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POLITY & GOVERNANCE

Ad Hoc Judges – Addressing Judicial Backlogs in High Courts

UPSC Syllabus: General Studies Paper II (Indian Constitution – Structure, Functioning, and Issues in Judiciary)

Context:

The **Supreme Court** has proposed appointing **retired High Court judges** on an **ad hoc basis** under **Article 224A** of the Constitution to address the **growing backlog of criminal cases**.

About Ad Hoc Judges:

- Constitutional Provision:**
 - Article 224A of the Indian Constitution empowers the **Chief Justice of a High Court** to appoint **retired judges** to perform judicial duties, with the **President's prior consent**.
- Who Are Ad Hoc Judges?**
 - Retired judges of any **High Court** temporarily invited back to serve.
 - They hold **the same powers and privileges** as sitting judges but are not considered regular judges.
- Criteria for Appointment:**
 - Only **retired High Court judges** are eligible.
 - Appointment requires their **consent** to return for judicial service.

Procedure for Appointment:

- Identification by Chief Justice:**
 - The **Chief Justice of the concerned High Court** identifies suitable retired judges and obtains their consent.
- Recommendation Process:**
 - The recommendation is forwarded to the **President of India** via the **Union Law Ministry**.
 - The **Supreme Court Collegium** must endorse the recommendation.
- Final Approval:**
 - The **President of India**, on advice from the **Prime Minister**, approves the appointment.

Terms and Conditions of Service:

- Tenure:**
 - Typically for **2-3 years**, depending on the requirement.
- Privileges:**
 - Ad hoc judges are entitled to **allowances** determined by the President and enjoy **all privileges** of sitting High Court judges during their term.

Rationale Behind the Appointment of Ad Hoc Judges:

- Judicial Backlog:**
 - High Courts face **over 59 lakh pending cases** (as of 2023), with **criminal cases** contributing significantly.
 - Ad hoc judges can **expedite case disposal**.
- Vacancy Issue:**
 - Over **30% of sanctioned High Court judge positions** remain vacant.
 - Temporary appointments help **bridge the gap** while permanent vacancies are filled.
- Expertise of Retired Judges:**
 - Retired judges bring **experience and expertise**, enhancing the efficiency of case disposal.
- Cost-Effectiveness:**
 - Temporary appointments reduce the **financial burden** compared to appointing new permanent judges.

Challenges in Implementing Article 224A:

- 1. Consent of Retired Judges:**
 - Retired judges may decline appointments due to **age, health issues, or other commitments.**
- 2. Collegium System Delays:**
 - The process of obtaining recommendations and approvals can be **time-consuming.**
- 3. Limited Scope:**
 - Ad hoc judges can only provide **temporary relief**, and addressing systemic issues requires **structural reforms.**
- 4. Judicial Independence Concerns:**
 - Reappointment of retired judges may raise concerns about **political influence or bias.**

Way Forward:

- 1. Streamline Appointment Processes:**
 - Ensure timely recommendations and approvals under Article 224A.
- 2. Permanent Structural Reforms:**
 - Fill **existing vacancies** in High Courts through regular appointments.
 - Increase the sanctioned strength of judges in proportion to the growing case load.
- 3. Leveraging Technology:**
 - Implement **e-courts** and **digital case management systems** to expedite case disposal.
- 4. Alternate Dispute Resolution (ADR):**
 - Promote **mediation, arbitration, and conciliation mechanisms** to reduce the burden on courts.
- 5. Periodic Review of Ad Hoc Judges' Impact:**
 - Evaluate the **effectiveness** of ad hoc judges in clearing backlogs and make adjustments as needed.

Celebrating Democracy – 15th National Voters' Day

UPSC Syllabus: General Studies Paper II (Indian Constitution, Governance – Electoral Processes, and Representation of People)

Context:

The **15th National Voters' Day (NVD)** was celebrated across India on **January 25, 2025**, marking the establishment of the **Election Commission of India (ECI)** on January 25, 1950.

About the 15th National Voters' Day:

- 1. Why Celebrated?**
 - **Commemoration:** Celebrates the establishment of the **Election Commission of India (ECI)** a day before India became a Republic.
 - **Significance:** Marks the ECI's role in ensuring **free, fair, and transparent elections.**
- 2. Aim:**
 - **Create Awareness:** Highlights the **importance of voting** in a democracy.
 - **Inspire Participation:** Encourages **citizens, especially first-time voters**, to actively engage in the electoral process.
- 3. Theme for 2025:**
 - **"Nothing Like Voting, I Vote for Sure":**
 - Emphasizes the **pride, responsibility, and power of voting.**
 - Builds on the previous year's focus on **increasing electoral participation.**

Key Features of the Celebration:

- 1. Best Electoral Practices Awards:**
 - **Awards by the President of India:** Recognizes District Election Officers, Superintendents of Police, and states excelling in **election management and innovation.**
- 2. Publications Unveiled:**
 - **"India Votes 2024: A Saga of Democracy":** A coffee table book showcasing **India's electoral journey.**
 - **"Belief in the Ballot":** Chronicles **inspiring stories** of voter participation during India's 2024 elections.
- 3. Voter Awareness Initiatives:**
 - Special focus on **young and first-time voters.**
 - Awareness drives to promote **inclusive and active participation.**

Significance of National Voters' Day:

- Reinforces Democracy:**
 - Highlights voting as the cornerstone of a **strong, vibrant democracy**.
- Encourages Marginalized Participation:**
 - Motivates **first-time voters** and individuals from **marginalized groups** to participate actively in elections.
- Honours Electoral Excellence:**
 - Recognizes exceptional efforts in ensuring **inclusive, free, and fair elections**.
- Promotes Innovation:**
 - Showcases the role of **technology** and innovative practices in improving the electoral process.
- Strengthens Democratic Values:**
 - Fosters a sense of pride and responsibility among citizens for **nation-building**.

Additional Insights and Data:

- Election Commission of India's Role:**
 - The ECI manages the world's largest electoral process with **950+ million registered voters**.
 - Its innovations, like **Electronic Voting Machines (EVMs)** and **Voter Verifiable Paper Audit Trail (VVPAT)**, have enhanced electoral transparency.
- India's Voter Turnout:**
 - The **2024 General Election** recorded a turnout of **67.4%**, with higher participation from **youth and women voters**.
- Global Inspiration:**
 - India's electoral system is recognized globally for its **scale, inclusivity, and efficiency**, inspiring emerging democracies worldwide.

Way Forward:

- Youth Engagement:**
 - Strengthen voter education campaigns to connect with **young and first-time voters**.
- Inclusive Participation:**
 - Enhance outreach to ensure **marginalized and remote populations** are included in the electoral process.
- Technology Upgradation:**
 - Promote innovations like **blockchain voting** and **online voter registration** to simplify the voting process.
- Collaborative Awareness:**
 - Partner with educational institutions, NGOs, and media to amplify **voter awareness initiatives**.

Party Whips in India – Ensuring Discipline or Curtailing Freedom?

UPSC Syllabus: General Studies Paper II (Parliamentary Processes and Functioning)

Context:

The **Vice President of India** recently questioned the relevance of **party whips** in parliamentary proceedings, asserting that they limit legislators' **freedom** and **independent decision-making**.

About Whip in Parliamentary Practice:

- What is a Whip?**
 - A **written directive** issued by a political party to its legislators, mandating their **presence** during votes or requiring them to vote in a specific manner.
 - Origin:** Derived from the British parliamentary practice of "whipping in" members to adhere to the party line.
- Appointed By:**
 - Each political party designates a **Chief Whip**, typically a senior legislator, to issue whips and oversee compliance.
- Constitutional Status:**
 - The **Constitution of India** does not explicitly mention **whips**; their functioning derives from parliamentary conventions and the **anti-defection law (Tenth Schedule)**.

Types of Whips:

- One-line Whip:**
 - Informs members about an **important vote** but allows **abstention** if they choose not to follow the party line.
- Two-line Whip:**
 - Directs members to **be present** during the vote but does not explicitly bind them to vote in a particular way.
- Three-line Whip:**
 - The most **stringent** type, mandating members to **be present and vote** as per the party's directive.
 - Non-compliance** can result in **disqualification** under the **anti-defection law**.

Functions and Powers of Whips:

- 1. Ensure Attendance:**
 - Whips ensure members are **present** during crucial legislative sessions and votes.
- 2. Maintain Party Discipline:**
 - Aligns members' actions with **party objectives** and prevents dissent.
- 3. Strengthen Decision-Making:**
 - Ensures cohesion in voting on critical matters like **budgets, Bills, and no-confidence motions**.
- 4. Monitor Compliance:**
 - Tracks legislators' adherence to the party line and reports instances of **defiance**.
- 5. Prevent Fragmentation:**
 - Enforces a **collective stance**, reducing the risk of **internal divisions** within the party.

Concerns and Criticism of Party Whips:

- 1. Curtails Legislators' Independence:**
 - Restricts legislators' ability to vote based on their **conscience** or **constituency interests**.
 - Weakens the concept of a **deliberative democracy**.
- 2. Centralized Decision-Making:**
 - Concentrates power in the **party leadership**, sidelining individual legislators' voices.
- 3. Reduced Accountability:**
 - Legislators may prioritize **party loyalty** over the interests of their **constituencies**.
- 4. Undermines Debate:**
 - Discourages **healthy discussions** and dissent within the legislature, reducing the quality of debates.

Relevance of Whips in Modern Parliamentary Democracy:

- 1. Essential for Stability:**
 - Ensures party **cohesion** and **stability** in multi-party systems like India, where coalition governments are common.
- 2. Prevents Legislative Deadlock:**
 - Collective voting mitigates the risk of **gridlocks** during critical policy decisions.
- 3. Safeguards Government Survival:**
 - Whips are crucial in votes of **confidence** or **no-confidence** to maintain government stability.
- 4. Checks Opportunistic Behavior:**
 - Discourages legislators from **defecting** or **cross-voting** for personal gains.

Way Forward:

- 1. Limited Scope for Whips:**
 - Restrict the issuance of whips to votes of **confidence, no-confidence, and money Bills**, allowing legislators more independence on other matters.
- 2. Encourage Debates:**
 - Foster an environment that promotes **deliberation** and **constructive dissent** within parties.
- 3. Reform Anti-Defection Law:**
 - Review the **Tenth Schedule** to differentiate between **party discipline** and **legislative independence**.
- 4. Strengthen Constituency Representation:**
 - Empower legislators to prioritize **constituency interests** over rigid adherence to party directives.
- 5. Transparency in Decision-Making:**
 - Ensure party decisions are **democratically discussed** and not imposed unilaterally by leadership.

Misuse of Government Schemes

UPSC Syllabus: General Studies Paper II (Government Policies and Interventions)

Context:

In 2024, 4.14 lakh insurance claims under the Pradhan Mantri Fasal Bima Yojana (PMFBY) were found to be bogus in Maharashtra, exposing systemic inefficiencies and **misuse of government schemes**.

Leakages in Government Schemes:

- 1. Bogus Claims:**

- Farmers submitted **fake insurance claims** for:
 - **Non-existent crops.**
 - Lands not owned or unauthorized, such as **temples, government plots**, and even **petrol pump lands**.
- **Example:**
 - A farmer in Nashik filed an insurance claim for crops grown on a **petrol pump plot**.
- 2. **Manipulation by Middlemen:**
 - **Common Service Centres (CSCs)** filed fraudulent applications using **forged documents** without the farmers' knowledge or consent.
 - **Example:** In Maharashtra, **96 CSCs** are under investigation for **irregularities**.
- 3. **Lack of Verification:**
 - Absence of **timely cross-checking** allowed **false claims** to bypass initial scrutiny.
- 4. **Administrative Challenges:**
 - The **high volume** of applications delayed **physical inspections**, leaving room for systemic inefficiencies and fraud.
- 5. **Resource Drain:**
 - Misuse diverted **public funds**, reducing benefits for **genuine farmers**, undermining the scheme's purpose.

Consequences of Misuse:

1. **Loss of Public Trust:**
 - Misuse erodes **public confidence** in government programs, reducing participation by genuine beneficiaries.
2. **Fiscal Burden:**
 - Fraudulent claims increase the financial burden on the government, leading to **inefficient fund allocation**.
3. **Reduced Effectiveness:**
 - Leakages dilute the **impact** of schemes meant to provide **support** to farmers in times of distress.
4. **Marginalization of Genuine Farmers:**
 - Misuse creates **barriers for deserving farmers**, especially small and marginal ones, to access benefits.

Way Forward:

1. **Strengthen Verification Mechanisms:**
 - Use **satellite imagery** and **drone technology** to verify crops and land use before processing claims.
 - Implement **real-time Aadhaar-based monitoring** to cross-check beneficiary data.
2. **Digital Transparency:**
 - Enhance the use of **digital platforms** like PMFBY's online portal for direct applications, minimizing middlemen's involvement.
 - Use **blockchain technology** to ensure transparency and traceability in fund disbursement.
3. **Accountability of CSCs:**
 - Strictly monitor **Common Service Centres** and penalize those involved in fraudulent activities.
4. **Empower Farmers:**
 - Conduct **awareness programs** to educate farmers about the proper application process and discourage them from relying on intermediaries.
5. **Periodic Audits:**
 - Regularly audit scheme implementation, including random field inspections, to identify and prevent misuse.
6. **Grievance Redressal Mechanism:**
 - Strengthen grievance redressal systems to address complaints from genuine beneficiaries in a **time-bound manner**.
7. **Integration with Technology:**
 - Leverage **GIS mapping** and remote sensing to track agricultural activities and ensure claims are based on actual data.

Beti Bachao Beti Padhao (BBBP) Scheme

UPSC Syllabus: General Studies Paper II (Government Policies and Interventions)

Context:

The **Ministry of Women and Child Development** is commemorating the **10th anniversary** of the **Beti Bachao Beti Padhao (BBBP)** scheme, a flagship initiative promoting **gender equality, girl child education, and empowerment**.

About Beti Bachao Beti Padhao (BBBP):

1. **What is BBBP?**
 - A **government initiative** aimed at addressing **gender bias** and promoting the **rights, survival, and education** of the girl child.
2. **Launched In:**
 - **January 22, 2015**, in **Panipat, Haryana**.
3. **Ministry Involved:**

- Led by the **Ministry of Women and Child Development**, in collaboration with the **Ministries of Health and Family Welfare and Education**.

Objectives:

1. **Improve Child Sex Ratio (CSR):**
 - Target the declining CSR caused by **gender-biased sex selection**.
2. **Ensure Gender Equality:**
 - Promote the **social and economic empowerment** of women.
3. **Prevent Gender-Biased Practices:**
 - Eliminate **gender-biased sex-selective practices**.
4. **Promote Education:**
 - Encourage the **enrollment and participation** of girls in schools.

Components of the Scheme:

1. **Advocacy Campaigns:**
 - Create awareness to address **declining CSR and Sex Ratio at Birth (SBR)**.
2. **Multi-Sectoral Interventions:**
 - Focus on **gender-critical districts** through health, education, and social sector programs.
3. **Financial Incentives:**
 - **Sukanya Samridhi Yojana (SSA)** to encourage families to save for their daughters' future.

Beneficiaries:

1. **Primary:**
 - **Pregnant/lactating mothers, young parents, and girl children.**
2. **Secondary:**
 - **Adolescents, medical professionals, private hospitals, and families.**
3. **Tertiary:**
 - **Community leaders, media, NGOs, and the public.**

Eligibility Criteria:

1. **Family with a Girl Child:**
 - The family must have a **girl child below 10 years of age**.
2. **Sukanya Samridhi Account (SSA):**
 - A **SSA account** should be opened in the girl's name.
3. **Resident Indian:**
 - The girl child must be a **resident Indian citizen**.

Features:

1. **Advocacy Campaigns:**
 - Address **gender bias** through mass awareness programs.
2. **Multi-Sectoral Interventions:**
 - Implemented in **gender-critical districts** to improve health and education indicators.
3. **Financial Incentives:**
 - **Sukanya Samridhi Yojana** ensures financial support for girls' education and future needs.
4. **Infrastructure Development:**
 - Provision of **functional toilets for girls** in schools to improve school retention rates.

Integration with Mission Shakti:

- The **BBBP scheme** is now integrated with **Mission Shakti**, a comprehensive program for **women's safety and empowerment**, under the **15th Finance Commission period (2021-2026)**.

Achievements:

1. **Improved CSR:**
 - CSR has shown improvement in states like **Haryana and Punjab** where the ratio was critically low.
2. **Increased Awareness:**
 - National campaigns have resulted in **greater awareness** about **gender equality**.
3. **Education Gains:**
 - Enrollment of girls in schools has increased, reducing dropout rates.

4. **Financial Inclusion:**
 - Over **2.5 crore Sukanya Samridhi Accounts** opened as of 2024.

Challenges in Implementation:

1. **Regional Disparities:**
 - Northern states still show a **significant gap** in CSR and gender equality indicators.
2. **Limited Awareness:**
 - Lack of awareness in **remote and rural areas** hampers scheme benefits.
3. **Monitoring Issues:**
 - Insufficient **monitoring and evaluation** of district-level interventions.
4. **Socio-Cultural Barriers:**
 - **Patriarchal mindsets** hinder the scheme's full potential.

Way Forward:

1. **Strengthen Monitoring Systems:**
 - Implement **real-time tracking mechanisms** for CSR and SBR in gender-critical districts.
2. **Promote Community Participation:**
 - Involve **community leaders, NGOs, and women's groups** to drive local implementation.
3. **Focus on Rural Areas:**
 - Target rural and remote regions with **customized awareness campaigns**.
4. **Improve Financial Access:**
 - Simplify processes to open **Sukanya Samridhi Accounts**, ensuring inclusivity.
5. **Integrate Vocational Training:**
 - Equip adolescent girls with **skills for employment**, enhancing long-term empowerment.

One Nation, One Legislative Platform

UPSC Syllabus: General Studies Paper II (Parliament and State Legislatures, Transparency and Accountability)

Context:

The **85th All India Presiding Officers' Conference (AIPOC)** in **Patna, Bihar**, highlighted the **One Nation, One Legislative Platform** initiative to **unify all legislative bodies** onto a single digital platform, promoting **efficiency, transparency, and public participation**.

About All India Presiding Officers' Conference (AIPOC):

1. **Origin:**
 - Established in **1921**, with the first conference held in **Shimla**.
 - It is the **apex body of Indian legislatures**, involving **presiding officers** of Parliament and state legislatures.
2. **2025 Conference Highlights:**
 - **Location:** Patna, Bihar, hosted in the **historic Bihar Legislature Premises**.
 - Key Resolutions:
 - Addressing **disruptions** and improving the **quality of debates**.
 - Celebrating the **75th anniversary of the Constitution** with public engagement initiatives.
 - Promoting **digitization** in legislative processes.
3. **Aim:**
 - Strengthen **democratic institutions** by fostering **accountability, transparency**, and robust legislative practices.
4. **Significance:**
 - Enhances **coordination** among legislative bodies.
 - Promotes **cooperative federalism** by aligning local and national issues.
 - Drives modernization through **digitization** and **public accessibility**.

