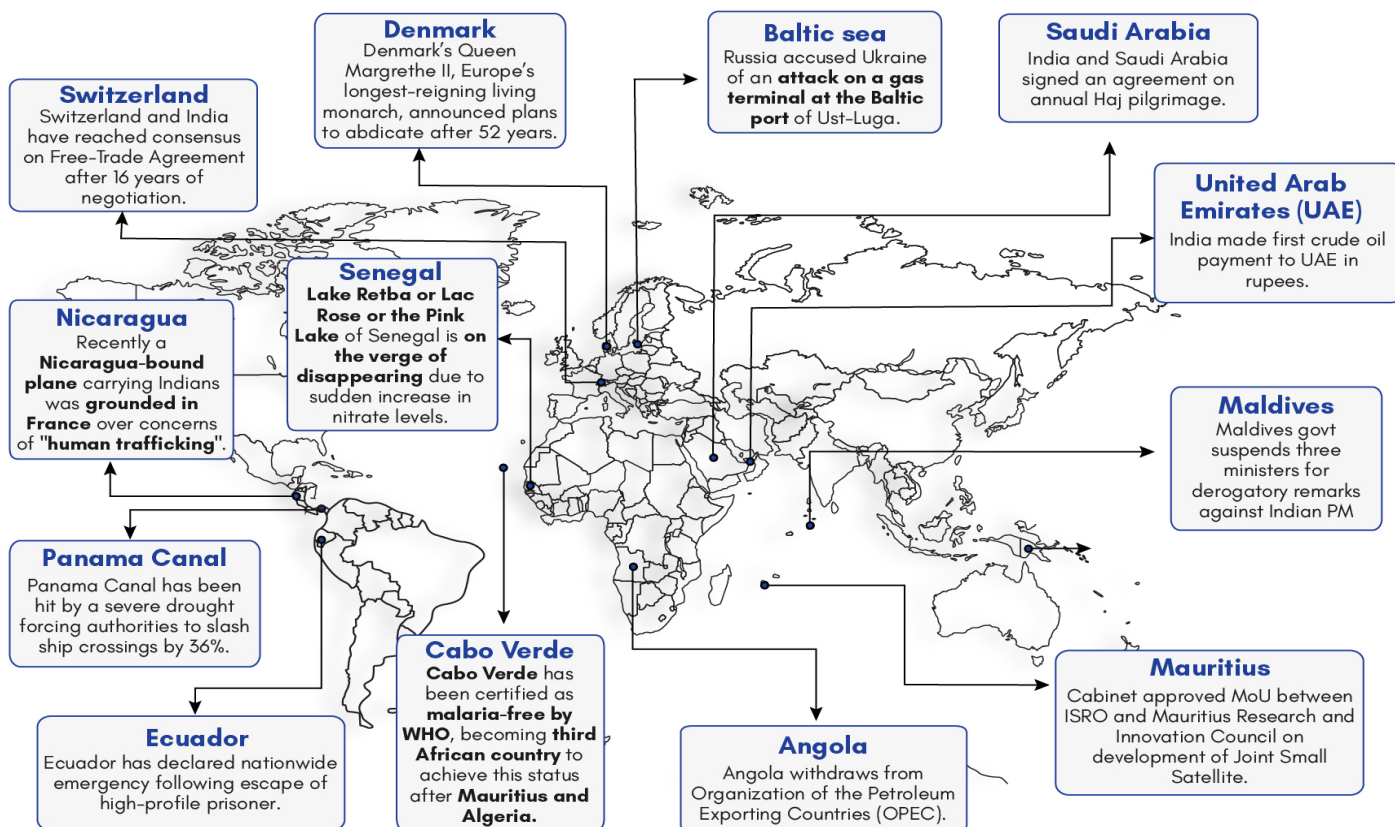
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## Places in News: India