About One Nation, One Legislative Platform:

1. **What it is:**
 - A mission to integrate **Parliament, state legislatures, and local bodies** onto a **single digital platform**.
2. **Aim:**
 - **Real-time sharing** of legislative data and practices.
 - Foster **transparency, accountability, and public participation** in legislative processes.
3. **Features:**
 - a. **Integrated Digital Platform:**

- Unifies **Parliament, state legislatures, and local bodies** for **seamless data sharing** and coordination.

b. Real-Time Information:

- Provides live updates on **legislative proceedings, bills, and debates**, enhancing transparency.

c. AI and Technology Integration:

- Utilizes **Artificial Intelligence** to:
 - Analyze legislative data.
 - Streamline decision-making processes.
 - Predict the impact of proposed laws.

d. Paperless Legislatures: Promotes **eco-friendly practices** by digitizing records and reducing reliance on physical documentation.

e. Public Accessibility: Ensures citizens can access legislative information through the platform, fostering **participation and accountability**.

Benefits of One Nation, One Legislative Platform:

1. **Transparency:**
 - Public access to legislative data builds **trust** and improves **government accountability**.
2. **Efficiency:**
 - Reduces redundancy in legislative processes by enabling **real-time coordination**.
3. **Eco-Friendly:**
 - Promotes **sustainability** by reducing the use of paper and other physical resources.
4. **Strengthening Federalism:**
 - Enhances collaboration between **Parliament, state legislatures, and local bodies**, fostering **cooperative federalism**.
5. **Citizen Participation:**
 - Empowers citizens to engage with legislative processes, strengthening the **democratic fabric**.

Challenges in Implementation:

1. **Digital Divide:**
 - Unequal access to digital technology across states may hinder uniform implementation.
2. **Capacity Building:**
 - Legislators and staff require **training** to adapt to the new digital platform.
3. **Data Security:**
 - Ensuring the **protection of sensitive legislative data** is critical.
4. **Coordination:**
 - Aligning technological frameworks across **multiple legislative bodies** poses logistical challenges.
5. **Resistance to Change:**
 - Traditional systems and practices may resist modernization efforts.

Way Forward:

1. **Infrastructure Development:**
 - Enhance **digital infrastructure**, particularly in **rural areas**, to bridge the digital divide.
2. **Capacity Building:**
 - Provide **training programs** for legislators and staff to adapt to digital workflows.
3. **Data Protection Mechanisms:**
 - Implement robust **cybersecurity measures** to ensure the safety and privacy of legislative data.
4. **Stakeholder Engagement:**
 - Involve all stakeholders, including **legislators, bureaucrats, and citizens**, in the platform's design and implementation.
5. **Phased Rollout:**
 - Introduce the platform in **phases**, starting with key states and gradually expanding to ensure smooth implementation.

Urbanisation and Behavioural Change

UPSC Syllabus: General Studies Paper II & III (Urban Planning, Public Administration, Behavioural Insights in Governance)

Context:

India's **urban population** is projected to reach **40% by 2030**, posing challenges like **infrastructure strain, climate impact, and resource management**. Beyond **policy and technological solutions**, fostering **behavioral change** is essential for sustainable urban growth.

Need for Behavioral Change Officers:

- 1. Enhancing Urban Service Delivery:**
 - **Behavioral Nudges:** Transform urban services by influencing citizen behavior.
 - **Example: Indore's waste management success** was driven by awareness campaigns like the viral '**Kachra Gadi**' initiative.
- 2. Driving Sustainability:**
 - Encouraging citizens to adopt **eco-friendly practices** like public transport and energy conservation reduces emissions and costs.
 - **Example: Delhi's odd-even scheme** reduced traffic congestion by **30%**, highlighting the potential of behavioral interventions.
- 3. Improving Public Safety:**
 - Empathy-driven policing builds trust and safer communities.
 - **Example: Kerala's Janamaithri Suraksha** project improved **police-citizen relations** through community engagement.
- 4. Institutional Efficiency:**
 - Embedding behavioral insights enhances **service delivery** and operational efficiency.
 - **Example: NITI Aayog's Behavioral Insights Unit** successfully implemented **nudge-based welfare schemes**.

Inducting Behavioral Change in Officers:

- 1. Training Programs:**
 - Organize workshops on **behavioral science frameworks** like **MINDSPACE** for municipal officers.
- 2. Dedicated Roles:**
 - Establish **Chief Behavioral Officers (CBOs)** within urban local bodies to integrate behavioral insights into urban governance.
- 3. Data-Driven Approach:**
 - Use **citizen surveys** and **big data** to identify behavioral bottlenecks in urban systems.
- 4. Public Engagement:**
 - Launch **co-creation campaigns**, empowering citizens to participate in decision-making and policy implementation.
- 5. Policy Experimentation:**
 - Pilot **behavioral interventions** on small scales before city-wide implementation.
 - **Example: Bihar's nudge-based maternal health schemes** increased institutional deliveries.

Challenges to Behavioral Change:

- 1. Resistance to Change:**
 - Cultural and social inertia among citizens and officials delays acceptance of behavioral nudges.
 - **Example: Hesitation in adopting waste segregation** due to lack of awareness.
- 2. Insufficient Training:**
 - Limited expertise in **behavioral science** among public servants.
- 3. Resource Constraints:**
 - **Budgetary limitations** hinder the implementation of behavioral programs.
- 4. Fragmented Coordination:**
 - Difficulties in aligning multiple stakeholders like transport agencies, sanitation departments, etc.

Way Ahead:

- 1. Institutionalize Behavioral Roles:**
 - Make **behavioral insights** a core part of urban governance by creating **dedicated behavioral teams**.
- 2. Collaborate with Experts:**
 - Partner with **behavioral scientists** and organizations to design and implement targeted interventions.
- 3. Use Technology:**
 - Deploy **digital platforms** to track progress and ensure targeted citizen engagement.
 - **Example: Mobile apps for real-time feedback on waste collection systems.**
- 4. Scale Proven Models:**
 - Expand **successful pilots** like Indore's waste management model to other cities for replication.
- 5. Sustained Public Awareness Campaigns:**
 - Continuously engage the public through awareness drives and workshops to create **long-term behavioral shifts**.

GC Draft Regulations for Vice Chancellors

UPSC Syllabus: General Studies Paper II (Governance – Federalism, Education Policies)

Context:

The **University Grants Commission (UGC)** recently released **draft regulations** for the **selection and appointment of Vice Chancellors (VCs)** in universities, aiming to standardize processes across institutions. However, these proposals have sparked debates over **state autonomy** and **constitutional principles**.

Key Features of UGC Draft Regulations on Vice Chancellors:

- 1. Search-cum-Selection Committee Formation:**
 - A **three-member committee** to be constituted by the **Chancellor/Visitor**.
 - Members include nominees from:
 - Chancellor/Visitor.
 - UGC Chairman.
 - University's apex body (e.g., **Senate/Syndicate/Executive Council**).
- 2. Inclusion of Non-Academics:**
 - Eligibility extended to professionals with over **10 years of experience** in:
 - **Public policy, public administration, or industry.**
- 3. Standardized Selection Process:**
 - Uniform selection criteria for **central, state, and private universities**.
- 4. Mandatory UGC Nominee:**
 - Inclusion of a **UGC nominee** in the Search-cum-Selection Committee for **state universities** is made mandatory.
- 5. Alignment with NEP 2020:**
 - Draft aligned with **National Education Policy (NEP) 2020**, emphasizing:
 - **Transparency.**
 - **Inclusivity.**
 - **Quality in higher education.**

Positives of the Proposed Draft:

- 1. Standardized Framework:**
 - Ensures **uniformity in selection processes**, enhancing the quality of appointments.
 - **Example:** Supported by the Supreme Court in **Kalyani Mathivanan v. K.V. Jeyaraj (2015)**, which upheld UGC's role in maintaining standards.
- 2. Increased Transparency:**
 - Clear procedures reduce **discretionary powers**, fostering **accountability** in appointments.
- 3. Widened Talent Pool:**
 - Inclusion of professionals from non-academic fields can bring **diverse perspectives** and **innovative governance practices**.
- 4. Alignment with NEP 2020:**
 - Supports **holistic education reforms**, focusing on **meritocracy** and **inclusive growth**.
- 5. Focus on Governance Standards:**
 - Encourages **best practices** by involving experienced professionals in administrative roles.

Issues with the Proposed Draft:

- 1. Violation of State Autonomy:**
 - Mandatory inclusion of a **UGC nominee** in state universities undermines **state legislations**.
 - **Example:** Kerala's opposition highlights the tension between UGC and state authority.
- 2. Constitutional Overreach:**
 - UGC regulations, being **subordinate legislation**, cannot override **State University Acts**.
 - **Example:** SC ruling in **Ch. Tika Ramji v. State of UP (1956)** upheld the supremacy of state laws in concurrent subjects like education.
- 3. Federal Principles at Stake:**
 - Centralized control through UGC may erode **federal structure**, reducing states' roles in higher education governance.
 - **Example:** States like Tamil Nadu and Kerala have raised concerns over **erosion of authority**.
- 4. Ambiguity in Non-Academic Eligibility:**
 - Criteria for non-academic professionals lack clarity, risking the dilution of educational standards.
- 5. Potential Political Interference:**
 - Greater control by **Governors**, who often act as Central appointees, may lead to **politically influenced appointments**.
 - **Example:** Recent controversies in **West Bengal** and **Tamil Nadu** reflect this concern.

Way Forward:

- 1. Strengthen Consultation with States:**
 - Engage **state governments** to align UGC regulations with state-specific needs and laws.
- 2. Define Eligibility Clearly:**
 - Set detailed eligibility criteria for **non-academic professionals**, ensuring their contributions to education or public policy.
- 3. Adopt Flexibility:**
 - Allow states the discretion to **adopt or modify** UGC regulations to suit their governance frameworks.
 - **Example:** SC ruling in **P.J. Dharmaraj v. Church of South India (2024)** emphasized flexibility in governance.
- 4. Preserve Federal Balance:**
 - Respect **state legislations** and maintain a **cooperative federal structure** in higher education governance.
- 5. Judicial Clarification:**
 - Seek a definitive ruling from a **Constitutional Bench** to resolve ambiguities in the overlapping jurisdictions of UGC and state laws.

INTERNATIONAL RELATIONS

Strengthening India-Indonesia Strategic Ties

UPSC Syllabus: General Studies Paper II (International Relations – India’s bilateral, regional, and global groupings and agreements)

Context:

Indonesian President **Prabowo Subianto’s** visit to India on January 26, 2025, for the 76th Republic Day celebrations, aims to enhance cooperation in **economic, defense, cultural, and strategic domains**.

Historical Background:

- Early Civilizational Ties:**
 - **Cultural and Trade Links:** India and Indonesia share **millennia-old connections** through Hinduism, Buddhism, and maritime legacies like the **Bali Yatra festival**.
- Modern Diplomatic Relations:**
 - **1950:** Formal diplomatic ties established.
 - **1951 Treaty of Friendship:** Strengthened cooperation.
 - **Bandung Conference (1955):** Laid the foundation for the **Non-Aligned Movement**.
- Strategic Partnership:**
 - **2005:** Relationship elevated to a **Strategic Partnership**.
 - **2018:** Upgraded to **Comprehensive Strategic Partnership**, emphasizing economic and security cooperation.
- Act East Policy:**
 - Indonesia’s inclusion in **India’s Act East Policy (2014)** underscores its strategic importance in India’s regional engagement.

Positives in India-Indonesia Relations:

- Economic Cooperation:**
 - **Trade Volume:** Bilateral trade reached **\$29.4 billion (FY 2023-24)**, with a target of **\$50 billion by 2025**.
 - **Key Exports/Imports:** India imports **Indonesian coal and palm oil**; India invests **\$1.56 billion** in Indonesian sectors like textiles and infrastructure.
- Strategic and Defense Collaboration:**
 - **Joint Military Exercises:**
 - **Samudra Shakti** and **IND-INDO CORPAT** bolster maritime security.
 - **Defense Cooperation Agreement (2018):** Enables regular **military exchanges** and **joint patrols** in the Indian Ocean.
- Cultural Ties:**
 - Shared traditions of **Hinduism and Buddhism**.
 - Events like **Indonesia’s participation in India’s Republic Day Parade** foster people-to-people connections.
- Connectivity and Tourism:**
 - **Direct Flights:** Introduced in 2023, boosting tourism.
 - **Bali:** India became the **second-largest source of tourists**.
- Space and Healthcare Collaboration:**
 - **ISRO:** Supports Indonesia’s satellite missions.
 - Indian hospitals like **Apollo** invest in Indonesia’s healthcare sector.

Challenges in Bilateral Ties:

- Trade Imbalance:**
 - **Limited Diversification:** India heavily depends on **coal and palm oil imports** from Indonesia.
 - **China Factor:** Indonesia’s trade with **China (\$139 billion, 2023)** dwarfs its trade with India.
- Geopolitical Competition:**
 - Indo-Pacific tensions and Indonesia’s partnerships with other nations challenge India’s strategic influence.
- Maritime Security Threats:**
 - Issues like **piracy, illegal fishing**, and geopolitical disputes in shared waters require greater collaboration.
- Limited Investment:**
 - India’s **investment in Indonesia** is relatively modest compared to regional players like China and Japan.
- Bureaucratic Hurdles:**
 - **Regulatory Challenges:** Delays in joint infrastructure and trade projects slow down cooperation.

Way Ahead:

- 1. Boost Economic Diversification:**
 - Expand trade to include **technology, renewable energy**, and agriculture.
- 2. Enhance Defense Cooperation:**
 - Strengthen joint maritime security initiatives under **India's SAGAR framework**.
 - Expand the scope of **military exercises** and strategic dialogues.
- 3. Leverage Connectivity:**
 - Increase **flight networks** and promote **business tourism** through cultural exchanges.
- 4. Focus on Green Energy:**
 - Collaborate on **renewable energy projects** to achieve climate and energy security goals.
- 5. Deepen People-to-People Ties:**
 - Encourage educational exchanges through **scholarships (e.g., ITEC)**.
 - Strengthen the role of the **Indian diaspora** in bilateral relations.

Additional Data and Reports:

- 1. UNCTAD Report (2023):** Highlights that India and Indonesia have untapped potential in **renewable energy collaboration**.
- 2. ASEAN Connectivity Master Plan 2025:** Encourages India's investment in Indonesia's infrastructure and maritime connectivity.
- 3. BIMSTEC Cooperation:** Enhances trilateral trade and energy partnerships.

The M23 Armed Group and its Impact on the DRC

UPSC Syllabus: General Studies Paper II (International Relations – Regional Conflicts and Global Peace Initiatives)

Context:

The **M23 armed group** has escalated its activities in the **eastern Democratic Republic of Congo (DRC)**, capturing key areas like **Minova** and threatening **Goma**, the provincial capital of North Kivu.

About the M23 Armed Group:

- 1. What is M23?**
 - **Full Form:** **March 23 Movement (M23)**.
 - **Location:** Operates in the **eastern DRC**, primarily in **North Kivu province**.
 - **Origin:** Formed in **2012** by a faction of the **Congolese army**, citing grievances over the **2009 peace agreement** between the government and rebels.
 - **Nature:**
 - A **rebel group** involved in **territorial seizures** and conflict.
 - Activities fueled by **ethnic tensions, resource competition**, and **international involvement**.
- 2. Support and Allegations:**
 - **UN Reports:** Suggest **substantial backing from Rwanda**, including claims of **direct military support**.
 - Rwanda denies these allegations but faces criticism for its role in destabilizing the region.

About the Democratic Republic of Congo (DRC):

- 1. Geography:**
 - **Capital:** Kinshasa.
 - **Neighboring Countries:** Angola, Zambia, Tanzania, Burundi, Rwanda, Uganda, South Sudan, Central African Republic, and Republic of Congo.
- 2. Natural Features:**
 - **Rivers:** The **Congo River**, Africa's **second-longest river**, provides essential **transport and hydroelectric resources**.
 - **Mountains:** Includes the **Rwenzori Mountains** and **Virunga Mountain range**, home to **active volcanoes** like **Mount Nyiragongo**.
- 3. Resources:**
 - Rich in **minerals**, including **cobalt, gold**, and **coltan**, which are **critical for global tech industries**.
 - Resource wealth is a key factor in the country's persistent **conflicts**.

Key Concerns Around M23 Activities:

- 1. Humanitarian Crisis:**
 - Thousands displaced as civilians flee escalating **violence**.
 - Increased reports of **human rights abuses**, including **killings and sexual violence**.
- 2. Regional Instability:**
 - Spillover of violence into neighboring countries like **Rwanda** and **Uganda** threatens regional security.
 - Tensions between **Rwanda and DRC** over alleged support for M23 exacerbate diplomatic conflicts.

3. **Resource Exploitation:**
 - Armed groups exploit DRC's **mineral wealth**, funding their activities and perpetuating conflict.
4. **Global Implications:**
 - Instability in the region affects global supply chains for minerals like **cobalt and coltan**, essential for **batteries and electronics**.
5. **Weak Governance:**
 - The DRC struggles with **weak state institutions**, making it vulnerable to rebel activities and **foreign interference**.

Way Forward:

1. **Strengthen Regional Cooperation:**
 - Enhance collaboration between the **DRC, Rwanda, and Uganda** to address cross-border support for rebel groups.
 - Leverage platforms like the **African Union (AU)** and **East African Community (EAC)** for conflict resolution.
2. **Increase UN Peacekeeping Efforts:**
 - Expand and strengthen the mandate of the **United Nations Organization Stabilization Mission in the DRC (MONUSCO)**.
3. **Address Resource Exploitation:**
 - Regulate mining and trade of minerals to prevent funding of **armed groups**.
 - Promote transparency through mechanisms like the **Kimberley Process** and **OECD Due Diligence Guidance**.
4. **Promote Good Governance:**
 - Strengthen state institutions to tackle **corruption**, improve **security forces**, and ensure **rule of law**.
5. **Support Humanitarian Relief:**
 - Mobilize global resources to address the **displacement crisis** and provide **relief aid** to affected populations.

US Withdrawal from WHO

UPSC Syllabus: General Studies Paper II (International Relations – Multilateral Institutions, Global Cooperation)

Context:

The **United States**, under President Donald Trump, signed an executive order to **withdraw from the WHO**, citing mishandling of the **COVID-19 pandemic**, political bias, and financial concerns.

About the WHO:

1. **Aims:**
 - Ensure **universal health coverage** and promote **health equity**.
 - Strengthen **disease prevention** and control globally.
 - Enhance **global preparedness and response** to health emergencies.
2. **Functions:**
 - **Set global health standards** and guidelines.
 - **Monitor emerging health issues** and coordinate international responses.
 - Provide **technical assistance** to countries for capacity building.
 - Facilitate **health research** and policy development.

WHO's Role in Global Health:

1. **Global Coordination:**
 - Leads efforts to combat **pandemics** (e.g., COVID-19, Ebola).
 - Collaborates with governments, NGOs, and private entities to strengthen **healthcare systems**.
2. **Disease Eradication:**
 - Played a key role in eradicating **smallpox** and reducing **polio cases** by 99%.
3. **Capacity Building:**
 - Supports **low- and middle-income countries** in improving health infrastructure and training healthcare workers.
4. **Health Policy Advocacy:**
 - Promotes funding and policies for **non-communicable diseases**, **mental health**, and **nutrition improvement**.

USA's Decision to Leave WHO:

1. **Reasons Cited:**
 - Alleged **mishandling of the COVID-19 pandemic**.
 - Perceived **political bias** within the organization.
 - Unequal **financial burden** on the US compared to other countries, particularly China.
2. **Key Provisions in the Executive Order:**
 - **Cease funding** and resources to WHO.
 - Recall all **US personnel** working with the organization.
 - Seek **alternative partnerships** for health initiatives.

3. Process to Leave WHO:

- The **WHO Constitution** does not explicitly outline a withdrawal process.
- US Congress conditions (1948): Requires a **one-year notice** and payment of **outstanding financial commitments**.

Impact of USA's Exit:

1. On WHO:

- **Financial Strain:**
 - Loss of **20% of funding**, impacting health programs like **disease eradication** and **pandemic preparedness**.
- **Expertise Gap:**
 - Loss of collaboration with US agencies like the **CDC** affects WHO's **health surveillance** capabilities.

2. On Global Health:

- **Pandemic Preparedness:**
 - Disruption in global frameworks for managing pandemics and **vaccine distribution**.
- **Increased Global Inequity:**
 - Greater reliance on nations like **China**, altering the balance of **global health governance**.

3. On India:

- **Health Programs:**
 - Reduced WHO support for India's efforts in **tuberculosis, malaria, and maternal health**.
- **Collaborative Research:**
 - Loss of partnerships impacts India's **capacity-building initiatives**.
- **Implementation Challenges:**
 - Adverse effects on **vaccine coverage** and disease-prevention guidelines.

Way Forward:

- Strengthen Global Partnerships:**
 - Nations like **India** and countries from the **Global South** should take leadership roles in **WHO initiatives**.
- Diversify Funding:**
 - Reduce reliance on single-member contributions by increasing **voluntary funding** from philanthropies and regional coalitions.
- Transparency and Reform:**
 - Address concerns about **governance, accountability, and equitable representation** of member states.
- Encourage Collaboration:**
 - Foster global collaboration on **vaccine development, pandemic preparedness, and health equity** to offset gaps.
- Bolster Regional Frameworks:**
 - Strengthen regional health bodies like **SAARC Health Initiatives** to complement global efforts.

Indus Water Treaty (IWT), 1960

UPSC Syllabus: General Studies Paper II (International Relations – Bilateral Treaties and Agreements)

Context:

A **World Bank-appointed Neutral Expert (NE)** has declared his competence to resolve differences between **India** and **Pakistan** regarding the design of the **Kishenganga** and **Ratle hydroelectric projects** under the **Indus Water Treaty (IWT), 1960**.

About the World Bank's Neutral Expert (NE):

- What is a Neutral Expert?**
 - Appointed under **Paragraph 7 of Annexure F** of the IWT.
 - Role: Resolves **technical disputes** when the **Permanent Indus Commission (PIC)** fails to reach a mutual agreement.
- Current Focus:**
 - Technical evaluation of:
 - **Kishenganga Hydroelectric Project** (Jhelum River).
 - **Ratle Hydroelectric Project** (Chenab River).
- Dams Under Issue:**
 - **Kishenganga Hydroelectric Project:**
 - **Location:** On the **Jhelum River**, a tributary of the Indus, in Jammu & Kashmir.
 - **Ratle Hydroelectric Project:**
 - **Location:** On the **Chenab River**, a tributary of the Indus, in Jammu & Kashmir.

About the Indus Water Treaty (IWT):

- Established In:**
 - Signed in **1960** by:

- **Indian Prime Minister Jawaharlal Nehru.**
 - **Pakistan President Ayub Khan.**
- Brokered by the **World Bank**, which also serves as a signatory.
- 2. **Nations Involved:**
 - **India:** Allocated water from **eastern rivers – Beas, Ravi, and Sutlej.**
 - **Pakistan:** Allocated water from **western rivers – Indus, Chenab, and Jhelum.**
- 3. **Key Features of the Treaty:**
 - **Equitable Distribution:** Governs the sharing of the **Indus River system's waters.**
 - **Permitted Uses:** Allows both nations limited use of each other's rivers for:
 - **Hydroelectric projects.**
 - **Irrigation and domestic use.**
 - **Permanent Indus Commission (PIC):**
 - Consists of commissioners from **India and Pakistan** to oversee treaty implementation.
- 4. **World Bank's Role:**
 - **Neutral Expert:** Appoints a technical expert to resolve **differences.**
 - **Court of Arbitration:** Facilitates arbitration if disputes are unresolved.
 - **Oversight:** Ensures the treaty's integrity and proper implementation.

Challenges and Disputes under IWT:

1. **Hydroelectric Projects:**
 - Differences arise over India's projects on the **western rivers**, which Pakistan claims violate treaty provisions.
2. **Design and Technical Issues:**
 - Pakistan objects to design elements, such as spillway height and pond storage, claiming they reduce downstream water availability.
3. **Geopolitical Tensions:**
 - Frequent political and military tensions between India and Pakistan complicate treaty negotiations and dispute resolution.
4. **Climate Change:**
 - Changing rainfall patterns and glacial melt in the Indus basin increase **water scarcity**, exacerbating disputes.
5. **Infrastructure Development:**
 - India's increased focus on developing **hydropower infrastructure** on rivers allocated to Pakistan has intensified tensions.

Significance of IWT:

1. **Successful Bilateral Agreement:**
 - Despite wars and hostilities, the treaty has **survived over six decades**, reflecting its robustness.
2. **Water Security:**
 - Ensures water access for **Pakistan** while allowing India limited use of western rivers.
3. **Dispute Resolution Mechanism:**
 - Provides a structured framework for addressing disagreements, fostering **dialogue** over confrontation.
4. **World Bank Mediation:**
 - Acts as a **neutral facilitator**, ensuring adherence to treaty provisions.

Way Forward:

1. **Strengthen PIC Mechanism:**
 - Enhance the **Permanent Indus Commission's** capacity to address technical disputes without external intervention.
2. **Promote Trust-Building Measures:**
 - Foster **bilateral dialogue** and confidence-building measures to reduce political tensions over water-sharing issues.
3. **Leverage Technology:**
 - Use **satellite monitoring** and **real-time data sharing** to ensure transparency in water usage and project designs.
4. **Climate Resilience:**
 - Integrate climate adaptation strategies into water-sharing agreements to address the **long-term impacts** of climate change.
5. **Expand Arbitration Framework:**
 - Streamline the dispute resolution process by involving technical experts and neutral mediators for quicker resolutions.

Jaishankar's Five-Point Agenda

UPSC Syllabus: General Studies Paper II (International Relations)

Context:

External Affairs Minister S. Jaishankar unveiled a **five-point agenda** during the **BRICS outreach session in Kazan, Russia** (October 24, 2024), to promote a **South-friendly, equitable, and multipolar world order.**

Origin and Background:

- 1. Unveiling of the Agenda:**
 - Proposed by **S. Jaishankar**, India's External Affairs Minister.
 - Aims to address **global governance imbalances**, strengthen **Global South representation**, and advance a **resilient international order**.
- 2. Contextual Drivers:**
 - Persistent inequalities in globalization benefits.
 - Supply chain disruptions post-COVID-19.
 - Marginalization of developing nations in **global decision-making** forums.

Jaishankar's Five-Point Agenda:

- 1. Expanding Independent Platforms:**
 - **Objective:** Strengthen multilateral platforms like **BRICS** to provide **alternatives to Western-dominated systems**.
 - **Examples:** Create economic alliances that give voice to **developing nations**.
- 2. Reforming Global Institutions:**
 - **Focus:** Push for reforms in organizations like the **United Nations** and **multilateral development banks**.
 - **Specifics:**
 - Expand the **UN Security Council** to include more nations, particularly from the Global South.
 - Update funding mechanisms to reflect **current global economic realities**.
- 3. Democratizing the Global Economy:**
 - **Strategy:** Promote **regional production hubs** and create resilient **supply chains**.
 - **Need:** Address vulnerabilities in **global trade**, as seen during the COVID-19 pandemic.
- 4. Correcting Colonial-Era Infrastructure:**
 - **Target:** Develop **inclusive connectivity projects** respecting **sovereignty** and **territorial integrity**.
 - **Goal:** Address inequities stemming from outdated **colonial systems** of infrastructure and trade routes.
- 5. Sharing Scalable Solutions:**
 - **India's Contribution:** Share initiatives like:
 - **Digital Public Infrastructure**.
 - **Unified Payments Interface (UPI)**.
 - **International Solar Alliance (ISA)**.
 - **Impact:** Provide cost-effective solutions to **developing nations** for tackling global challenges.

Need for the Agenda:

- 1. Global Imbalances:**
 - Inequalities persist in access to **health, food, and energy security**.
- 2. Marginalization of Global South:**
 - Developing countries lack **adequate representation** in global institutions like the UN and IMF.
- 3. Supply Chain Vulnerabilities:**
 - The **COVID-19 pandemic** exposed the fragility of supply chains, necessitating **regional diversification**.
- 4. Geopolitical Instabilities:**
 - Conflicts like those in **West Asia** pose threats to global peace and stability.
- 5. SDG Challenges:**
 - The **Sustainable Development Goals (SDGs)** are hindered by inadequate **global cooperation** and outdated policies.

Challenges to the Agenda:

- 1. Institutional Resistance:**
 - Reforming global institutions like the UN Security Council faces opposition from **permanent members (P-5)**.
- 2. Geopolitical Rivalries:**
 - Competing interests among major powers hinder **consensus-building** on multipolarity.
- 3. Economic Protectionism:**
 - Rise of **trade wars** and protectionist measures disrupt global economic democratization.
- 4. Technological Gaps:**
 - Developing countries struggle with **limited access** to cutting-edge technologies.
- 5. Global Conflicts:**
 - Ongoing **regional conflicts** divert resources and attention from collaborative global actions.

Way Forward:

- 1. Strengthening Alliances:**
 - Promote **South-South cooperation** through forums like **BRICS, G20**, and regional groupings.
- 2. Advocating Reforms:**
 - Build coalitions with like-minded nations to push for **UNSC expansion** and reforms in multilateral banks.

3. **Fostering Resilience:**
 - Invest in **regional production hubs** and sustainable infrastructure to reduce economic vulnerabilities.
4. **Scaling Digital Solutions:**
 - Share India's successes in **digital public goods** to empower the Global South.
5. **Encouraging Dialogue:**
 - Use platforms like **BRICS, G77, and Non-Aligned Movement (NAM)** to mediate conflicts and advocate for a rules-based order.

Global Estimates on International Migrant Workers 2022

UPSC Syllabus: General Studies Paper II (International Relations – Globalization and Migration)

Context:

The **Global Estimates on International Migrant Workers 2022**, published by the **International Labour Organization (ILO)**, provides key data on the contribution and dynamics of **international migrants (IMs)** in the global labor force.

About the Report:

1. **Published by:**
 - **International Labour Organization (ILO).**
2. **Focus:**
 - Highlights the **role of international migrants** in the global workforce.
 - Analyzes **demographics, sectoral distribution, and host country trends.**

Key Data Insights:

1. **Global Share of Migrant Workers:**
 - IMs constituted **4.7% of the global labor force** in 2022.
 - Total IM workers: **167.7 million**, marking an **increase of over 30 million** since 2013.
2. **Gender Dynamics:**
 - **Male Workers:**
 - **61.3% of IMs (102.7 million).**
 - **Female Workers:**
 - **38.7% of IMs (64.9 million).**
 - Higher representation in **care-related roles** within the services sector.
3. **Age Distribution:**
 - **Prime-age adults (25–54 years):** Largest group, comprising **74.9%** of IMs.
 - **Youth (15–24 years):** 9.3%.
 - **Older adults (55–64 years):** 12.5%.
 - **Seniors (65+ years):** 3.4%.
4. **Sectoral Distribution:**
 - **Services Sector:** Dominates with **68.4%** of IMs (higher for women at **80.7%**).
 - **Industry:** 24.3% of IMs.
 - **Agriculture:** Only 7.4%, much lower compared to **24.3%** for non-migrant workers.
5. **Host Countries:**
 - **High-Income Countries:**
 - Host **68.4%** (114 million) of IMs, particularly in **Europe and North America.**
 - **Upper-Middle-Income Countries:**
 - Absorb **17.4%** (29.2 million).
 - **Arab States:**
 - Account for **13.3%** of IM workers, though this share has slightly declined over the decade.

Significance of Migrant Workers:

1. **Economic Contribution:**
 - IMs are vital in **high-income economies**, filling critical gaps in sectors like **healthcare, construction, and agriculture.**
2. **Gendered Roles:**
 - Female IMs dominate **care-related professions**, supporting essential services in host countries.
3. **Youthful Workforce:**
 - Migrants in the **25–54 age group** contribute to **productive labor markets**, addressing aging populations in developed nations.
4. **Diversity of Skills:**
 - IMs range from **low-skilled workers** in agriculture to **high-skilled professionals** in technology and services.

Challenges for Migrant Workers:

1. **Exploitation and Abuse:**
 - Vulnerability to **low wages, unsafe working conditions, and lack of social protections**, especially in the Arab States.
2. **Gender Disparities:**
 - Female migrants face **double discrimination** due to gender and migration status.
3. **Integration Barriers:**
 - Limited access to **legal status, language skills, and social security** in host countries.
4. **Policy Restrictions:**
 - Stringent **immigration laws** in high-income countries limit opportunities for IMs.
5. **Impact of Global Crises:**
 - Pandemics and conflicts disrupt migrant workers' livelihoods and mobility.

Way Forward:

1. **Inclusive Labor Policies:**
 - Host countries should adopt **migrant-inclusive labor laws** to ensure fair wages and safe working conditions.
2. **Global Frameworks:**
 - Strengthen adherence to international frameworks like the **ILO Conventions** and the **Global Compact on Migration**.
3. **Empowering Female Migrants:**
 - Promote gender-sensitive policies to protect and empower female IMs in the workforce.
4. **Skill Development:**
 - Invest in **training programs** for migrants to enhance employability in high-demand sectors.
5. **Regional Cooperation:**
 - Foster **bilateral agreements** between source and host countries to ensure regulated and ethical migration.
6. **Digital Solutions:**
 - Use technology for **e-governance**, tracking worker rights, and improving cross-border employment processes.

World Economic Forum (WEF)

UPSC Syllabus: General Studies Paper II (International Relations – Global Groupings)

Context:

The **World Economic Forum (WEF) Annual Meeting 2025**, held in **Davos, Switzerland**, focuses on fostering **public-private cooperation** to address global challenges, under the theme “**Collaboration for the Intelligent Age.**”

About the World Economic Forum (WEF):

1. **Establishment:**
 - **Founded:** 1971, as the **European Management Forum**.
 - Renamed as the **World Economic Forum** in 1987.
2. **Headquarters:**
 - Located in **Cologny, Switzerland**.
3. **Founder:**
 - Established by **Klaus Schwab**, a German economist who pioneered the concept of “**stakeholder capitalism.**”
4. **Aim:**
 - **Improve the state of the world** by fostering **collaboration** between public and private stakeholders.
 - Address **global economic, social, and environmental challenges** through multilateral cooperation.

Key Features and Functions:

1. **Global Dialogues:**
 - Organizes the **Annual Meeting in Davos**, attended by leaders from **business, politics, civil society, and academia** to discuss critical global issues like **climate change, inequality, and technological advancements**.
2. **Publications and Rankings:**
 - Releases influential reports, including:
 - **Global Competitiveness Report:** Measures economic competitiveness.
 - **Global Gender Gap Report:** Tracks gender parity worldwide.
 - **Future of Jobs Report:** Projects trends in employment and skills.
 - **Energy Transition Index:** Evaluates the progress in transitioning to sustainable energy systems.
3. **Policy Advocacy:**
 - Advocates for **sustainability, inclusive development, and technological innovation** through global initiatives.
4. **Diplomatic Initiatives:**

- Played a role in historic negotiations, such as the **1992 meeting** between **Nelson Mandela** and **South African President F.W. de Klerk**, contributing to South Africa's peaceful transition.
5. **Collaborative Platforms:**
- Facilitates partnerships in areas like **climate action**, **global health**, **digital economy**, and **sustainable development goals (SDGs)**.

2025 Theme: “Collaboration for the Intelligent Age”

- Focuses on leveraging **technology, innovation, and collective intelligence** to address challenges like:
 - **Artificial Intelligence (AI)** and its ethical use.
 - **Global warming** and climate adaptation.
 - Bridging **digital divides** and fostering inclusivity.

Impact of WEF:

1. **Economic Cooperation:**
 - Creates a space for fostering partnerships among governments and corporations, driving **investment** and **growth initiatives** globally.
2. **Sustainability Advocacy:**
 - Pushes for policies addressing **climate change**, **carbon neutrality**, and **renewable energy transitions**.
3. **Technological Advancement:**
 - Promotes discussions on **AI**, **cybersecurity**, and **4th Industrial Revolution** technologies.
4. **Global Development Goals:**
 - Encourages alignment with the **UN's SDGs**, promoting global health, education, and poverty reduction initiatives.

Criticisms of WEF:

1. **Elitism:**
 - Criticized for being a forum dominated by wealthy corporations and influential nations, sidelining the interests of marginalized groups.
2. **Inequality in Representation:**
 - Developing nations often face limited representation compared to developed countries.
3. **Lack of Tangible Outcomes:**
 - Accused of focusing on dialogues rather than actionable solutions.
4. **Environmental Concerns:**
 - Hosting the Annual Meeting in Davos has been criticized for its **carbon footprint**, despite the WEF's emphasis on sustainability.

Way Forward:

1. **Inclusivity:**
 - Ensure participation of **developing nations**, **grassroots organizations**, and **youth leaders** to make discussions more diverse.
2. **Action-Oriented Framework:**
 - Convert discussions into **concrete actions** with measurable goals and follow-ups.
3. **Sustainability Commitment:**
 - Implement **carbon-neutral practices** for hosting events to align with its climate advocacy.
4. **Technology for Equity:**
 - Promote **accessible technological solutions** to bridge global digital divides.

BRICS Bloc

UPSC Syllabus: General Studies Paper II – International Relations (Global Groupings and Agreements)

Context

In 2025, **Indonesia** joined as a **full member** of BRICS, and **Nigeria** was admitted as a “**partner country**”, alongside nine other partner nations, reflecting the bloc's evolving geopolitical influence and its focus on strengthening South-South cooperation.

About BRICS Bloc

1. **Establishment and Evolution:**
 - **Founded:** In 2009 as BRIC (Brazil, Russia, India, China); became BRICS in 2010 with South Africa's inclusion.
 - **Expansion:**
 - 2023: Added **Iran, Egypt, Ethiopia, and the UAE**.
 - **Saudi Arabia** invited but yet to formally join.
 - 2025: **Indonesia** became a **full member**.
2. **Structure and Operation:**
 - **Headquarters:** No permanent HQ; operates under **rotational presidency**.
 - **Membership:** Includes 11 full-time members and 10 partner nations.

3. Partner Nations:

- **Current Partners:** Nigeria, Belarus, Bolivia, Cuba, Kazakhstan, Malaysia, Thailand, Uganda, and Uzbekistan.
- Partners are not full members but collaborate on economic, political, and development issues.

Key Objectives of BRICS

1. Economic Cooperation:

- Facilitate **trade and investment** among members to reduce dependency on Western economies.
- Promote local currency trade to reduce reliance on the US dollar.

2. Global Governance Reform:

- Advocate for **fair representation** in institutions like the **UN, World Bank, and IMF**, ensuring the Global South's voice in decision-making.