## Places in News: World



# Personalities In News

Personality	About	Ethical Values Exhibited by the Personality
 <p><b>Rani Velu Nachiyar</b> (3 January 1730 -1796)</p>	<ul style="list-style-type: none"> <li>She was princess of <b>Ramanathapuram</b> (Tamil Nadu) and child of Raja of <b>Ramnad kingdom</b>.</li> <li>Known by Tamils as <b>Veeramangai</b>.</li> <li>She was <b>proficient in languages</b> like French, English, and Urdu.</li> <li><b>Contributions:</b> <ul style="list-style-type: none"> <li><b>Was first queen</b> to have ever actively opposed the British rule.</li> <li>In collaboration with <b>Hyder Ali and Gopala Nayaker</b>, waged war against British.</li> <li>Went on to <b>produce first human bomb</b> and established first army of trained women soldiers.</li> <li><b>Reinherited Sivagangai kingdom</b> of her husband.</li> </ul> </li> </ul>	<p><b>Self-Confidence and Leadership</b></p> <ul style="list-style-type: none"> <li>According to legend, Rani's Self-confidence was so strong that she decided to take Britishers on herself</li> <li>Her leadership was demonstrated through her strategic alliances and the formation of a pioneering women's army, reflecting the ability to inspire and mobilize others towards a common goal.</li> </ul>
 <p><b>Bharatendu Harishchandra</b> (1850-1885)</p>	<ul style="list-style-type: none"> <li>A poet, writer and reformist.</li> <li><b>Contributions</b> <ul style="list-style-type: none"> <li>Promoted and revived the <b>Hindi language</b>.</li> <li>Known as <b>father of 'khadi Boli'</b> and one of the <b>era of Hindi literature</b> is also known as <b>Bharatendu Yuga</b> after him.</li> <li>Wrote under the pen name "<b>Rasa</b>".</li> <li>Used publications to <b>shape public opinion during freedom movement</b>.</li> <li><b>Journals:</b> HarishChandra chandrika, Kavivachan Sudha etc.</li> <li><b>Drama:</b> Andher Nagari, Bharat Durdasha, Vaidik Hinsa Hinsa Na Bhavati etc.</li> </ul> </li> </ul>	<p><b>Patriotism and Social Reform</b></p> <ul style="list-style-type: none"> <li>He advocated for national unity and pride, emphasizing the importance of cultural identity in resisting colonial rule.</li> <li>He critiqued and sought to address social injustices, promoting equitable treatment and reforms in societal practices.</li> </ul>
 <p><b>Swami Shraddhanand</b> (22 February 1856 - 23 December 1926)</p>	<ul style="list-style-type: none"> <li><b>Early life</b> <ul style="list-style-type: none"> <li>Born in Punjab's <b>Jalandhar, Munshi Ram</b>, popularly known as Swami Shraddhanand, was a <b>prominent social reformer</b>.</li> <li>In 1882, he embraced <b>Arya Samaj</b> and took <b>sanyasa</b> in 1917.</li> </ul> </li> <li><b>Contribution</b> <ul style="list-style-type: none"> <li>Following a <b>schism in Arya Samaj</b>, a group led by him established a Gurukula at Haridwar in 1902.</li> <li>Participated in <b>anti-Rowlatt Act</b>.</li> <li>Organised the <b>Delhi Suddhar Sabha</b> for upliftment of the oppressed class.</li> <li>Participated in <b>Non-cooperation movement</b> but resigned due to <b>disagreement with Gandhi ji</b>.</li> <li>Founded 2 dailies named <b>Urdu Tej and the Hindi Arjun</b>.</li> </ul> </li> </ul>	<p><b>Social Equality and Educational Reform</b></p> <ul style="list-style-type: none"> <li>He tirelessly worked towards the upliftment of oppressed classes, advocating for an end to caste discrimination and promoting social inclusivity.</li> <li>He founded the Gurukula in Haridwar to advance value-based education, emphasizing accessibility and moral development across all societal segments.</li> </ul>