3. Development and Infrastructure:

- Fund infrastructure and sustainable development projects through the **New Development Bank (NDB)**.

4. South-South Cooperation:

- Strengthen partnerships among developing countries to address **climate change, health, and energy security** collectively.

5. Geopolitical Stability:

- Act as a counterbalance to Western-led global institutions.

BRICS Institutions and Initiatives

1. New Development Bank (NDB):

- Established in **2014** at the Fortaleza Summit.
- Funds **infrastructure projects** in member and partner nations.

2. Contingent Reserve Arrangement (CRA):

- Provides liquidity support to members during financial crises.

3. BRICS Payment System:

- In development to **reduce reliance on SWIFT** and encourage trade in local currencies.

4. Annual Summits:

- Serve as platforms to discuss economic, political, and global challenges.

5. Innovation Networks:

- Promote collaboration in **research, technology, and education**.

Significance of BRICS

1. Economic Weight:

- Represents **40% of the global population** and **30% of the world's GDP (PPP)**.

2. Geopolitical Influence:

- Acts as a platform for the **Global South**, challenging Western dominance.
- Drives **multipolarity** in global governance.

3. Trade and Investment:

- Increases intra-BRICS trade, focusing on **regional value chains**.

4. Development Initiatives:

- Funds **sustainable projects** in member nations, addressing **climate challenges** and **energy transitions**.

5. Global Financial Alternatives:

- Pushes for reduced dependency on the **US dollar** in global trade.

Challenges Facing BRICS

1. Internal Differences:

- **China-India tensions** hinder cooperation on certain issues.
- Diverse political systems and economic priorities create friction.

2. Limited Institutional Framework:

- Lack of a formalized structure makes decision-making slower.

3. Economic Inequality:

- Disparities in economic power between members, particularly between **China** and smaller economies.

4. Global Skepticism:

- Perceived as a counter-West bloc, leading to opposition from developed nations.

5. Operational Hurdles:

- Expanding membership might dilute focus and increase bureaucratic complexity.

Way Ahead for BRICS

1. Enhance Internal Coordination:

- Resolve disputes among members to strengthen unity.

2. Deepen Economic Integration:

- Promote trade in **local currencies** and develop the **BRICS Payment System**.

3. **Expand Development Initiatives:**
 - Focus on funding **green energy, infrastructure, and digital transformation** in partner nations.
4. **Leverage Partner Nations:**
 - Use partnerships to expand influence without overwhelming the bloc's decision-making processes.
5. **Advocate for Global Reforms:**
 - Build alliances to push for reforms in **UN, IMF, and World Bank**.

Exercise La Perouse

Syllabus: General Studies Paper II – International Relations (Bilateral, Regional, and Global Groupings/Agreements)

Context

The **multilateral naval exercise La Perouse 2025**, hosted by France, is being conducted in **strategic straits connecting the Indian and Pacific Oceans**, reinforcing maritime security and Indo-Pacific cooperation.

About Exercise La Perouse

1. **What it is:**
 - **La Perouse** is a multilateral **naval exercise** aimed at **strengthening maritime security, enhancing interoperability, and developing situational awareness** among participating navies.
2. **Host Nation:**
 - France leads the exercise, with its **Carrier Strike Group**, spearheaded by the **aircraft carrier Charles de Gaulle**.
3. **Location:**
 - Conducted in **Malacca, Sunda, and Lombok Straits**, which are vital **chokepoints between the Indian Ocean and the Pacific Ocean**.
4. **Participants (2025):**
 - **India, France, U.S., Canada, Australia, Indonesia, Malaysia, Singapore, U.K.**

Aims and Objectives

1. **Maritime Safety:**
 - Address **illegal trafficking, environmental hazards, and maritime crises**.
 - Foster collaboration to counter threats like piracy and smuggling.
2. **Enhanced Cooperation:**
 - Train in **maritime surveillance, air operations, anti-submarine warfare, and maritime interdiction**.
 - Promote joint responses to regional challenges.
3. **Interoperability:**
 - Leverage advanced systems like **IORIS (Indian Ocean Regional Information Sharing System)** for **real-time crisis management and seamless communication**.
4. **Commitment to Rules-Based Order:**
 - Promote stability and security in the **Indo-Pacific**, in alignment with India's **SAGAR (Security and Growth for All in the Region)** vision.

Significance of Exercise La Perouse

1. **Strategic Importance of the Indo-Pacific:**
 - The Indo-Pacific region is a hub for global trade and energy transit, making its security a global priority.
 - Exercises like La Perouse reinforce the **Free and Open Indo-Pacific (FOIP)** initiative.
2. **Strengthening Partnerships:**
 - Enhances **India's maritime cooperation** with like-minded nations, including **QUAD** members and regional players.
 - Promotes **defense diplomacy** between participating navies.
3. **Addressing Emerging Threats:**
 - Improves preparedness to tackle non-traditional threats like **cyberattacks, climate-induced disasters, and illegal fishing**.
4. **Technological Exchange:**
 - Encourages sharing of advanced maritime technologies, enhancing **joint operational capabilities**.

Challenges and Considerations

1. **Geopolitical Rivalries:**
 - China views such exercises as part of a containment strategy in the Indo-Pacific.
 - Balancing diplomatic relations with nations outside the exercise becomes critical.
2. **Operational Complexities:**
 - Coordinating large-scale multilateral operations across diverse naval platforms.
3. **Resource Limitations:**
 - Requires significant financial and logistical resources for sustained participation.

India's Role and Interests

1. **Indo-Pacific Strategy:**
 - Aligns with India's focus on **maritime security** and its commitment to a **rules-based international order**.
2. **SAGAR Vision:**
 - Strengthens regional cooperation under India's **SAGAR (Security and Growth for All in the Region)** framework.
3. **Strengthening Naval Power:**
 - Enhances the Indian Navy's **operational readiness** and collaboration with global partners.
4. **Boosting Regional Influence:**
 - Reinforces India's image as a **responsible maritime power** and a key stakeholder in Indo-Pacific security.

Way Ahead

1. **Expanded Engagement:**
 - Increase participation of more regional and global navies to enhance collaborative efforts.
2. **Technology-Driven Exercises:**
 - Focus on integrating **Artificial Intelligence (AI)** and **cybersecurity** in maritime operations.
3. **Capacity Building:**
 - Extend support to smaller Indo-Pacific nations in building their naval and maritime capacities.
4. **Balancing Diplomacy:**
 - Maintain robust engagement with all major powers, ensuring strategic autonomy while fostering cooperation.

INTERNAL SECURITY & DEFENCE

Sanjay – Revolutionizing Battlefield Surveillance for the Indian Army

UPSC Syllabus: General Studies Paper III (Science & Technology – Developments and Applications in Defense, Security, and Indigenization of Technology)

Context:

Defence Minister flagged off 'Sanjay', an advanced battlefield surveillance system (BSS) designed for the Indian Army, which will be operational by October 2025.

About Sanjay – The Battlefield Surveillance System (BSS):

1. **What is Sanjay?**
 - **Definition:** An **automated battlefield surveillance system** that integrates real-time inputs from **ground and aerial sensors** to generate a **Common Surveillance Picture (CSP)**.
 - **Objective:** To enable commanders to make **informed and swift decisions** in **conventional and sub-conventional warfare scenarios**.
2. **Developed by:**
 - **Indian Army** in collaboration with **Bharat Electronics Limited (BEL)**.
 - Developed under the **Buy (Indian)** category to promote **indigenous defense manufacturing**.
3. **Development Cost:**
 - Total cost: **₹2,402 crore**.
4. **Key Aims:**
 - **Enhance Battlefield Transparency:** Real-time surveillance for accurate analysis and rapid decisions.
 - **Strengthen Intelligence and Reconnaissance:** Provide **situational awareness** across terrains and borders.
 - **Promote Aatmanirbharta:** Showcase **India's self-reliance** in defense technology.

How Sanjay Works:

- i) **Integration of Data:**
 - a. Collects inputs from **multiple battlefield sensors** (ground and aerial).
- ii) **Processing and Verification:**
 - a. Processes collected data to **eliminate duplication** and confirm accuracy.
- iii) **Real-Time Analysis:**

- a. Centralized **Common Surveillance Picture (CSP)** generated and accessible through **Army Data and Satellite Communication Networks**.
- iv) **Decision Support:**
 - a. Assists **Command and Army Headquarters** in decision-making through a **centralized web application**.

Features of Sanjay:

- v) **Real-Time Data Integration:**
 - a. Inputs from diverse sources (ground radars, UAVs, and satellites) are processed into a single platform.
- vi) **Advanced Analytics:**
 - a. Equipped with **cutting-edge analytics** for accurate threat detection and situational assessment.
- vii) **Enhanced Surveillance:**
 - a. Provides real-time border monitoring, **intrusion detection**, and advanced intelligence capabilities.
- viii) **Network-Centric Operations:**
 - a. Operates within a **secure, integrated data and satellite network** for real-time communication.
- ix) **Indigenous Technology:**
 - a. Fully developed in India, contributing to defense **self-reliance** under the '**Year of Technology Absorption**' initiative.
- x) **Deployment Timeline:**
 - a. Induction into all **operational brigades, divisions, and corps** in **three phases (March–October 2025)**.
- xi) **Operational Versatility:**
 - a. Designed for **both conventional and sub-conventional operations**, enhancing battlefield adaptability.

Additional Data and Reports:

1. **Defense Expenditure Growth:**
 - o India's defense budget for FY 2023-24 allocated **₹1.62 lakh crore** for capital outlay, emphasizing indigenous defense projects like Sanjay.
2. **Global Context:**
 - o Sanjay aligns with **global advancements in network-centric warfare systems**, such as the **U.S. Distributed Common Ground System (DCGS)**.
3. **Self-Reliance Progress:**
 - o India's **Defense Production Policy (2020)** targets **\$25 billion** defense manufacturing by 2025.
4. **Induction Impact:**
 - o Expected to reduce dependence on **imported surveillance systems**, saving **foreign exchange** and boosting **domestic R&D**.

Way Ahead:

1. **Induction and Training:**
 - o Ensure timely **deployment** in all operational units and **train personnel** for seamless operation.
2. **Technology Upgradation:**
 - o Incorporate **AI-driven enhancements** for predictive analytics and real-time threat neutralization.
3. **Integration with SAGAR:**
 - o Utilize Sanjay under the **Security and Growth for All in the Region (SAGAR)** framework to secure **maritime borders**.
4. **Export Potential:**
 - o Position Sanjay for **global export markets**, enhancing India's profile in defense technology.

ECONOMY

Fiscal Health Index (FHI) 2025 – Analyzing State Fiscal Performance

UPSC Syllabus: General Studies Paper III (Economic Development – Government Budgeting, Fiscal Policy, and Governance)

Context:

NITI Aayog launched the **Fiscal Health Index (FHI) 2025**, providing a comprehensive analysis of the **fiscal health of 18 major Indian states**, with a focus on interstate disparities and policy interventions.

About Fiscal Health Index 2025:

1. **Developed by:** NITI Aayog, utilizing data from the **Comptroller and Auditor General (CAG)**.
2. **Base Year:** **2022-23 fiscal data** serves as the reference year for state rankings and analysis.
3. **Aim:**
 - o Evaluate **state fiscal health**.

- Highlight **interstate disparities**.
 - Promote **targeted policy interventions** for improved governance and fiscal performance.
4. **Key Criteria (Sub-Indices):**
- **Quality of Expenditure:** Assesses efficiency in **capital and social sector spending**.
 - **Revenue Mobilization:** Measures the state's capacity to generate **tax and non-tax revenues**.
 - **Fiscal Prudence:** Evaluates adherence to **fiscal deficit targets** and financial management.
 - **Debt Index:** Examines states' **total debt burden**.
 - **Debt Sustainability:** Focuses on **debt-to-GSDP ratio** and interest burden on revenue.

Key Features of FHI 2025:

1. **Data Coverage:**
 - Tracks **fiscal trends** from **2014-15 to 2022-23**.
2. **States Evaluated:**
 - Focuses on **18 major states**, which are key contributors to India's economy.
3. **State-Specific Insights:**
 - Provides tailored inputs for **policy interventions** to address fiscal challenges.
4. **Promotes Healthy Competition:**
 - Highlights **top achievers** and **aspirational states**, encouraging performance improvement.
5. **Vision Alignment:**
 - Aligned with **Viksit Bharat @2047**, India's goal for becoming a developed nation by 2047.

Top Achievers in FHI 2025 (2022-23 Data):

1. **Odisha:**
 - **Category:** Achievers
 - **FHI Score:** 67.8
2. **Chhattisgarh:**
 - **Category:** Achievers
 - **FHI Score:** 55.2
3. **Goa:** **Category:** Achievers



Challenges Highlighted by FHI:

1. **Revenue Mobilization Issues:**
 - States with **low tax collections** face fiscal challenges, highlighting the need for improved tax administration.
2. **Rising Debt Levels:**
 - Many states exhibit **unsustainable debt-to-GSDP ratios**, risking long-term fiscal stability.
3. **Quality of Expenditure:**
 - Insufficient spending on **capital infrastructure** and **social sectors** leads to inefficiencies in resource utilization.
4. **Fiscal Deficit Management:**
 - States face challenges in adhering to **FRBM (Fiscal Responsibility and Budget Management)** guidelines.

Way Forward:

1. **Enhance Revenue Mobilization:**
 - Strengthen **tax administration** and explore **non-tax revenue sources**.
2. **Focus on Debt Sustainability:**
 - Adopt policies to reduce **debt-to-GSDP ratios** and optimize borrowing.
3. **Improve Expenditure Efficiency:**
 - Prioritize **capital spending** and ensure better outcomes in **social sector investments**.
4. **State-Specific Strategies:**
 - Customize fiscal strategies based on **state-specific insights** provided by the index.
5. **Capacity Building:**
 - Train state officials in **financial management** and promote **data-driven governance**.

Additional Insights:

1. **Reserve Bank of India's (RBI) Report on State Finances (2023):**
 - Highlighted that **state debt levels** are projected to exceed **30% of GSDP by 2025**, breaching sustainable thresholds.
2. **14th Finance Commission Recommendations:**
 - Advocated for **revenue-sharing mechanisms** to strengthen state fiscal health.
3. **Global Comparisons:**
 - India's FHI aligns with global fiscal health indices like the **IMF's Fiscal Transparency Evaluation**.

Sachetisation Plan – Making Mutual Funds Accessible to All

UPSC Syllabus: General Studies Paper III (Indian Economy – Financial Inclusion and Capital Market Reforms)

Context:

The **Securities and Exchange Board of India (SEBI)** has introduced a **sachetisation plan**, enabling small-ticket **systematic investment plans (SIPs)** starting at ₹250/month, to democratize mutual fund investments.

About Sachetisation of Mutual Fund Investments:

1. **What is Sachetisation?**
 - **Definition:** A strategy inspired by **FMCG sachet models**, offering **small, affordable units** (e.g., shampoo sachets).
 - **Financial Application:** Allows low-income groups to invest in mutual funds through smaller, more **affordable contributions**.
2. **Need for Sachetisation:**
 - **Financial Inclusion:** Targets **underserved and low-income groups**, enabling them to participate in mutual fund investments.
 - **Addressing Barriers:** Overcomes the **high entry costs** of traditional SIPs.
 - **Market Deepening:** Expands the **retail investor base** in equity markets, stabilizing flows amidst **foreign investor volatility**.
3. **Aim of Sachetisation:**
 - **Promote Small Investments:** Encourage **small-ticket SIPs** to democratize access to financial products.
 - **Foster Long-Term Savings:** Help low-income investors build **wealth over time** through systematic investments.

How Sachetisation Works:

1. **Minimum SIP Amount:**
 - Investments start at **₹250/month**, targeted at **new mutual fund investors**.
2. **Eligibility Criteria:**
 - **New Investors Only:** Available exclusively to first-time mutual fund investors.
 - **Maximum Limit:**
 - Up to **three ₹250 SIPs** allowed per investor across **asset management companies (AMCs)**.
3. **Excluded Schemes:**
 - **Volatile Schemes Excluded:**
 - Debt schemes, **sectoral, thematic, small-cap, and mid-cap equity funds** are not eligible.
4. **Commitment Period:**
 - Encourages a **5-year (60 instalments)** commitment.
 - **Premature Withdrawal:** Allowed, but investors are encouraged to stay invested for long-term benefits.
5. **Technology-Driven Investment:**
 - **UPI Auto Pay or NACH:** Investments processed digitally to minimize transaction costs and improve accessibility.

Benefits of Sachetisation:

1. **Enhanced Financial Inclusion:**
 - Brings **low-income individuals** into the financial market fold.
 - Supports **rural and semi-urban investors** with limited disposable income.
2. **Retail Market Expansion:**
 - Expands the retail investor base, promoting **market stability**.
 - Mitigates over-reliance on foreign institutional investments.
3. **Encouragement of Savings:**
 - Fosters a **culture of savings and investments**, particularly among first-time investors.
4. **Affordable Investment Options:**
 - Reduces financial barriers, making mutual funds accessible to individuals with **lower savings capacity**.

Challenges in Implementation:

1. **Awareness and Literacy:**
 - Lack of **financial literacy** among target groups could limit uptake.
2. **Operational Costs:**
 - Managing **low-ticket investments** may lead to higher administrative costs for AMCs.
3. **Investment Volatility:**
 - Limited scheme options might deter investors seeking higher returns through small-cap or sectoral funds.
4. **Sustainability of Commitment:**
 - Ensuring long-term adherence to SIPs among first-time investors may be challenging.

Way Forward:

1. **Financial Literacy Campaigns:**
 - Conduct awareness programs to educate target groups about **SIPs** and their long-term benefits.
2. **Subsidizing Operational Costs:**
 - SEBI could incentivize AMCs to manage **low-ticket SIPs** profitably.
3. **Inclusion of Stable Schemes:**
 - Gradually expand the range of eligible funds to include **low-volatility options** for better returns.
4. **Focus on Digital Penetration:**
 - Enhance digital onboarding and simplify **UPI/NACH processes** for seamless participation.

Understanding Differential Pricing

UPSC Syllabus: General Studies Paper III (Indian Economy – Pricing Mechanisms and Market Behavior)

Context:

The **Central Consumer Protection Authority (CCPA)** has issued notices to **Ola** and **Uber** for alleged **differential pricing**, where pricing varied based on the type of **smartphone** used by consumers.

About Differential Pricing:

1. **What Is Differential Pricing?**
 - **Definition:** A strategy where businesses set **varying prices** for the same product or service based on factors such as **location, demand, consumer demographics, or purchasing behavior**.
 - **Objective:** Optimize revenues while catering to diverse market segments.
2. **Types of Differential Pricing:**
 - **Price Localization:** Adapting prices to reflect **local purchasing power** or **regional competition**.
 - **Real-Time Pricing:** Prices adjust dynamically based on **demand, competition, and availability**.
 - **Subscription-Based Pricing:** Discounts offered for **long-term commitments**.
 - **Seasonal Discounts:** Lower prices during **specific seasons or festivals**.
 - **Volume Discounts:** Incentives for **bulk purchases** with lower per-unit costs.

Factors Leading to Differential Pricing:

1. **Consumer Demographics:**
 - **Age, income level, and spending behavior** influence pricing.
2. **Geographic Location:**
 - Regional competition and **local cost structures** dictate pricing variations.
3. **Market Demand:**
 - Prices increase during **high-demand periods**, such as festivals or peak travel times.
4. **Technology Integration:**
 - **AI-driven dynamic pricing** enables tailoring costs to individual customer profiles.
5. **Economic Conditions:**
 - Factors like **inflation, exchange rates, and tariffs** influence pricing strategies.

Why Companies Use Differential Pricing:

1. **Maximize Revenue:**
 - **Tailored pricing** captures maximum consumer **willingness to pay**.
 - **Example:** Airlines charging more for **last-minute bookings**.
2. **Boost Market Penetration:**
 - Lower prices attract customers in **new markets**.
 - **Example:** Introductory offers for **product launches**.
3. **Encourage Bulk Purchases:**
 - Volume-based pricing clears **inventory faster**.
 - **Example:** Discounts on **combo deals**.
4. **Increase Profit Margins:**
 - Higher prices during **peak demand periods** maximize profits.
 - **Example:** Hotels raising rates during **major events**.
5. **Compete Locally:**
 - Adjust prices to align with **local purchasing power**.
 - **Example:** Mobile apps offering **region-specific pricing**.

Challenges with Differential Pricing:

1. **Consumer Perception:**
 - Can lead to a sense of **unfair treatment** among customers.
2. **Regulatory Concerns:**
 - Instances like **Ola and Uber's smartphone-based pricing** raise questions of **discrimination**.
3. **Data Privacy Issues:**
 - Pricing strategies based on **consumer data** may face **privacy concerns**.
4. **Ethical Implications:**
 - Overpricing in **low-income segments** could lead to **exploitation**.

Way Forward:

1. **Transparent Policies:**
 - Companies should clearly communicate their **pricing criteria** to consumers.
2. **Regulatory Oversight:**
 - Authorities like **CCPA** should monitor and address **unfair practices** in differential pricing.
3. **Fair Technology Usage:**
 - Ensure that **AI-driven pricing models** prioritize fairness over profit maximization.
4. **Consumer Awareness:**
 - Educate consumers on how **pricing mechanisms** work to build trust.
5. **Balanced Pricing Strategies:**
 - Maintain a balance between **profit maximization** and **consumer equity**, ensuring no group feels disadvantaged.

Diamond Imprest Authorization (DIA) Scheme

UPSC Syllabus: General Studies Paper III (Indian Economy – Industrial Policy and Export Promotion)

Context:

The Union Government has introduced the **Diamond Imprest Authorization (DIA) Scheme** to enhance the **competitiveness of Indian diamond exporters**, **boost exports**, and **safeguard employment** in the sector.

About the Diamond Imprest Authorization (DIA) Scheme:

1. **What is the DIA Scheme?**
 - A scheme that allows **duty-free import of natural cut and polished diamonds** under $\frac{1}{4}$ carat (25 cents) with an **export obligation of 10% value addition**.
2. **Ministry Involved:**
 - **Ministry of Commerce & Industry**.
3. **Aim of the Scheme:**
 - **Promote Value Addition:** Encourage the **processing** and **value addition** of diamonds within India.
 - **Boost Exports:** Enhance the **global competitiveness** of Indian diamond exporters, especially **MSMEs**.
 - **Generate Employment:** Create opportunities in **diamond assorting** and **semi-finished diamond processing**.

Key Features of the Scheme:

1. **Duty-Free Import:**
 - Allows duty-free import of **natural cut and polished diamonds** up to $\frac{1}{4}$ carat (25 cents).
2. **Eligibility Criteria:**
 - Exporters must hold **Two Star Export House status or higher**.
 - Minimum annual exports of **\$15 million**.
3. **Export Obligation:**
 - Exporters must achieve **10% value addition** on imported diamonds.
4. **Employment Focus:**
 - Aims to create jobs for **diamond assorters** and **semi-finished diamond processors**.
5. **Implementation Timeline:**
 - Effective from **April 1, 2025**.
 - Monitored under the **Gems and Jewellery Export Promotion Council (GJEPC)**.

Significance of the DIA Scheme:

1. **Support for MSMEs:**
 - Encourages small and medium enterprises to **scale up operations** and compete globally.

2. **Export Growth:**
 - Strengthens India's position as a **global leader** in diamond exports, aligning with the target of increasing **jewelry exports**.
3. **Boost to Employment:**
 - Promotes **skilled and semi-skilled jobs**, particularly in regions heavily reliant on diamond processing, such as **Gujarat**.
4. **Enhancing Competitiveness:**
 - Reduces input costs for exporters by enabling **duty-free imports**, improving profitability and competitiveness.
5. **Strengthening Global Partnerships:**
 - Facilitates smoother **supply chain integration** for international clients, fostering long-term trade relations.

Challenges to Implementation:

1. **Monitoring Compliance:**
 - Ensuring exporters meet the **10% value addition obligation** could be challenging.
2. **Benefitting Large Players:**
 - The eligibility criteria may **exclude smaller exporters**, limiting broader sectoral benefits.
3. **Market Volatility:**
 - Global fluctuations in diamond demand could impact exporters' ability to meet obligations.
4. **Administrative Oversight:**
 - Effective monitoring under **GJEPC** is critical to avoid misuse of duty-free imports.

Way Forward:

1. **Capacity Building for MSMEs:**
 - Simplify procedures to include more **small-scale exporters** in the scheme.
2. **Skill Development:**
 - Enhance training programs for **diamond assorters** and **processors** to maximize employment potential.
3. **Strengthening GJEPC Monitoring:**
 - Develop a robust **monitoring framework** to ensure compliance and transparency.
4. **Expand Eligibility Criteria:**
 - Consider relaxing the **\$15 million export threshold** to accommodate smaller businesses.
5. **Promote Diversification:**
 - Encourage exporters to focus on **lab-grown diamonds** and other high-value products to meet shifting global preferences.

White Goods and the PLI Scheme

UPSC Syllabus: General Studies Paper III (Indian Economy – Industries, Infrastructure Development)

Context:

The Government has announced that **24 companies** have been selected under the **Production Linked Incentive (PLI) Scheme for White Goods**, focusing on **air conditioners (ACs)** and **LED lights**, with a **committed investment of ₹3,516 crore**.

About White Goods:

1. **What Are White Goods?**
 - **Definition:** White goods are **large home appliances** designed for **domestic chores**, such as **cleaning, cooking, and climate control**.
 - **Durable Products:** These are long-lasting items, typically used daily.
2. **Examples of White Goods:**
 - a. **Kitchen Appliances:**
 - Refrigerators, ovens, microwaves, dishwashers.
 - b. **Laundry Room Appliances:**
 - Washing machines, dryers.
 - c. **Climate Control Devices:**
 - Air conditioners, heaters, dehumidifiers, fans.
 - d. **Lighting Solutions:**
 - **LED lights**, including core components like drivers and housing.
3. **Features of White Goods:**
 - a. **Durability:** Designed for **heavy daily use** and built to last.
 - b. **Versatility:** Available in various sizes, finishes, and technologies to meet diverse consumer needs.
 - c. **Energy Efficiency:** Modern appliances feature **energy-saving technologies** to reduce electricity consumption.

d. Technological Integration: Many white goods now come with **IoT connectivity** for **remote control** and **smart monitoring**.

e. Aesthetic Appeal: Wide range of **designs and colors** to complement modern interiors.

PLI Scheme for White Goods:

- 1. What is the PLI Scheme?**
 - **Production Linked Incentive (PLI)** is a government initiative aimed at **boosting domestic manufacturing, attracting investments,** and reducing **import dependency**.
- 2. Focus on White Goods:**
 - Covers **air conditioners (ACs)** and **LED lights**, including their core **components** and **sub-assemblies**.
- 3. Objectives of the PLI Scheme for White Goods:**
 - **Promote Domestic Manufacturing:** Reduce dependency on imports for components like compressors, LED drivers, and motors.
 - **Boost Employment:** Create direct and indirect job opportunities.
 - **Enhance Competitiveness:** Strengthen India's manufacturing sector in the global market.
- 4. Key Highlights:**
 - **24 Companies Selected:** Includes leading players in the white goods sector.
 - **Committed Investment:** ₹3,516 crore by participating companies.
 - **Incentives:** Linked to incremental production and employment generation.

Benefits of the PLI Scheme for White Goods:

- 1. Reduce Import Dependency:**
 - Domestic production of components like compressors and LED modules will cut **import costs**.
- 2. Boost Exports:**
 - Enhances India's potential as an **export hub** for white goods.
- 3. Job Creation:**
 - Encourages **skilled and semi-skilled employment** in the manufacturing sector.
- 4. Strengthen Supply Chains:**
 - Promotes the **localization** of supply chains, improving resilience.
- 5. Technology Transfer:**
 - Encourages partnerships with global firms for **knowledge sharing** and **technology upgrades**.

Challenges in the White Goods Sector:

- 1. High Capital Requirement:**
 - Manufacturing components like compressors and motors require **significant investment**.
- 2. Technological Gaps:**
 - Limited capacity for **advanced technology development** in certain sub-components.
- 3. Competition from Imports:**
 - Cheaper imports from countries like **China** pose challenges for domestic manufacturers.
- 4. Skill Shortages:**
 - Lack of adequately trained manpower for operating advanced manufacturing systems.
- 5. Energy Standards:**
 - Ensuring compliance with **global energy efficiency standards** can increase production costs.

Way Forward:

- 1. Incentivize Innovation:**
 - Provide additional support for **R&D** in energy-efficient and smart technologies.
- 2. Strengthen MSMEs:**
 - Support smaller players in the value chain to enhance **component localization**.
- 3. Enhance Skilling Programs:**
 - Focus on **skill development initiatives** tailored to the white goods manufacturing sector.
- 4. Global Collaborations:**
 - Partner with leading global firms for **technology transfer** and **market access**.
- 5. Promote Exports:**
 - Offer incentives for manufacturers to penetrate **international markets** with competitively priced, high-quality products.

ETHICS SOCIETY AND SOCIAL JUSTICE

Animal Diplomacy

UPSC Syllabus: General Studies Paper IV (Ethics in International Relations, Environmental Ethics)

Context:

Nepal's proposal to gift **surplus tigers** as a **diplomatic gesture** has sparked a global debate on the **ethics and implications of animal diplomacy**.

About Animal Diplomacy:

- 1. What is Animal Diplomacy?**
 - **Definition:** The use of **animals as symbols** of cultural goodwill or tools to **strengthen international ties**.
 - **Purpose:** Foster relationships between countries and highlight cultural, environmental, or economic connections.
- 2. Features of Animal Diplomacy:**
 - **Cultural Representation:**
 - Animals symbolize a country's **natural heritage**.
 - **Example:** China's pandas symbolize **conservation success** and cultural pride.
 - **Strengthening Bilateral Relations:**
 - Animal exchanges foster **goodwill** and **diplomatic ties**.
 - **Example:** Nepal gifted **one-horned rhinos** to Germany in 2015.
 - **Economic Leverage:**
 - Animal loans often align with **trade deals** or **economic partnerships**.
 - **Example:** China's panda loans coincide with major **trade agreements**.
 - **Conservation Symbolism:**
 - Demonstrates donor countries' commitment to **environmental protection**.
 - **Example:** Bhutan promotes conservation through its **black-necked crane initiatives**.
 - **Tourism Boost:**
 - Exotic animals in zoos attract **global tourists** and generate revenue.
 - **Example:** Zoos hosting pandas experience **record attendance**.

Role of Animals in Strengthening Diplomacy:

- 1. Symbol of Goodwill:**
 - Signifies **friendship and cooperation**.
 - **Example:** India's PM Nehru gifting an elephant to Japan in 1949 signified **post-war unity**.
- 2. Soft Power Tool:**
 - Enhances a country's **global influence and alliances**.
 - **Example:** China's "**Panda Diplomacy**" boosts its **international image**.
- 3. Conservation Partnerships:**
 - Shared **conservation goals** strengthen international collaboration.
 - **Example:** Nepal's gifting of rhinos to Qatar in 2024 highlighted **conservation efforts**.
- 4. Strengthening Bilateral Cooperation:**
 - Wildlife resources foster **partnerships** in tourism and conservation.
 - **Example:** Botswana uses its wildlife to promote **sustainable tourism collaborations**.
- 5. Promoting Cultural Exchange:**
 - Showcases a country's **cultural heritage and traditions**.
 - **Example:** Thailand's gifting of elephants emphasizes its **national identity**.

Negative Impacts of Animal Diplomacy:

Ethical Concerns:

- 1. Animal Welfare Risks:**
 - Stress from **transport** and captivity affects animal health.
 - **Example:** Pandas often struggle to adapt to **foreign climates**, causing health issues.
- 2. Exploitation for Political Gains:**
 - Animals are commodified, undermining their **intrinsic value**.

- **Example:** Animals used as tools for diplomacy rather than for **conservation**.
- 3. **Removal from Natural Habitat:**
 - Disrupts **ecosystems** and hinders **biodiversity conservation**.
 - **Example:** Gifting endangered species can destabilize **local ecologies**.
- 4. **Cultural Sensitivities:**
 - Gifts may conflict with the recipient country's **cultural values**.
 - **Example:** Gifting cows to vegetarian societies may provoke **controversies**.

Non-Ethical Concerns:

1. **Illegal Wildlife Trade Risk:**
 - Diplomatic exchanges can be exploited for **black-market wildlife trafficking**.
 - **Example:** Conservation goals misused for illegal trade of **exotic species**.
2. **Risk of Diplomatic Strains:**
 - Mismanagement or **death of animals** can sour bilateral relations.
 - **Example:** The death of pandas on loan caused **public and diplomatic backlash**.
3. **Short-Term Gains vs. Long-Term Costs:**
 - Gifting apex predators can destabilize recipient countries' **ecosystems**.
 - **Example:** Long-term ecological impacts are often overlooked in favor of **immediate goodwill**.

Way Ahead:

1. **Ethical Frameworks:**
 - Develop **international standards** to ensure animal welfare in diplomatic exchanges.
2. **Focus on Conservation Collaborations:**
 - Promote **partnerships for species protection** rather than gifting animals.
3. **Symbolic Representations:**
 - Use **artistic or symbolic representations** of animals to maintain goodwill.
4. **Education and Awareness:**
 - Promote **global awareness** about species conservation through **non-invasive means**.
5. **Regulatory Oversight:**
 - Ensure compliance with global regulations like **CITES** for animal transfers, with strict accountability.

Gandhi's Ideas of India

UPSC Syllabus: General Studies Paper IV (Ethics – Contributions of Moral Thinkers and Philosophers)

Context:

Mahatma Gandhi's vision and principles continue to influence **India's socio-political and ethical fabric**, offering solutions to contemporary challenges while resonating with universal values.

Gandhi's Ideas of India – Past Vision:

1. **Pluralistic Society:**
 - Gandhi envisioned **India** as a society rooted in **truth (Satya)** and **non-violence (Ahimsa)**, embracing **diversity and inclusivity**.
2. **Swaraj and Self-Reliance:**
 - Advocated for **Swaraj (self-rule)**, emphasizing **individual and community self-reliance** over dependence on external systems.
 - Focused on village-level autonomy, promoting **decentralization** of power.
3. **Ethical Learning:**
 - Integrated **truth and ethics** into education, emphasizing **civic conduct, health, and practical knowledge** for holistic development.
4. **Critique of Modern Institutions:**
 - Criticized modern systems like **law, medicine, and economics** for being detached from **human well-being and experiential truth**.
5. **Economic Philosophy:**
 - Advocated **trusteeship**, where wealth was viewed as a societal resource, ensuring **equity and social justice**.

Present Relevance of Gandhi's Ideas:

1. **Countering Polarization and Identities:**
 - His emphasis on **pluralism, non-violence, and self-reflection** addresses modern societal divisions and communal discord.
2. **Ethical Governance:**
 - Gandhi's principles of **truth, transparency, and ethical leadership** are solutions to **corruption** and governance crises.
3. **Environmental Sustainability:**
 - His critique of **materialism** and call for **simple living** aligns with **sustainable development** goals and ethical consumption in an age of environmental degradation.

4. **Social Justice:**
 - His vision of **Swaraj** emphasizes **empowerment of marginalized communities**, addressing **inequality and poverty**.
5. **Global Influence on Non-Violent Movements:**
 - Gandhi's model of **non-violent resistance** inspires civil protests globally, from the **US Civil Rights Movement** to modern advocacy for **human rights and democracy**.
6. **Decentralization and Local Governance:**
 - His focus on **village-level autonomy** resonates with modern efforts to strengthen **grassroots governance** through **Panchayati Raj institutions**.

Key Modern Applications of Gandhi's Vision:

1. **Sustainable Development and Ethical Living:**
 - Gandhi's critique of industrialization and consumerism aligns with **climate change mitigation** and **renewable energy initiatives**.
2. **Education for Values:**
 - Reviving Gandhi's emphasis on **values-based education** can address the growing disconnect between **academic excellence** and **ethical behavior**.
3. **Inclusive Economic Models:**
 - His idea of **trusteeship** encourages **corporate social responsibility (CSR)** and inclusive growth in modern economies.
4. **Global Peacebuilding:**
 - Gandhi's philosophy of **non-violence** offers a framework for resolving **international conflicts** through **dialogue and cooperation**.

The Issue of Poverty Underestimation in India

UPSC Syllabus: General Studies Paper I (Society – Poverty and Development)

Context:

The **2023-24 Household Consumption Expenditure Survey (HCES)** reported a **decline in urban and rural poverty**, sparking debates on the reliability of data, methodologies, and the adequacy of the defined consumption basket for poverty measurement.

About Poverty Data in India:

1. **HCES 2023-24 Findings:**
 - **Rural Poverty:** Reduced to **7.2%** (from 25.7% in 2011-12).
 - **Urban Poverty:** Declined to **4.6%** (from 13.7% in 2011-12).
2. **Multidimensional Poverty Index (MPI):**
 - **NITI Aayog (2022-23):** Multidimensional poverty dropped to **11.28%** (from 29.17% in 2013-14).
 - **Global MPI (2019-21):** 135.5 million Indians escaped multidimensional poverty.
3. **World Bank Estimates (2019):**
 - **Extreme Poverty:** At **11.9%**, using the **\$2.15/day poverty line**.
4. **Other Reports:**
 - **Rangarajan Committee (2014):** Estimated **2011-12 poverty** at **29.5%**, higher than Tendulkar Committee's **21.9%**.

Is Poverty Underestimated in India?

Yes, Poverty is Underestimated:

1. **Dated Poverty Lines:**
 - Poverty thresholds (e.g., **₹33/day urban, ₹27/day rural**, Tendulkar Committee) fail to reflect **rising living costs**.
 - **Example:** A nutritious diet is unaffordable for **74% of Indians** (World Bank).
2. **Multidimensional Deprivations:**
 - Improved access to electricity and sanitation masks **income-based poverty**.
 - **Example:** Informal workers lack financial security despite better amenities.
3. **Data Gaps:**
 - **Absence of Census 2021** limits accurate urban-rural poverty differentiation.
 - **Example:** Transitioning rural areas into peri-urban zones distorts statistics.
4. **Inconsistent Methodologies:**
 - Changes in survey recall periods (e.g., **MMRP**) inflate consumption data, artificially reducing poverty estimates.
 - **Example:** Higher reported expenditures reduce calculated poverty rates.
5. **Exclusion in Welfare Schemes:**
 - Implementation gaps leave out vulnerable populations.
 - **Example:** Leakages in **MGNREGA** and **Pradhan Mantri Awas Yojana (PMAY)**.