 <p><b>Swami Vivekananda</b> (1863-1902)</p>	<ul style="list-style-type: none"> <li>• <b>National Youth Day (12th January)</b> has been celebrated on the <b>birth anniversary of Swami Vivekananda</b>.</li> <li>• He was a philosopher and social reformer. His childhood name was <b>Narendra Nath Datta</b>.</li> <li>• <b>Contribution:</b> <ul style="list-style-type: none"> <li>▶ He popularised the <b>Vedanta</b>, the ancient system of <b>religious philosophy</b>.</li> <li>▶ Established <b>Ramakrishna Mission</b> in 1887, named after his <b>Guru Swami Ramakrishna Paramhansa</b>.</li> <li>▶ Also, set up <b>Belur Math (aka Ramakrishna Math)</b>.</li> <li>▶ Gave speech at the <b>World Religion Conference</b> in Chicago (US) in 1893.</li> <li>▶ <b>Literary work:</b> Raja Yoga, Karma Yoga etc.</li> </ul> </li> </ul>	<p><b>Rationalism and Spiritualism</b></p> <ul style="list-style-type: none"> <li>• Vivekananda emphasized on mass education for rational thinking and enlightened thoughts.</li> <li>• Religion for him was essentially a spiritual force with humanism at its core.</li> </ul>
 <p><b>Rash Behari Bose</b>(1886-1945)</p>	<ul style="list-style-type: none"> <li>• He was remembered on his death anniversary.</li> <li>• <b>Contributions</b> <ul style="list-style-type: none"> <li>▶ Was an active member of <b>Yugantar group of revolutionaries under leadership</b> of Motilal Roy.</li> <li>▶ Acted as an <b>effective link between revolutionaries of Punjab and United Provinces and Bengal</b>.</li> <li>▶ Involved in <b>Delhi Conspiracy case</b> (bomb attack on Viceroy Lord Hardinge), 1912.</li> <li>▶ Founded the <b>Indian independence League</b> (1942) in Tokyo.</li> <li>▶ Played key role in <b>Gadar Movement</b> and in formation of <b>Azad hind fauj (Indian National Army)</b>.</li> </ul> </li> </ul>	<p><b>Patriotism and Unity</b></p> <ul style="list-style-type: none"> <li>• His deep commitment to India's independence was evident through his involvement in revolutionary activities and his pivotal role in the formation of the Azad Hind Fauj.</li> <li>• He effectively bridged regional divides among revolutionaries, demonstrating his belief in unity and collaboration across different groups for the common goal of India's freedom.</li> </ul>
 <p><b>Homi Jehangir Bhabha</b> (1909-1966)</p>	<ul style="list-style-type: none"> <li>• He was remembered on his death anniversary.</li> <li>• <b>Contributions</b> <ul style="list-style-type: none"> <li>▶ Considered to be <b>father of India's nuclear program</b>.</li> <li>▶ Devised India's <b>three-stage nuclear power program in 1954</b>.</li> <li>▶ Established two great research institutions namely <b>Tata Institute of Fundamental Research (TIFR) and Atomic Energy Establishment at Trombay</b>.</li> <li>▶ Known for <b>Bhabha scattering</b>.</li> <li>▶ Published a string of widely-accepted papers on his <b>theories regarding cosmic ray showers</b>.</li> <li>▶ First person to become Chairman of <b>Atomic Energy Commission of India</b>.</li> </ul> </li> </ul>	<p><b>Scientific Rigour and Pursuit of Excellence</b></p> <ul style="list-style-type: none"> <li>• His foundational role in the Indian nuclear program and his significant contributions to theoretical physics, exemplify his commitment to scientific research and inquiry.</li> <li>• His leadership in establishing premier research institutes like TIFR and BARC, and his recognition on international platforms demonstrate his relentless pursuit of excellence in the field of nuclear science.</li> </ul>
 <p><b>Bina Das (24 Aug 1911-26 Dec 1986)</b></p>	<ul style="list-style-type: none"> <li>• Bina Das, a revolutionary from West Bengal, hailed from a <b>family involved in the Brahmo Samaj and the freedom struggle</b>. <ul style="list-style-type: none"> <li>▶ Her <b>father inspired Subhas Chandra Bose</b>.</li> </ul> </li> <li>• In 1932, she attempted to <b>assassinate Bengal Governor Stanley Jackson</b> (to protest against the British) at the University of Calcutta <b>but faced failure, leading to a nine-year imprisonment</b>.</li> </ul>	<p><b>Revolutionary Zeal and Empathy</b></p> <ul style="list-style-type: none"> <li>• Reflected in her bold actions in challenging colonial authority.</li> <li>• Her social work and political activities aimed at improving the lives of her fellow Indians.</li> </ul>

	<ul style="list-style-type: none"> <li>• Later, she <b>joined Congress</b>, took part in the <b>Quit India movement (1942)</b>, and served in <b>Bengal Provincial Legislative Assembly (1946 to 1947)</b> and <b>West Bengal Legislative Assembly (1947 to 1951)</b>.</li> <li>• She was accorded <b>Padma Shri</b> for her contributions in social work.</li> <li>• <b>Dhira Dhar</b> translated her Bengali autobiography.</li> </ul>	
 <p><b>Vikram Sarabhai</b> (1919-1971)</p>	<ul style="list-style-type: none"> <li>• Born in <b>Ahmedabad</b>.</li> <li>• Considered as <b>the Father of the Indian Space Program</b>.</li> <li>• <b>Contributions</b> <ul style="list-style-type: none"> <li>▸ The establishment of the <b>Indian National Committee for Space Research</b> (INCOSPAR, later ISRO) under his <b>chairmanship</b>.</li> </ul> </li> <li>• <b>Some institutions established by him:</b> <ul style="list-style-type: none"> <li>▸ <b>Physical Research Laboratory</b> in Ahmedabad.</li> <li>▸ <b>Indian Institute of Management, Ahmedabad</b>.</li> <li>▸ <b>Vikram Sarabhai Space Centre, Thiruvananthapuram</b></li> </ul> </li> <li>• <b>Awards and Honours:</b> In 1974, the <b>International Astronomical Union</b> decided that a Moon Crater <b>BESSEL</b> in Sea of Serenity would be known as <b>Sarabhai Crater</b>. <ul style="list-style-type: none"> <li>▸ Received <b>Shanti Swarup Bhatnagar Award, Padma Bhushan, Padma Vibhushan</b>.</li> </ul> </li> </ul>	<p><b>Visionary Leadership and Innovation</b></p> <ul style="list-style-type: none"> <li>• His foresight in establishing key scientific institutions like ISRO reflected his commitment to leverage science and education for national development.</li> <li>• His contributions to the space program and his role in the establishment of premier institutions underscore his dedication to innovation and striving for excellence in scientific research and education.</li> </ul>
 <p><b>Rohan Bopanna (1980-present)</b></p>	<ul style="list-style-type: none"> <li>• Indian tennis player Rohan Bopanna became <b>the oldest world number 1 in men's doubles tennis</b>.</li> <li>• He is also <b>the oldest tennis player</b> to reach the Grand Slam final.</li> <li>• He has a <b>Grand Slam title and five ATP Masters 1000 titles</b>.</li> <li>• <b>Contributions</b> <ul style="list-style-type: none"> <li>▸ <b>Represented India at the 2012 and 2016 editions of the Olympics</b>.</li> <li>▸ <b>Member of India's Davis Cup team since 2002</b>.</li> </ul> </li> </ul>	<p><b>Perseverance and Commitment to Sport</b></p> <ul style="list-style-type: none"> <li>• His journey to becoming the oldest world number-1 in men's doubles showcases his unwavering perseverance in pursuing excellence over the course of his career.</li> <li>• His long-standing representation of India at international competitions, including the Olympics and Davis Cup, highlights his deep commitment to the sport of tennis and his country.</li> </ul>

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# UPSC TOPPERS PREPARATION APPROACH & STRATEGIES

*Insights from Toppers' Talk and Answer Scripts*



**Ishita Kishore**  
**Rank 1, 2022**

Ishita Kishore, the UPSC topper of 2022, serves as a remarkable inspiration for her unwavering determination and relentless efforts making her as a beacon of motivation for aspiring candidates. Through her methodical preparation approach, she emerged triumphant in the esteemed Civil Services Examination securing top rank. Ishita extensively relied on VisionIAS Mains test series to refine her answer writing abilities. To gain further insights into Ishita's answer writing approaches, kindly scan the QR code provided.

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# UPSC CSE TOPPERS 2022



**Waseem  
Ahmad Bhat**



Waseem Ahmad Bhat, an exceptional achiever who secured an All India Rank 7 in his third attempt in the UPSC Civil Services Examination 2022. He also achieved All India Rank 225 in his first attempt in 2020 and currently, he is training as an Assistant Commissioner Income Tax.

Waseem was a student of the **VisionIAS Foundation Course**, Batch in 2019.

Hailing from Doru Shahabad, Anantnag, Jammu & Kashmir, he completed his schooling in Anantnag and holds a degree in Civil Engineering from NIT Srinagar.