No, Poverty is Not Underestimated:

- Substantial Poverty Reduction:**
 - Reports like NITI Aayog's MPI and HCES demonstrate consistent poverty decline.
 - Example:** Over **24.82 crore people** escaped multidimensional poverty (2013-2023).
- Improved Welfare Programs:**
 - Schemes like **PMJDY**, **SBM**, and **PMUY** improved standards of living.
 - Example:** Universal access to bank accounts through **PMJDY** promotes financial inclusion.
- Decline in Calorie-Based Poverty:**
 - Diversified rural consumption indicates rising standards of living.
 - Example:** Increased spending on **services** and non-subsistence goods.
- Global Validation:**
 - India's MPI and poverty reduction align with UN and World Bank progress metrics.
 - Example:** **UNDP's MPI** highlights poverty halving since 2015-16.
- Economic Growth:**
 - High **GDP growth** and reduced inflation supported poverty alleviation.
 - Example:** **Poshan Abhiyan** reduced malnutrition in vulnerable groups.

Challenges and Issues:

- Underrepresentation of Vulnerable Groups:**
 - Migrants and informal workers** are often excluded from official poverty estimates.
- Regional Disparities:**
 - Northeastern and central Indian states lag behind in poverty alleviation despite national progress.
- Nutrition and Health Gaps:**
 - Despite poverty reduction, indicators like **child malnutrition** remain high.
- Stagnant Rural Incomes:**
 - Agricultural distress and limited rural diversification hinder progress.

Way Ahead:

- Updated Poverty Metrics:**
 - Revisit poverty lines to reflect **rising costs** and **regional variations**.
- Strengthen Data Collection:**
 - Conduct **Census 2021** and improve **consumption expenditure surveys** for better accuracy.
- Focus on Income Poverty:**
 - Integrate **income vulnerability** metrics with multidimensional poverty indices.
- Enhance Welfare Targeting:**
 - Improve transparency and reduce leakages in **flagship programs** like MGNREGA and PMAY.
- Promote Livelihood Development:**
 - Foster rural employment through **MSMEs**, skill development, and diversification.

AGRICULTURE

Contract Farming

UPSC Syllabus: General Studies Paper III (Agriculture – Farm Management, Marketing)

Context:

India has transitioned from being an **importer** to a **major exporter of frozen French fries (FF)**, with **contract farming** playing a crucial role. Companies partner with farmers, ensuring **quality produce** and **stable incomes**.

What is Contract Farming?

- Definition:**

Contract farming involves agreements between **farmers** and **buyers** (companies, exporters, etc.), where:

 - Farmers commit to producing specific crops.
 - Buyers assure **procurement, predetermined prices**, and sometimes **input support** (e.g., seeds, fertilizers).
- Key Features:**
 - Predefined Pricing:** Ensures income stability for farmers.
 - Input Support:** Buyers often provide **quality seeds**, fertilizers, and training.

- **Market Linkages:** Farmers gain assured access to markets for their produce.

Success Examples of Contract Farming:

- 1. French Fries Export in Gujarat:**
 - **Companies Involved:** Companies like **HyFun Foods** partner with farmers.
 - **Benefits to Farmers:**
 - Guaranteed prices for produce.
 - Support with **quality seeds**, technical assistance, and training.
 - **Impact:**
 - Over **7,000 farmers in Gujarat** produce high-quality potatoes for export, ensuring **stable incomes**.
 - India's frozen French fry exports now **exceed domestic consumption**.
- 2. Sugarcane in Maharashtra:**
 - **Engagement with Mills:** Sugar mills contract farmers for a **consistent sugarcane supply**.
 - **Support Provided:** Seeds, fertilizers, and **technical advice**.
 - **Outcome:** Stable incomes for farmers and uninterrupted raw material for mills.
- 3. ITC's E-Choupal:**
 - **Crop Focus:** Supports **soybean farmers**.
 - **Services Provided:**
 - **Market information** through digital platforms.
 - Quality inputs like seeds and fertilizers.
 - **Impact:** Improved yields and better prices for farmers.
- 4. Dairy Farming:**
 - **Amul Model:**
 - Contracts farmers for **milk supply**.
 - Ensures **fair prices** and **quality standards**.
 - **Outcome:**
 - Consistent incomes for dairy farmers.
 - Enhanced quality of dairy products for markets.

Advantages of Contract Farming:

- 1. Income Stability:**
 - Farmers are protected from **price fluctuations**, ensuring **predictable earnings**.
- 2. Market Access:**
 - Farmers gain **direct links** to buyers, avoiding exploitation by intermediaries.
- 3. Improved Quality:**
 - Input support and technical training enhance **crop quality** and yield.
- 4. Reduction in Risk:**
 - Pre-agreed prices reduce risks related to **market uncertainty**.
- 5. Boost to Exports:**
 - Quality produce from contract farming contributes to **agricultural exports**, as seen in French fries and dairy.

Challenges in Contract Farming:

- 1. Farmer Exploitation:**
 - Companies may impose **unfair terms**, leading to **unequal bargaining power**.
- 2. Input Dependency:**
 - Farmers may become dependent on buyers for seeds and fertilizers.
- 3. Contract Breaches:**
 - Disputes arise when buyers or farmers fail to honor agreements.
- 4. Limited Scope:**
 - Currently, contract farming focuses on specific high-value crops, limiting inclusion of **small-scale farmers**.
- 5. Regulatory Gaps:**
 - Lack of robust legislation to ensure **fair practices** and resolve disputes.

Way Forward:

- 1. Strengthen Legal Framework:**
 - Implement robust regulations under the **Model Contract Farming Act** to protect both farmers and buyers.
- 2. Promote Inclusivity:**
 - Extend contract farming to **small and marginal farmers**, ensuring **equitable benefits**.
- 3. Capacity Building:**
 - Provide farmers with training in **negotiation, legal literacy**, and technical skills.
- 4. Technology Integration:**
 - Use **digital platforms** for transparent pricing, real-time data, and grievance redressal.
- 5. Encourage Diversification:**

- Promote contract farming for a variety of crops, including pulses, oilseeds, and millets, to reduce dependency on traditional crops.

India's Coffee Journey – A Global Contributor

UPSC Syllabus: General Studies Paper III (Agriculture – Major Crops and Export Trends)

Context:

India has become the **seventh-largest coffee producer globally**, with exports reaching **\$1.29 billion** in FY 2023-24, a significant rise from **\$719.42 million** in 2020-21.

About Coffee:

1. **Origin of Coffee in India:**
 - **Introduced by Baba Budan:** In the **1600s**, the Sufi saint brought **seven coffee beans** from Yemen and planted them in the **Baba Budan Giri region** of Karnataka, initiating India's coffee cultivation.
2. **Types of Coffee Cultivated in India:**
 - **Arabica:**
 - **Features:** Mild, aromatic flavor.
 - **Market Value:** Higher due to superior quality.
 - **Robusta:**
 - **Features:** Stronger taste and higher caffeine content.
 - **Usage:** Commonly used in **instant coffee** production.

Climatic Conditions for Coffee Cultivation:

1. **Temperature:** Ideal range: **15°C to 28°C**.
2. **Rainfall:** Annual requirement: **150–250 cm**.
3. **Soil:** Grows best in **well-drained loamy soil**, rich in **humus** and **minerals** like **iron** and **calcium**.
4. **Climate:** Thrives in **hot, humid climates** with **shaded plantations**.
5. **Elevation:** Optimal altitude: **600–1,600 meters** above sea level.

India's Coffee Production Highlights:

1. **Global Ranking:**
 - India is the **seventh-largest producer** of coffee globally.
2. **Exports:**
 - **Over 70%** of coffee production is exported.
 - **Major Buyers:**
 - Italy, Belgium, and Russia are India's largest coffee importers.
3. **State-wise Production Contribution:**
 - **Karnataka:**
 - Largest producer, contributing over **70%** of India's total coffee production.
 - **Kerala:**
 - Second-largest producer.
 - **Tamil Nadu:**
 - Third-largest producer, particularly in regions like **Nilgiris** and **Yercaud**.
 - **Other States:**
 - **Andhra Pradesh, Odisha, and northeastern states** contribute marginally.

Economic and Cultural Importance of Coffee:

1. **Economic Contributions:**
 - Significant source of **foreign exchange earnings** through exports.
 - Provides **livelihood** to millions of farmers, especially in Karnataka, Kerala, and Tamil Nadu.
2. **Cultural Relevance:**
 - Coffee plantations are a major part of the **heritage** in regions like **Coorg** and **Wayanad**.
 - Coffee is integral to Indian culinary traditions and **urban café culture**.

Challenges in Coffee Cultivation:

1. **Climate Vulnerability:**
 - Coffee cultivation is sensitive to **climate change**, particularly **erratic rainfall** and **rising temperatures**.
2. **Price Fluctuations:**
 - Farmers face uncertainty due to **volatility in global coffee prices**.

3. **Pests and Diseases:**
 - Coffee plants are prone to issues like **coffee rust** and **white stem borer infestations**.
4. **High Input Costs:**
 - Increasing costs of **labor, fertilizers, and pesticides** affect profitability.
5. **Global Competition:**
 - Competes with top coffee-producing countries like **Brazil, Vietnam, and Colombia**.

Way Forward:

1. **Promote Specialty Coffee:**
 - Encourage production of **high-value specialty coffee** varieties like **Monsooned Malabar** to boost exports.
2. **Climate Adaptation:**
 - Introduce **drought-resistant varieties** and sustainable farming practices.
3. **Value Addition:**
 - Promote **processing and packaging** industries for greater value addition.
4. **Strengthen Branding:**
 - Market Indian coffee under a **single national brand**, highlighting its **unique flavor profile** and **sustainable practices**.
5. **Support for Farmers:**
 - Provide subsidies for **organic farming** and access to **affordable credit** for small and marginal farmers.

GEOGRAPHY AND DISASTER

Cabo Verde

UPSC Syllabus: General Studies Paper I (World Geography – Location and Physical Features) & Paper III (Environment – Climate Challenges)

Context:

The **World Bank's report** estimates that **Cabo Verde**, a small island nation off the coast of West Africa, will require **\$842 million** between 2024 and 2030 to address its **climate and development challenges**.

About Cabo Verde:

1. **Location:**
 - An island nation situated in the **Atlantic Ocean**, approximately **570 km west of Senegal** on Africa's northwestern coast.
2. **Neighbor Nations:**
 - The nearest country is **Senegal**, located on the African mainland.
3. **Capital:**
 - **Praia**, located on **Santiago Island**.
4. **Geographic Features:**
 - **Volcanic Islands:**
 - Comprises **10 volcanic islands** divided into two groups:
 - **Barlavento (Windward)** group.
 - **Sotavento (Leeward)** group.
 - **Climate:**
 - Moderate climate with **stable temperatures** but extremely **arid** conditions.
 - **No Major Rivers:**
 - Relies on **rainfall** and **underground water resources** due to its arid nature.
5. **Population:**
 - The majority of the population is of **mixed African and European descent**, commonly referred to as **mestiço** or **Crioulo**.

Climate and Development Challenges:

1. **Climate Vulnerabilities:**
 - **Water Scarcity:** Arid conditions and lack of rivers exacerbate water availability issues.
 - **Rising Sea Levels:** Threaten coastal areas and infrastructure.
 - **Extreme Weather:** Cabo Verde faces irregular rainfall and frequent droughts.
2. **Economic Challenges:**
 - Reliant on **tourism and remittances**, which are vulnerable to climate disruptions.
 - Limited **natural resources** hamper diversified economic growth.
3. **Development Needs:**
 - Investments in **water management**, renewable energy, and sustainable infrastructure are critical.

4. World Bank Estimate:

- **\$842 million investment** is required over 2024–2030 to mitigate climate risks and meet development goals.

Significance of Cabo Verde:

1. Strategic Location:

- Positioned along key maritime routes in the **Atlantic Ocean**, enhancing its geopolitical importance.

2. Renewable Energy Potential:

- Rich in **wind** and **solar energy** resources, making it a candidate for green energy transitions.

3. Biodiversity:

- The volcanic islands host unique flora and fauna, some of which are endemic to the region.

4. Cultural Heritage:

- Known for its **Creole culture**, blending African and European influences, particularly evident in its music and cuisine.

Way Forward:

1. Invest in Climate Resilience:

- Develop **water conservation** systems and **renewable energy projects** to address climate vulnerabilities.

2. Diversify Economy:

- Reduce reliance on tourism by fostering **agriculture, fisheries, and sustainable industries**.

3. Regional Cooperation:

- Collaborate with neighboring nations like **Senegal** for shared solutions to environmental challenges.

4. Strengthen Infrastructure:

- Build resilient infrastructure to withstand climate impacts and boost economic activity.

5. Promote Global Partnerships:

- Seek funding and technical expertise from international organizations like the **World Bank** and **UNDP** to implement sustainable projects.

Vaigai River – A Lifeline of Tamil Nadu

UPSC Syllabus: General Studies Paper I (Geography – Indian Rivers and Water Resources)

Context:

The **Madurai Bench of the Madras High Court** has directed local bodies in Tamil Nadu to prepare an **actionable timeline** for the rejuvenation of the **Vaigai River**, a critical water body for the state.

About Vaigai River:

1. Origin:

- The **Vaigai River** originates from the **Varusanadu Hills** on the **Periyar Plateau** in the **Western Ghats**.

2. End Point:

- The river empties into the **Palk Strait**, near the **Pamban Bridge** in **Ramanathapuram district**, Tamil Nadu.

3. Tributaries:

- Major tributaries include:
 - **Suruliyaru**
 - **Mullaiyaru**
 - **Varaaga Nadhi**
 - **Manjalaru**
 - **Kottagudi**
 - **Kridhumaal**
 - **Upparu**

4. Flow Through States:

- The river primarily flows through the state of **Tamil Nadu**.

Key Features of the Vaigai River:

1. Vaigai Dam:

- Located near **Andipatti** in **Theni district**, it is crucial for **irrigation** and **water storage**.

2. Vattaparai Falls:

- A notable **waterfall** situated on the Vaigai River, attracting tourists and pilgrims.

Cultural and Historical Significance:

1. Sangam Literature:

- The Vaigai River is revered in **Sangam literature**, dating back to **300 BCE**, as a lifeline of the region.

2. **Kritamaala:**
 - Known as **Kritamaala**, symbolizing its flow around **Madurai** like a **garland**.
3. **Thiruvilayadal Puranam:**
 - Mentioned in this ancient Tamil text, emphasizing its association with the **Pandya kingdom** and its historical importance.

Importance of Vaigai River:

1. **Irrigation:**
 - Supports **agriculture** in the districts of **Theni, Dindigul, Madurai, Sivaganga, and Ramanathapuram**.
2. **Water Supply:**
 - Serves as a vital **water source** for domestic and industrial use in **Madurai** and surrounding regions.
3. **Cultural Heritage:**
 - Integral to Tamil Nadu's **cultural identity**, particularly in **Madurai**, which is often referred to as the city of the **Vaigai River**.

Challenges Faced by the Vaigai River:

1. **Pollution:**
 - **Industrial effluents** and **domestic sewage** significantly degrade water quality.
2. **Encroachments:**
 - **Urbanization** and **illegal constructions** obstruct the river's flow and reduce its width.
3. **Overexploitation:**
 - Excessive withdrawal for irrigation and drinking water creates **water scarcity** downstream.
4. **Sand Mining:**
 - Unregulated **sand mining** disrupts the riverbed, affecting its ecological balance.
5. **Climate Change:**
 - Altered rainfall patterns and reduced inflows threaten the river's sustainability.

Rejuvenation Efforts:

1. **Court-Directed Action:**
 - The **Madurai Bench of the Madras High Court** has ordered local bodies to create a **timeline for rejuvenation**, ensuring sustainable river management.
2. **Desilting and Cleaning:**
 - Periodic **desilting** and removal of pollutants to improve water quality.
3. **Afforestation:**
 - Planting trees along the riverbanks to prevent **soil erosion** and improve **groundwater recharge**.
4. **Community Engagement:**
 - Encouraging local participation in **awareness campaigns** and **conservation programs**.
5. **Integrated Water Management:**
 - Adopting **integrated river basin management** strategies to address pollution, encroachments, and overuse.

Way Forward:

1. **Strict Enforcement of Laws:**
 - Prevent **encroachments** and penalize **polluters** to safeguard the river.
2. **Sustainable Urban Planning:**
 - Develop **infrastructure** that minimizes the impact on the river's natural flow.
3. **Technological Interventions:**
 - Use **GIS mapping** and **remote sensing** to monitor and manage the river's health.
4. **Collaboration:**
 - Foster collaboration between **state agencies, local communities, and NGOs** for effective river management.
5. **Public Participation:**
 - Create awareness about the **cultural and ecological importance** of the Vaigai River to ensure collective action.

HISTORY, ART & CULTURE

France's Colonization in Africa and its Modern Implications

UPSC Syllabus: World History (Colonization and Decolonization)

Context:

West African nations are increasingly shifting away from colonial ties with France, forming alliances with global powers like China and Russia for security and economic cooperation.

About France's Colonization of Africa:

- 1. Early Ventures (1830):**
 - **Colonial Start:** France began its colonization with the **capture of Algiers in 1830**, initiating its dominance in North Africa.
 - **Goal:** To expand its economic and strategic influence in the African continent.
- 2. Expansion in West Africa:**
 - **Key Territories:** **Senegal, Gambia, and Ivory Coast** were brought under French control.
 - **Berlin Conference (1884-85):** Territorial claims were formalized, granting France vast regions in North, West, and Central Africa.
- 3. Direct Rule:**
 - **Centralized Administration:** French colonies were governed directly from **Paris**, modeled after European governance systems.
 - **Impact:** Traditional African governance systems were dismantled.
- 4. Economic Exploitation:**
 - **Forced Labour:** Extensive use of **forced African labor** for resource extraction.
 - **Key Commodities:** Resources like **gold, cocoa, groundnuts, and timber** were extracted, benefitting France's economy.

Consequences of French Colonization:

Economic Impact:

- 1. Resource Exploitation:**
 - African resources were exported to France, leaving minimal **local economic development**.
- 2. Monoculture Economies:**
 - African nations became overly dependent on single cash crops like **cocoa (Ghana)** and **groundnuts (Senegal)**.
- 3. Heavy Taxation:**
 - Harsh fiscal policies drained local economies, further deepening **poverty** in colonies.

Social and Cultural Impact:

- 1. Racial Discrimination:**
 - Africans were treated as **second-class citizens** under French rule.
- 2. Cultural Looting:**
 - Thousands of African artifacts were taken to France, resulting in the loss of **indigenous heritage**.
- 3. Erosion of Traditions:**
 - Indigenous governance structures were replaced, disrupting traditional **societal norms**.

Political Impact:

- 1. Artificial Borders:**
 - Arbitrary boundaries drawn by colonial powers caused **ethnic divisions** and **post-independence conflicts**.
- 2. Labor Exploitation:**
 - **Forced labor systems** displaced communities, leading to a population decline.

Decolonization of Africa:

- 1. Post-WWII Era:**
 - **Global Movements:** Anti-colonial movements and **African resistance** pushed for decolonization.
- 2. Independence Movements:**
 - Countries like **Senegal, Guinea, and Algeria** gained independence through **negotiation or armed struggle**.
- 3. Françafrique System:**
 - France maintained post-independence influence through **economic and political control**, ensuring reliance on France.