Waseem opted for **Anthropology** as his optional subject. His topper's talk covers vital topics such as preparing for the **changing pattern of Prelims**, essay writing and strategy, writing **quote-based essays**, utilizing topper's answer scripts for preparation, and **effective revision strategies**.

TOPPERS' TALK



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**Aniruddh  
Yadav**



Aniruddh Yadav, a remarkable achiever who secured an All India Rank 8 in his fourth attempt in the UPSC Civil Services Examination of 2022.

Aniruddh opted for **Anthropology** as his optional subject. He completed his dual degree course in Biochemical Engineering & Biotechnology from IIT Delhi.

His topper's talk covers crucial aspects such as **creating a schedule** and **subject-wise timetable**, honing answer writing skills through topic-based **practice**, **mastering the structure** and format of answers (Introduction, Body, Conclusion), **managing time effectively** during answer writing practice, and preparing **topic-wise notes** with the help of syllabus analysis and previous year questions.

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**Siddharth  
Shukla**



Siddharth Shukla, belongs to Uttar Pradesh. He completed his BA in History (H) from Delhi University, which was also his optional subject.

He displayed exemplary resilience by appearing in the exam for the fourth attempt and secured AIR 18 in 2022.

The preparation strategy reflected in his talk and answer scripts include the strategy for Essay, **efficient use of PYQs**, **notes making**, among others.

Additionally, he has also focused upon **non-academic aspects** such as **stress management**, **habit formation**, and **role of meditation** which are critical for this examination.

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**Anoushka  
Sharma**



Anoushka Sharma hailing from Madhya Pradesh completed her graduation from City University, New York with a bachelor's degree in Economics. She gained job experience through a three-month internship with the United Nations prior to taking the civil service examination.

She passed her CSE with AIR 20 in 2022 on her third attempt. **Economics** is her optional subject.

She has a very good command over ethics paper and she has shared her **insights on time management and strategy for attempting questions** in CSE Mains.

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# UPSC CSE TOPPERS 2021



**Gamini Singla**



Gamini Singla, hailing from Punjab, completed her graduation in Computer Science Engineering from Punjab Engineering College Chandigarh. Thereafter, she honed her skills through a five-month internship as a finance analyst at JP Morgan.

She secured a remarkable All India Rank of 3 in the UPSC CSE 2021 in her second attempt with **Sociology** as her optional subject.

With her strategic **approach to GS Paper IV (Ethics) and Essay**, Gamini demonstrated her ability to **critically analyze ethical issues** and effectively express her thoughts in a coherent manner.

Her expertise in answer writing provided her with a competitive edge, allowing her to convey her knowledge and insights concisely.

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**Aishwarya Verma**



Aishwarya Verma hails from Madhya Pradesh. After graduating in Electrical Engineering, he opted for Civil Services as a career of choice.

He chose **Geography** as his optional subject and achieved an All-India Rank 4 in UPSC CSE 2021 in his fourth attempt.

Apart from the hard work, determination and resilience shown by Aishwarya, his success can also be attributed to his **short and enriched self-made notes, advanced answer writing skills**, and smart preparation strategy, including S&T.

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**Utkarsh Dwivedi**



Utkarsh Dwivedi, hailing from historic town of Ayodhya, Uttar Pradesh, a graduate in Mechanical Engineering from VIT Vellore, displayed resilience by attempting the exam for the third time and succeeding with remarkable achievement with the optional subject, **Political Science and International Relations**.

He displayed **exemplary command over Ethics Paper**, specially Case Studies and **quotation-based questions**. With his deep understanding of the demand of the UPSC Examination and excellent time management skills, he not only optimized his efforts, but also maximized his performance at all stages of the UPSC CSE.

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**Yaksh Chaudhary**



Yaksh Chaudhary, a resident of Amroha, Uttar Pradesh, through unwavering determination secured an All India Rank 6 in the prestigious exam on his third attempt in 2021. With his passion for Sociology, Yaksh opted for it as his optional subject and devised a winning strategy for his preparation.

Yaksh's **exceptional expertise in answer writing** and adeptness in attempting question papers during the mains exam provided him an edge. Moreover, his skill in crafting **well-structured diagrams** for General Studies, Ethics, and Sociology further enriched the quality and visual appeal of his responses. Yaksh's achievements serve as an inspiration to aspiring candidates nationwide, exemplifying the significance of perseverance, dedication, and strategic planning.

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# UPSC CSE TOPPERS 2020



**Shubham  
Kumar**

**1**  
RANK  
2020

Shubham Kumar, hailing from Katihar District in Bihar, completed his graduation in Civil Engineering from IIT Bombay. He achieved the remarkable feat of securing All India Rank 1 in the UPSC examination of 2020 in his third attempt.

His success can be attributed to his **unique approach and meticulous preparation**. Shubham emphasized the importance of **regular mock tests** for prelims and carefully analyzing previous years' UPSC prelims questions.

Shubham was a student of the **VisionIAS Foundation Course**.

He also **utilized topper's copies to enhance his skills in ethics answer writing** and emphasized the **use of diagrams and graphs** in GS papers.

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**Praveen  
Kumar**

**7**  
RANK  
2020

Praveen Kumar, achieved an impressive All India Rank 07 in the UPSC Civil Services Examination 2020. Hailing from Jammui, Bihar, Praveen holds a degree in Civil Engineering from IIT Kanpur.

His remarkable journey includes clearing the GATE examination with an AIR 5 and securing AIR 3 in the Indian Engineering Services (IES) exam, all while working for the Indian Railway Service.

Praveen's toppers talk provides invaluable insights, covering motivations for pursuing the IAS, **effective booklists and sources for exam preparation, strategies for newspaper reading and content extraction, note-making techniques** for mains, and **utilizing flow charts and diagrams** in answers.

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**Jagrati  
Awasthi**

**2**  
RANK  
2020

Jagrati Awasthi, from Bhopal, Madhya Pradesh, completed her graduation in Electrical Engineering from NIT Bhopal. She gained two years of valuable work experience at BHEL.

With **Sociology** as her optional subject, she achieved an outstanding All India Rank of 2 in the UPSC examination of 2020.

She has emphasized the **importance of a well-structured daily routine** and shared a **detailed booklist** and recommended sources. Jagrati stressed the significance of thorough reading and utilizing previous years' questions to grasp the exam's demands.

Along with refined **note-making techniques**, she has provided insights on determining the optimal number of questions to attempt in the prelims and leveraging previous year's question papers for **Ethics case studies'** preparation.

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**Satyam  
Gandhi**

**10**  
RANK  
2020

Satyam Gandhi, an exceptional achiever, secured an All India Rank 10 in the UPSC Civil Services Examination 2020. Hailing from Bihar, Satyam graduated in Political Sciences (H) from Dayal Singh College, University of Delhi.

With **Political Science and International Relations** as his optional subject, he cleared the exam on his first attempt, displaying remarkable determination.

In addition, Satyam achieved an impressive AIR 242 in the NDA Exam. His toppers talk offers invaluable insights into **time management strategies** for a first attempt success, the **significance of flowcharts and diagrams** in mains answers, **effective essay structuring**, and his experience in obtaining a remarkable 201 marks in the interview.