France's Present Role in Africa:

Military Influence:

1. **Troop Deployment:**
 - French troops were stationed in **Chad, Senegal, and Ivory Coast** to combat **regional insurgencies**.
2. **Recent Withdrawals:**
 - Rising **anti-French sentiments** and failure to address terrorism have led to troop withdrawals.

Economic Influence:

1. **Economic Dependence:**
 - Many African nations still have **heavy trade ties** with France.
 - France faces **competition** from China's **Belt and Road Initiative** and Russia's military partnerships.

Declining Influence:

1. **Shift in Alliances:**
 - African countries are forging partnerships with powers like **Russia and China**, reducing reliance on France.
2. **Crisis of Françafrique:**
 - African nations are rejecting the model of dependency, seeking **sovereignty and equitable partnerships**.

Additional Data and Reports:

1. **UN Report on Colonial Legacy (2021):**
 - Highlighted how colonialism stunted Africa's **industrial and economic growth**.
2. **OECD Study on African Economies (2022):**
 - Africa's monoculture dependency resulted in **inconsistent GDP growth** post-independence.
3. **Cultural Repatriation Movement:**
 - Countries like **Benin and Senegal** have demanded the return of stolen artifacts from France.

Conclusion:

- France's colonial history in Africa left a **lasting impact on its economic, political, and cultural systems**.
- The **decolonization movement** dismantled formal colonialism, but **post-colonial dependencies** persisted.
- Africa's current shift towards **diverse alliances** reflects its push for **sovereignty and a multipolar global order**.

"Takers, Not Makers" Report

UPSC Syllabus: General Studies Paper I (Modern Indian History – Effects of British Rule) & Paper II (International Organizations, Inequality, and Global Economic Institutions)

Context:

The **Oxfam International report**, titled "**Takers, Not Makers**", was presented at the **World Economic Forum 2025**, highlighting the **economic exploitation of India during British colonial rule** and its enduring impact on **global inequality**.

About "Takers, Not Makers" Report:

1. **Released by:**
 - **Oxfam International** at the **World Economic Forum (WEF) 2025**.
2. **Coverage:**
 - Examines **wealth extraction** by colonial powers, particularly **Britain**.
 - Explores **global inequality**, linking colonial exploitation to **modern economic systems**.
3. **Key Data Insights:**
 - **\$64.82 trillion extracted:**
 - Wealth extracted from **India by Britain (1765–1900)**, adjusted to today's value.
 - **Beneficiaries of wealth:**
 - **52% (33.8 trillion)** enriched the **UK's richest 10%**.
 - **32%** benefited the **UK middle class**.
 - **Decline in India's industrial output:**
 - Fell from **25% in 1750** to **2% in 1900**, driven by Britain's **protectionist policies** targeting Asian textiles.
 - **Persistent exploitation:**
 - **Wages in the Global South** remain **87–95% lower** than in the Global North.

4. Significance:

- **Colonialism's lasting impact:**
 - Reveals how colonial exploitation led to **systemic inequities** in global economic and social structures.
- **Critique of global institutions:**
 - Highlights the role of modern systems like the **WTO, World Bank, and IMF** in perpetuating inequalities.
- **Contemporary parallels:**
 - Links historical exploitation to modern issues like **biopiracy, labor exploitation, and resource extraction** by multinational corporations.

About Oxfam International:

1. **Established In:**
 - **1942** during **World War II** as the **Oxford Committee for Famine Relief**.
2. **Headquarters:**
 - **Oxford**, United Kingdom.
3. **Aim:**
 - To **alleviate global poverty** and **address inequalities** through advocacy, development programs, and humanitarian aid.
4. **Functions:**
 - **Global Reach:** Operates in **79 countries** across Asia, Africa, Europe, and the Americas.
 - **Focus Areas:**
 - **Education, health**, public services, and inequality reduction.
 - **Advocacy:** Campaigns against **tax evasion, climate change, gender disparity, and economic inequality**.

Key Findings from the Report:

1. **Colonial Economic Exploitation:**
 - Systematic extraction of wealth from colonies like India impoverished the Global South while enriching colonial powers.
2. **Decline of Indian Industry:**
 - British policies decimated India's **textile industry**, once a global leader, through **protectionist trade policies** favoring British goods.
3. **Global Inequality Persistence:**
 - Current **wage gaps** between the Global South and North reflect the lasting legacy of colonialism.
4. **Modern Parallels:**
 - Exploitation continues through mechanisms like **low wages, biopiracy, and resource extraction** by global corporations.
5. **Institutional Critique:**
 - Institutions like the **WTO** and **World Bank** are criticized for perpetuating a global system favoring wealthy nations.

Implications for India:

1. **Historical Injustice:**
 - Highlights the **economic plundering** during colonial rule and its contribution to India's historical poverty.
2. **Global Advocacy:**
 - Strengthens India's case for **reparative justice** and equitable global economic policies.
3. **Policy Formulation:**
 - Encourages stronger protections against **modern economic exploitation** and support for **fair trade agreements**.

Way Forward:

1. **Global Reforms:**
 - Push for reforms in international organizations like the **WTO, World Bank, and IMF** to ensure **equity** in global trade and financial systems.
2. **Decolonization of Economics:**
 - Advocate for **reparative economic policies** to address historical injustices, such as **debt relief** for developing nations.
3. **Empower the Global South:**
 - Promote **South-South cooperation** to strengthen the economic position of developing nations.
4. **Raise Awareness:**
 - Educate the global public about **colonial exploitation** and its lasting effects on modern economies.
5. **Sustainable Development:**
 - Encourage **corporate accountability** and enforce **fair labor practices** to reduce exploitation in the Global South.

Netaji Subhas Chandra Bose

UPSC Syllabus: General Studies Paper I (Modern Indian History – Indian Freedom Struggle)

Context:

India celebrates **Parakram Diwas** annually on **January 23rd** to honor the birth anniversary of **Netaji Subhas Chandra Bose**, a fearless patriot and key figure in India's **freedom movement**.

About Parakram Diwas:

1. **Celebrated Since:** Introduced in **2021** by the **Government of India**.
2. **Aim:** To inspire **patriotism, courage**, and determination among citizens, particularly the **youth**.
3. **Significance:**
 - Honors **Netaji's role** in the freedom struggle.
 - Highlights his philosophy of **fearlessness** and **sacrifice**.
 - Reinforces his vision of a **self-reliant and united India**.

About Netaji Subhas Chandra Bose:

1. **Birth and Early Life:**
 - Born on **January 23, 1897**, in **Cuttack, Odisha**.
 - **Education:**
 - Attended **Ravenshaw Collegiate School, Presidency College**, and **University of Cambridge**.
 - Cleared the **Indian Civil Services (ICS)** exam in **1920** but resigned in **1921** to join the freedom struggle.
2. **Role in Freedom Movement:**
 - a. **Leadership in INC:**
 - **Active Member of the Indian National Congress (INC):**
 - Elected **President** in:
 - **1938 (Haripura Session):** Advocated **industrialization** for India.
 - **1939 (Tripuri Session):** Resigned due to **ideological differences** with Mahatma Gandhi.
 - **Conflict with Gandhian Ideology:**
 - Supported **immediate and complete independence**.
 - b. **Forward Bloc:**
 - Founded in **1939** after resigning from INC.
 - Aimed to **unify anti-British forces** with **socialist ideals**.
 - c. **Indian National Army (INA):**
 - **Founded INA** in collaboration with **Japan**.
 - Mobilized **overseas Indians** and **prisoners of war** to fight British forces.
 - Issued the famous call: "**Give me blood, and I will give you freedom.**"
 - Established the **Azad Hind Government (1943)** to unite Indians against British rule.
3. **Literature and Media:**
 - Edited the newspaper **Forward**, advocating for **Swaraj**.
 - Authored **The Indian Struggle**, detailing India's fight for independence from **1920 to 1934**.
4. **Key Ideals:**
 - **Militant Nationalism:** Supported armed resistance to achieve independence.
 - **Industrialization:** Advocated for economic self-reliance.
 - **Unity and Secularism:** Stressed unity across caste, religion, and region to fight colonialism.

Associated Organizations:

1. **Indian National Congress (INC):**
 - Advocated **complete independence** and **economic reforms** during his tenure.
2. **Forward Bloc:**
 - Unified **anti-British forces** under a **socialist agenda**.
3. **Indian National Army (INA):**
 - Mobilized overseas Indians and prisoners of war to fight British forces.

Legacy and Significance:

1. **Nationalist Icon:**
 - Symbol of **courage, leadership**, and **dedication** to India's independence.
2. **Inspiration for Armed Resistance:**
 - His formation of the INA showed the potential of **armed struggle** alongside mass movements.
3. **Visionary Leader:**
 - Advocated a **modern, industrialized India** with a strong military and economic foundation.
4. **Global Influence:**
 - His collaboration with Axis powers reflected India's potential as a global player.

Way Forward:

1. **Youth Engagement:**
 - Promote **Netaji's ideals** of patriotism, self-reliance, and courage through **educational programs** and public campaigns.
2. **Historical Research:**
 - Encourage in-depth studies on his contributions to India's independence.
3. **Global Recognition:**
 - Advocate for international acknowledgment of his **Azad Hind Government** and INA's efforts.
4. **National Integration:**
 - Emphasize his ideals of **unity across diversity**, crucial in today's socio-political context.

The Iron Age – Early Beginnings and Societal Transformations

UPSC Syllabus: General Studies Paper I (Indian History – Ancient Period, Cultural Developments, and Societal Changes)

Context:

Recent dating of **burial urn samples** from **Sivagalai** in Tamil Nadu's **Tuticorin district** suggests that the **Iron Age in India** may have begun at least **1,000 years earlier** than previously estimated, around **3,345 BCE**.

About the Iron Age:

1. **What is the Iron Age?**
 - A period marked by the dominance of **iron tools and weapons**, replacing earlier materials like **stone** and **bronze**.
 - Associated with significant advancements in **metallurgy, technology**, and societal transformations.
2. **Timeframe:**
 - **Globally:** The Iron Age began around **1200 BCE**.
 - **In India:** Recent findings push its beginnings to **3,345 BCE** (Sivagalai, Tamil Nadu), earlier than the **Hittite Empire's use of iron** (~1380 BCE).

Key Locations in India:

1. **Sivagalai (Tamil Nadu):** Earliest evidence of the Iron Age, dated to **3,345 BCE**.
2. **Mayiladumparai (Tamil Nadu):** Evidence from **2,172 BCE**.
3. **Brahmagiri (Karnataka):** Iron artifacts dated to **2,140 BCE**.
4. **Gachibowli (Telangana):** Findings suggest Iron Age activity around **2,200 BCE**.

Phases of the Iron Age in India:

1. **Early Iron Age (1500 BCE – 1000 BCE):**
 - **Key Developments:**
 - Introduction of **iron tools** for agriculture and hunting.
 - Overlap with the **late Vedic period**; texts like the **Atharvaveda** composed.
 - **Significant Sites:**
 - **Hallur (Karnataka), Atranjikhhera (Uttar Pradesh), Malhar (Chhattisgarh).**
2. **Middle Iron Age (1000 BCE – 600 BCE):**
 - **Key Developments:**
 - Expansion of **iron technology** and the emergence of **urbanization**.
 - **Painted Grey Ware (PGW) culture** dominates the Ganga-Yamuna plains.
 - Rise of **fortified settlements** and **Janapadas** (early states).
 - **Significant Sites:**
 - **Kausambi, Ahichhatra**, and other urban centres.
3. **Late Iron Age (600 BCE – 200 BCE):**
 - **Key Developments:**

- Formation of **Mahajanapadas** and rise of the **Mauryan Empire**.
- Spread of **Buddhism** and **Jainism**; ethical governance under **Ashoka**.
- **Significant Urban Centres:**
 - **Pataliputra (Patna), Ujjain, and Taxila.**

Key Features of the Iron Age:

1. **Iron Technology:**
 - Advanced **smelting techniques** led to the production of durable tools and weapons, transforming **agriculture, warfare, and daily life.**
2. **Agricultural Revolution:**
 - Introduction of **iron ploughs** and **sickles** increased agricultural productivity, enabling **food surpluses.**
3. **Urbanization:**
 - Emergence of **fortified cities** with sophisticated infrastructure like **drainage systems, roads, and public buildings.**
4. **Political Structures:**
 - Formation of **Janapadas** (territorial states) and later **Mahajanapadas**, culminating in the rise of the **Mauryan Empire.**
5. **Cultural Growth:**
 - Composition of significant texts like the **Upanishads.**
 - Development of **Buddhist and Jain art, architecture, and philosophy.**

Significance of the Recent Findings:

1. **Earlier Timeline:**
 - The discovery at **Sivagalai** suggests that the **Iron Age in India** predates global estimates, challenging conventional narratives about the **spread of iron technology.**
2. **Technological Sophistication:**
 - Findings indicate early mastery over **metallurgical techniques**, enabling the production of advanced tools and weapons.
3. **Regional Contributions:**
 - Highlights the role of **South India** in early iron technology, contrasting with earlier focus on **northern sites** like Atranjikhhera and Malhar.
4. **Integration with Vedic Period:**
 - Aligns with the **late Vedic period**, where iron tools facilitated **agricultural expansion and settlement growth.**

Challenges and Areas of Focus:

1. **Lack of Uniform Evidence:**
 - Sparse archaeological data limits understanding of **regional variations** in the Iron Age.
2. **Preservation of Artifacts:**
 - Many iron artifacts degrade over time, posing challenges to **scientific analysis.**
3. **Research Gaps:**
 - Greater focus needed on **South Indian sites** to explore their contribution to early iron use.
4. **Interdisciplinary Studies:**
 - Collaborations between **archaeologists, geologists, and historians** can enhance insights.

Ministry of Culture's Tableau 2025

UPSC Syllabus: General Studies Paper I (Indian Culture – Art Forms, Architecture, and Heritage)

Context:

The **Ministry of Culture's tableau**, presented at the **Republic Day 2025** parade, reflects India's **cultural richness and creativity**, aligned with the Prime Minister's vision of '**Virasat Bhi, Vikas Bhi**' (Heritage with Development).

Key Components of the Tableau and Their Significance:

1. **Yaadh on the Potter's Wheel:**
 - **What it Represents:**
 - The **ancient Tamil musical instrument**, symbolizing the **continuity** and depth of India's **musical and artistic traditions.**
 - **Significance:**
 - Highlights India's **rooted heritage** in performing arts and its evolution across centuries.
 - Showcases the **interconnectedness** of India's artistic legacy.
2. **Kinetic Kalpavriksha:**
 - **What it Represents:**
 - The **sacred wish-fulfilling tree**, which transforms into the '**Golden Bird**'.
 - **Significance:**
 - **Kalpavriksha** symbolizes India's **rich cultural heritage** and **spiritual aspirations.**

- The **Golden Bird transformation** reflects India's aspirations for economic growth, creativity, and global leadership.

3. Digital Screens:

- **What it Represents:**
 - Ten **digital panels** displaying India's **diverse creative fields**, including:
 - Performing arts.
 - Literature.
 - Architecture.
 - Design.
 - Tourism.
- **Significance:**
 - Highlights how India's **cultural diversity** serves as a foundation for **innovation and growth**.
 - Demonstrates the integration of **tradition** with **modern technology**.

4. Golden Bird Transformation:

- **What it Represents:**
 - India's legacy as the '**Sone Ki Chidiya**' (**Golden Bird**) and its **path toward reclaiming this title** through **sustainable and inclusive development**.
- **Significance:**
 - Reinforces the message of **cultural pride**.
 - Links **heritage preservation** with **national progress**.
 - Encourages citizens to take pride in India's **glorious past** while contributing to a **sustainable future**.

Broader Themes Represented:

- Cultural Heritage:**
 - The tableau underscores India's **ancient traditions** in music, art, and architecture, emphasizing **preservation and continuity**.
- Economic and Creative Progress:**
 - The transformation of **Kalpavriksha** into the **Golden Bird** reflects India's aspirations for **economic prosperity** and **global recognition**.
- Integration of Heritage and Development:**
 - Aligns with the vision of '**Virasat Bhi, Vikas Bhi**', linking **heritage preservation** with **modern development goals**.
- Technological Advancement:**
 - The use of **digital screens** highlights India's capability to blend **cultural richness** with **technological innovation**.

Ratnagiri Excavation

UPSC Syllabus: General Studies Paper I (Indian Heritage and Culture – Art and Architecture)

Context:

The **Archaeological Survey of India (ASI)** has resumed excavations at **Ratnagiri**, a prominent **Buddhist site in Odisha**, uncovering significant artifacts and relics that reflect its historical and cultural importance.

About Ratnagiri Excavation:

- Location:**
 - Situated in **Jajpur district**, Odisha, around **100 km northeast of Bhubaneswar**.
 - Forms part of the **Diamond Triangle** of Odisha, alongside **Udaygiri** and **Lalitgiri**.
- Artifacts Found in Recent Excavations:**
 - **Colossal Buddha Head:**
 - Measures **3–4 feet** in height, indicating advanced sculptural techniques.
 - **Massive Palm:**
 - Approximately **5 feet long**, part of a Buddha statue.
 - **Ancient Wall:**
 - Likely remnants of a Buddhist monastery or temple.
 - **Inscribed Relics:**
 - Dates back to the **8th–9th centuries AD**, reflecting Ratnagiri's peak as a Buddhist hub.

Historical Significance of Ratnagiri:

- Timeline:**
 - Flourished between the **5th and 13th centuries**, with peak construction from the **7th to 10th centuries**.
- Buddhist Schools:**
 - Center for **Mahayana Buddhism**, later evolving into **Tantrayana (Vajrayana)** practices.
- Ashokan Influence:**
 - Buddhism gained prominence in Odisha after the **Kalinga War (261 BCE)** under **Mauryan Emperor Ashoka**, who embraced the faith.

4. Global Spread of Buddhism:

- Likely served as a **maritime hub** for spreading Buddhism to **Southeast Asia** through Odisha's ancient trade networks.

Significance of Ratnagiri:

1. Historical and Educational Importance:

- Rivalled **Nalanda** as a prominent **Buddhist learning center**.
- Possibly visited by **Chinese monk Hiuen Tsang** during his travels in **638–639 AD**.

2. Cultural Heritage:

- Home to numerous **votive stupas, monasteries, and Buddhist relics**.
- Showcases the evolution of **Buddhist art and architecture**.

3. Global Maritime Connections:

- Integral to Odisha's **Baliyatra**, commemorating ancient trade links with **Java, Sumatra, and Bali**.
- Evidence of religious and trade exchanges with **Southeast Asia**.

4. Archaeological Significance:

- Provides insights into Odisha's **Buddhist heritage** and its contribution to global Buddhism.

Key Features of Ratnagiri's Buddhist Architecture:

1. Stupas:

- Elaborate votive stupas with carvings depicting scenes from **Buddhist Jataka tales**.

2. Monasteries:

- Monasteries with large courtyards and intricately carved entrances.

3. Sculptures:

- Statues of **Buddha** in meditative and teaching postures, along with **Bodhisattva figures**.

4. Inscriptions:

- Stone inscriptions providing details about Buddhist rituals and historical events.