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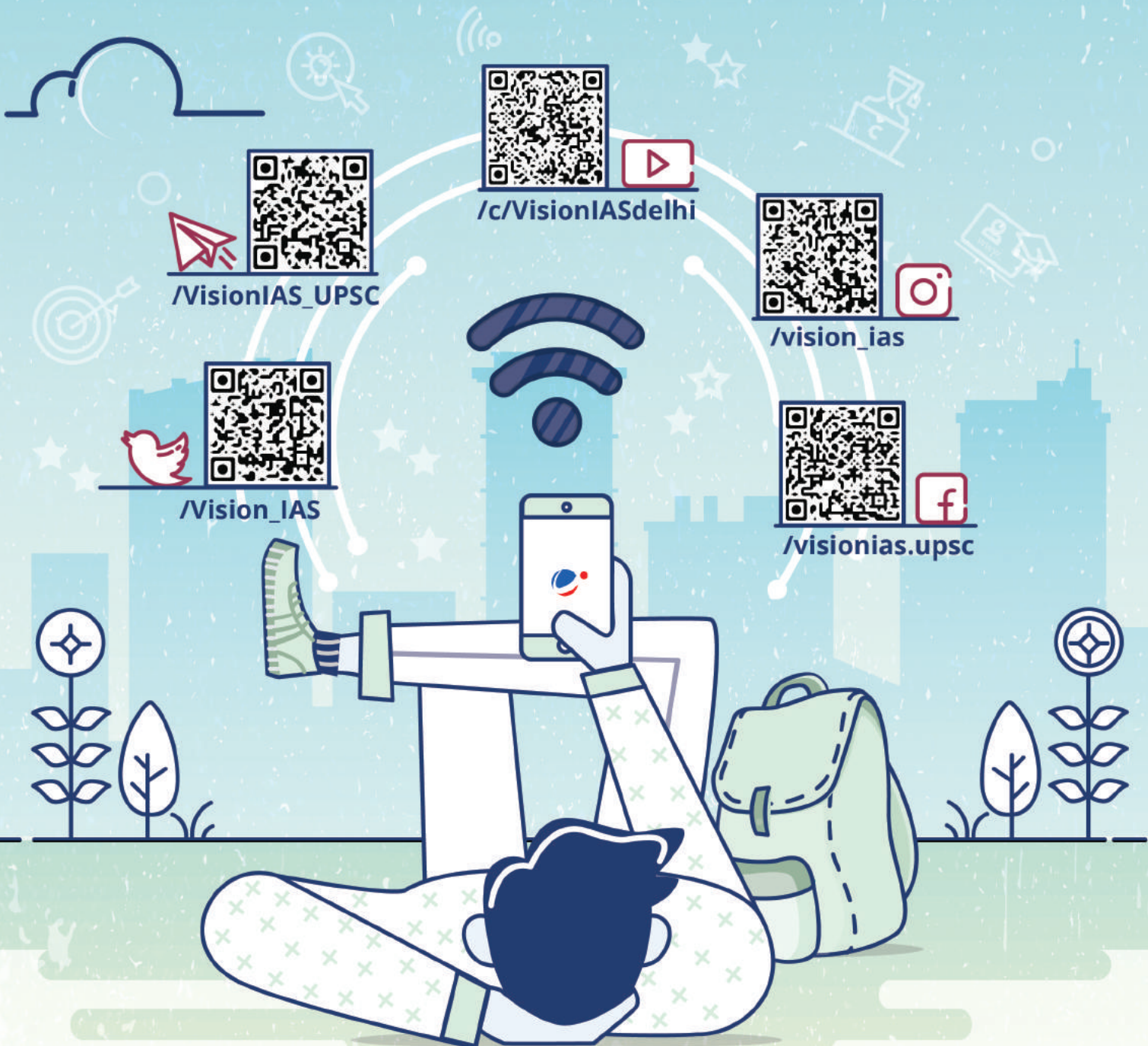
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*Congratulations*  
to all Successful Candidates

**39 in Top 50  
Selections  
in CSE 2022**



**1  
AIR**  
Ishita Kishore



**2  
AIR**  
Garima Lohia



**3  
AIR**  
Uma Harathi N

**8 in Top 10  
Selections  
in CSE 2021**



**2  
AIR**  
ANKITA AGARWAL



**3  
AIR**  
GAMINI  
SINGLA



**4  
AIR**  
AISHWARYA  
VERMA



**5  
AIR**  
UTKARSH  
DWIVEDI



**6  
AIR**  
YAKSH  
CHAUDHARY



**7  
AIR**  
SAMYAK S  
JAIN



**8  
AIR**  
ISHITA  
RATHI



**9  
AIR**  
PREETAM  
KUMAR



**1  
AIR**

**SHUBHAM KUMAR**  
**CIVIL SERVICES  
EXAMINATION 2020**



**HEAD OFFICE**

1<sup>st</sup> floor, Apsara Arcade,  
Near Gate-7 Karol Bagh Metro Station,  
1/8 b, Pusa Road, Karol Bagh,  
Delhi - 110005

**DELHI**

**Mukherjee Nagar Centre**

Plot No. 857, Ground Floor, Mukherjee Nagar,  
Opposite Punjab & Sindh Bank,  
Mukherjee Nagar, New Delhi - 110009

**For Detailed Enquiry,**

Please Call:  
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+91 9019066066

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