Challenges in Preserving Ratnagiri:

1. Natural Erosion:

- Weathering of ancient structures due to exposure to natural elements.

2. Illegal Excavations:

- Threat of relics being stolen or damaged due to unauthorized activities.

3. Tourism Pressure:

- Increased tourism without adequate infrastructure may harm the site's integrity.

4. Lack of Awareness:

- Limited public knowledge about Ratnagiri's historical and cultural significance.

Way Forward:

1. Enhanced Excavation and Research:

- Continue systematic excavations to uncover and preserve more relics.

2. Conservation Efforts:

- Use modern techniques to restore and protect ancient structures and artifacts.

3. Global Collaboration:

- Partner with international organizations like **UNESCO** to highlight Ratnagiri's significance.

4. Cultural Tourism Development:

- Develop eco-friendly infrastructure to promote **heritage tourism**, boosting local economies.

5. Awareness Campaigns:

- Organize educational programs and exhibitions to showcase Ratnagiri's historical value.

Konark Sun Temple

UPSC Syllabus: General Studies Paper I (Indian Art and Culture, Heritage)

Context

Singapore President Tharman Shanmugaratnam recently visited the **Konark Sun Temple**, emphasizing its **global significance** and the rich craftsmanship of **Odisha's heritage**.

About Konark Sun Temple

1. Location:

- Situated in **Konark**, Odisha, near the **Bay of Bengal**.

- Located 35 km from **Puri**, forming part of Odisha's Golden Triangle (Bhubaneswar-Puri-Konark).
- 2. **Construction Timeline:**
 - Built in the **13th century (1238–1264 CE)**.
 - **Commissioned by:** King **Narasimha Deva I** of the **Eastern Ganga dynasty**.
- 3. **Architectural Highlights:**
 - **Chariot Design:**
 - Represents a colossal **chariot of Surya**, the Sun God.
 - Features **24 intricately carved wheels**, each **3 meters in diameter**, symbolizing the passage of time.
 - **Seven Horses:**
 - Sculpted horses pull the chariot, depicting the Sun's **journey across the sky**.
 - **Intricate Sculptures:**
 - Adorned with carvings of **dancers, musicians, animals**, and **mythological narratives** showcasing the artistic finesse of Kalinga artisans.
 - **Vimana and Shikhara:**
 - The original towering **vimana** (sanctum tower) collapsed in the **19th century**, but its base remains.
 - **Natmandir and Jahamogana:**
 - The **dance hall (natmandir)** and **audience hall (jahamogana)** feature pyramidal structures, reflecting the grandeur of **Kalinga temple architecture**.
 - **Symbolic Motifs:**
 - Sculptures of **lions, mythical creatures**, and **erotic art** highlight spiritual, cultural, and social aspects of 13th-century India.

Significance of Konark Sun Temple

1. **Religious Importance:**
 - Dedicated to **Surya**, the Sun God, revered in **Hinduism**.
 - Symbolizes the **cosmic and celestial connection** between humans and nature.
2. **Architectural Masterpiece:**
 - Exemplifies the zenith of **Kalinga architecture** with its engineering precision and artistic grandeur.
3. **Global Recognition:**
 - Declared a **UNESCO World Heritage Site (1984)** for its outstanding artistic and cultural significance.
 - Attracts **tourists and scholars worldwide**.
4. **Cultural Legacy:**
 - Depicts the **confluence of religion, art, and astronomy**.
 - A testament to the **maritime and trade dominance** of the Ganga dynasty.

Threats and Challenges

1. **Environmental Damage:**
 - **Salt-laden winds** from the Bay of Bengal corrode the sandstone structure.
2. **Structural Collapse:**
 - The **vimana** (main tower) collapsed in the 19th century, and parts of the structure remain fragile.
3. **Tourism Pressure:**
 - Increasing footfall leads to physical stress on the site and the need for sustainable tourism policies.
4. **Climate Change:**
 - Rising sea levels and erratic weather patterns threaten the site's long-term preservation.
5. **Neglect and Restoration:**
 - Inadequate maintenance and delays in conservation efforts have raised concerns about the monument's integrity.

Government Initiatives for Preservation

1. **Archaeological Survey of India (ASI):**
 - Responsible for the **maintenance and restoration** of the temple.
2. **UNESCO Support:**
 - Collaborates on technical guidance for **conservation practices**.
3. **Lighting and Accessibility Enhancements:**
 - LED illumination of the temple enhances its appeal and visibility.
4. **Heritage Tourism Development:**
 - Integrated into **Odisha's tourism circuit** to promote cultural awareness and sustainable tourism.
5. **Digital Archiving:**
 - Efforts are underway to **digitally document** the temple's carvings and inscriptions.

Kalaripayattu: India's Ancient Martial Art

UPSC Syllabus: General Studies Paper I (Indian Art and Culture)

Context

The relegation of **Kalaripayattu** to the **demonstration** section at the **38th National Games in Uttarakhand** has sparked controversy, raising questions about the recognition of India's cultural heritage.

About Kalaripayattu

- What it is:**
 - Kalaripayattu is among the **oldest martial arts** globally, originating in **Kerala**, South India.
 - It combines **combat techniques, physical training, and healing practices**, representing both a **martial and spiritual discipline**.
- Etymology:**
 - "**Kalari**": Refers to a **combat arena** in Malayalam.
 - "**Payattu**": Means **fight** or **training**.
- History and Mythology:**
 - Mythological Origins:** Believed to be created by **Parasurama**, the warrior sage who is said to have reclaimed Kerala from the sea.
 - Practiced extensively by **warriors and soldiers** during ancient and medieval periods.
 - Influenced other martial arts globally, including the Chinese martial art form **Shaolin Kung Fu**.

Features of Kalaripayattu

- Training Components:**
 - Maippayattu** (Body conditioning): Focuses on flexibility, strength, stamina, and reflexes.
 - Kolthari** (Wooden weapons): Training with sticks and wooden swords.
 - Angathari** (Metallic weapons): Use of metallic weapons like swords, spears, and daggers.
 - Verumkai** (Bare-handed techniques): Hand-to-hand combat for disarming or neutralizing an opponent.
- Healing Techniques:**
 - Includes **Marma Vidya**, the science of targeting **vital points** on the body, used for healing or defense.
- Philosophy and Discipline:**
 - Kalaripayattu emphasizes **discipline, self-control, and spiritual balance**, alongside physical combat.
- Performance Art:**
 - Practiced and showcased in traditional performances and festivals, combining **martial art** with **dance movements**.
- Women in Kalaripayattu:**
 - Women have been historically trained in this art, with **legendary female warriors** like **Unniyarcha** serving as symbols of empowerment.

Modern Recognition and Challenges

- National Recognition:**
 - Included in the **National List of Intangible Cultural Heritage (ICH)** of India in **2009**.
 - Celebrated as part of Kerala's cultural identity and promoted in tourism.
- Controversy:**
 - At the **38th National Games**, relegating Kalaripayattu to a **demonstration sport** undermines its historical significance and **national importance**.
- Global Influence:**
 - Inspired martial arts worldwide, showcasing India's **soft power**.
- Challenges:**
 - Declining popularity** among younger generations due to the rise of modern combat sports.
 - Lack of **institutional support** and funding.
 - Inconsistent inclusion in **national-level sports events**, limiting opportunities for practitioners.

Way Forward

- Cultural Promotion:**
 - Integrate Kalaripayattu into **school curriculums** as part of physical education and cultural heritage.
- Sports Recognition:**
 - Establish it as a **competitive sport** at the national and international levels, ensuring proper representation at events like the **National Games**.
- Tourism and Global Reach:**
 - Promote Kalaripayattu as a **tourism attraction** by linking it with Kerala's **Ayurveda** and wellness tourism.
- Institutional Support:**
 - Provide funding for **Kalaripayattu academies** and **practitioners**, ensuring its survival and growth.
- Global Platforms:**

- Encourage performances at **global cultural forums** to showcase its artistic and historical significance.

ENVIRONMENT & ECOLOGY

Digital Preservation of Kashmir's Iconic Chinar Trees

UPSC Syllabus: General Studies Paper III (Environment – Conservation, Climate Change)

Context:

The **J&K Forest Research Institute (FRI)** has initiated an innovative project to digitally preserve **Kashmir's iconic Chinar trees** through **geo-tagging** and **QR codes**, ensuring their **monitoring, conservation, and management**.

About Kashmir Chinar Trees:

1. **Scientific Name:**
 - **Platanus orientalis** (*Oriental plane*).
2. **Habitat and Distribution:**
 - **Native Regions:** From **Italy to the Himalayas**, including **Turkey, the Caucasus, and Iran**.
 - **In Kashmir:**
 - Found extensively in districts like **Ganderbal** and **Budgam**.
 - Iconic presence in gardens, shrines, and cultural sites.
3. **Climatic Factors:**
 - Thrives in **temperate climates** with well-drained soils.
 - Requires **abundant sunlight** and **consistent moisture** for optimal growth.
4. **Features:**
 - **Height:** Grows up to **30 meters** with a **girth of 10–15 meters** at the base.
 - **Longevity:** Some trees in Kashmir are over **600 years old**.
 - **Seasonal Beauty:** Leaves change colors from **deep green (summer)** to **red, amber, and yellow (autumn)**.

Reasons Behind Decline:

1. **Urbanization:**
 - Habitat loss due to **construction** and **infrastructure development**.
2. **Climate Change:**
 - **Altered rainfall patterns** and **temperature extremes** disrupt growth cycles.
3. **Illegal Felling:**
 - Despite **protected status**, trees are exploited for **timber**.
4. **Pests and Diseases:**
 - Environmental stress increases vulnerability to **pests** and **diseases**.

Conservation Initiative:

1. **Geo-Tagging and QR Codes:**
 - **Geo-tagging:** Each Chinar tree is mapped for precise monitoring and data collection.
 - **QR Codes:** Provide detailed information about the tree's age, health, and history, accessible via mobile devices.
2. **Objectives:**
 - **Monitor Tree Health:** Regular updates on tree growth and condition.
 - **Prevent Illegal Felling:** Digital tracking ensures accountability and enforcement.
 - **Public Awareness:** Promote the cultural and ecological importance of Chinars.
3. **Implementing Agency:**
 - Led by the **J&K Forest Research Institute (FRI)**.

Significance of Chinar Trees:

1. **Cultural Importance:**
 - Revered as a **symbol of Kashmiri heritage** and frequently mentioned in **poetry, folklore, and art**.
2. **Ecological Role:**
 - **Carbon Sequestration:** Absorbs CO₂, contributing to climate mitigation.
 - **Shade and Microclimate:** Provides cooling in temperate regions.
 - **Soil Stabilization:** Prevents soil erosion along riverbanks and slopes.
3. **Tourism Attraction:**

- Known for their **majestic appearance**, they draw **nature enthusiasts** and **tourists**.

Challenges in Conservation:

1. **Urban Encroachments:**
 - Rapid urbanization limits the space for Chinar growth.
2. **Climate Variability:**
 - Unpredictable weather patterns reduce **growth rates** and **longevity**.
3. **Insufficient Awareness:**
 - Lack of understanding about the **ecological value** of Chinars among the public.
4. **Resource Constraints:**
 - Limited resources for large-scale implementation of **geo-tagging initiatives**.

Way Forward:

1. **Strengthen Legal Protections:**
 - Enforce existing laws to prevent illegal felling and exploitation.
2. **Public Engagement:**
 - Conduct **awareness campaigns** on the cultural and ecological significance of Chinar trees.
3. **Climate Adaptation Measures:**
 - Introduce **drought-resistant varieties** and ensure regular irrigation during dry spells.
4. **Expand Digital Conservation:**
 - Scale up **geo-tagging** to include other native trees for biodiversity preservation.
5. **Collaborate with Local Communities:**
 - Involve local communities in **plantation drives** and **tree monitoring**.

Cauvery-South Vellar Link Project

UPSC Syllabus: General Studies Paper II & III (Interstate Relations, Water Resources, and Environmental Conservation)

Context:

The **Supreme Court** observed that the Centre has not granted **in-principle approval** for Tamil Nadu's **Cauvery-South Vellar Link Project**, despite the state's request in **January 2021**.

About the Cauvery-South Vellar Link Project:

1. **What is the Project?**
 - **Purpose:** A Tamil Nadu initiative to **divert surplus floodwater** from the **Mettur Dam** to dry tanks in the **Sarabanga Basin** in Salem district.
 - **Aim:**
 - Ensure **efficient water utilization** for agriculture.
 - Replenish water bodies in **drought-prone areas**.
2. **States Involved:**
 - **Tamil Nadu:** Supports the project to address **agricultural and drinking water needs**.
 - **Karnataka:** Opposes the project, claiming it diverts **excess Cauvery water**, potentially infringing on its **allocated share** as per interstate water agreements.
3. **Significance of the Project:**
 - **Agricultural Support:** Addresses irrigation needs in Tamil Nadu's dry regions.
 - **Water Management:** Reduces water wastage by utilizing **surplus floodwater**.
 - **Interstate Disputes:** Highlights the need for **federal cooperation** and equitable sharing of interstate river resources.

About the Cauvery River:

1. **Origin:**
 - **Talakaveri**, Brahmagiri Hills, Western Ghats, Karnataka.
2. **Endpoint:**
 - Poompuhar, flowing into the **Bay of Bengal**.
3. **States Flow Through:**
 - Karnataka, Tamil Nadu, Kerala, Puducherry.
4. **Significance:**
 - Revered as '**Ponni**' in Tamil Nadu and often called the **Dakshina Ganga** (Ganges of the South).
5. **Tributaries:**
 - **Left Bank:** Arkavathi, Hemavathi, Shimsa, Harangi.
 - **Right Bank:** Lakshman Tirtha, Kabini, Suvarnavathi, Noyil, Bhavani, Amaravathi.

6. Protected Areas in the Basin:

- Nagarhole National Park, Wayanad Wildlife Sanctuary, Sathyamangalam Tiger Reserve.

About the Vellar River:

1. **Origin:** Servarayan Hills, Eastern Ghats.
2. **Endpoint:** Flows into the Bay of Bengal.
3. **States Flow Through:** Tamil Nadu (Salem, Perambalur, and Cuddalore districts).
4. **Tributaries:** Manimuktha River, Chinnar River, Vasishta Nadi.

Challenges and Implications:

1. **Interstate Disputes:**
 - Tamil Nadu's project raises **concerns from Karnataka**, citing violation of the **Cauvery Water Dispute Tribunal Award**.
2. **Approval Delays:**
 - Lack of **in-principle approval** from the Centre delays project execution, affecting **drought-prone areas** in Tamil Nadu.
3. **Environmental Impact:**
 - Potential **ecological implications** of diverting surplus water need evaluation to ensure **sustainability**.
4. **Federal Cooperation:**
 - Highlights the need for **coordinated policies** for water resource sharing and addressing disputes under the **Interstate River Water Disputes Act, 1956**.

Way Forward:

1. **Scientific Assessment:**
 - Conduct a **detailed environmental impact assessment (EIA)** to evaluate the project's feasibility and ecological impact.
2. **Interstate Dialogue:**
 - Promote **collaborative discussions** between Tamil Nadu and Karnataka under the guidance of the Centre to resolve disputes.
3. **Efficient Water Use:**
 - Integrate the project with **modern water conservation techniques**, ensuring minimal resource wastage.
4. **Federal Oversight:**
 - The Centre should expedite its decision by evaluating the **project's compliance** with the **Cauvery Tribunal's provisions**.

The Black Panther – A Mysterious and Elusive Predator

UPSC Syllabus: General Studies Paper III (Conservation, Environmental Impact, and Animal Protection Laws)

Context:

A recent video shared by an **Indian Forest Service (IFS)** officer showcased a rare **black panther** strolling through the lush greenery of **north Bengal**.

About Black Panther:

1. **What is a Black Panther?**
 - **Colloquial Term:** Refers to **melanistic** (dark-colored) large felines in the **Panthera** genus.
 - Known for their **striking black fur** and mysterious allure.
2. **Scientific Names:**
 - **Black Leopard:** *Panthera pardus*
 - **Black Jaguar:** *Panthera onca*
3. **Habitat:**
 - Found across **three continents:** Asia, Africa, and the Americas.
 - **Preferred Habitat:** Dense **tropical rainforests, grasslands, and mountainous regions**.
 - **Global Range:** Includes regions like **Southwest China, Southern India, Nepal, Malaysia, Indonesia, and Burma**.
 - **Indian Range:** Found in notable areas such as **Kabini Forest (Karnataka), Nagarhole National Park, Periyar Wildlife Sanctuary, Silent Valley, and Sundarbans**.

Characteristics of the Black Panther:

1. **Physical Features:**
 - **Fur:** Glossy **black or dark brown** fur with faint **spotted patterns** visible when exposed to sunlight.
 - **Eyes:** Striking **emerald green** eyes that give the panther a **fierce and elegant look**, even in darkness.
2. **Behavioural Traits:**
 - **Solitary and territorial** hunters.
 - Known for **exceptional intelligence**, sharp eyesight, and a keen sense of smell.
 - **Males** exhibit **polygamous** behaviour.

3. Why the Black Color?

- **Melanism** results from specific genetic alleles:
 - **Recessive alleles** in leopards and **dominant alleles** in jaguars.
- High concentration of **melanin** creates the dark fur, which serves as **camouflage** in dense forested areas.

Conservation Status and Threats:

1. Conservation Status:

- **IUCN Red List:** Classified as **Vulnerable**.
- **CITES:** Listed in **Appendix I**, which strictly regulates trade.
- **Indian Wildlife (Protection) Act, 1972: Schedule I** (maximum protection).

2. Threats:

- **Habitat Loss:** Deforestation and human encroachment threaten the natural habitat of black panthers.
- **Poaching:** Black panthers are victims of illegal hunting for their pelts and other body parts.
- **Declining Prey Populations:** Reduced availability of natural prey species affects their survival and hunting patterns.

Additional Insights:

1. Role in Ecosystem:

- As apex predators, black panthers play a crucial role in maintaining **biodiversity** by controlling prey populations.

2. Cultural Significance:

- Revered for their **mysterious nature**, black panthers often feature prominently in folklore and are considered symbols of strength and stealth.

3. Conservation Efforts:

- Efforts to preserve their habitats include **anti-poaching laws** and **wildlife sanctuaries**.
- Awareness campaigns focus on reducing **human-wildlife conflict** and promoting **sustainable practices**.

Rhodamine B – A Hazardous Synthetic Dye Under Global Scrutiny

UPSC Syllabus: General Studies Paper III (Environment and Health Hazards – Toxic Substances and Regulations)

Context:

Global bans, including those by the **Food and Drug Administration (FDA)** and **Indian states**, have brought **Rhodamine B** and its harmful impacts under intense scrutiny due to its **toxicity and environmental risks**.

About Rhodamine B:

1. What is Rhodamine B?

- **Chemical Name:** Rhodamine B ($C_{28}H_{31}ClN_2O_3$).
- **Properties:** A **water-soluble synthetic dye**, appearing **green** in powder form and turning **bright fluorescent pink** in water.

2. Uses:

- Commonly used as a **coloring agent** in **textiles, leather, paper, and paints**.
- Utilized in **scientific research** due to its **fluorescence properties**.

3. Industrial Applications:

- Popular in **non-food sectors**, including **industrial marking** and manufacturing of **vibrant red and pink shades**.

Features of Rhodamine B:

1. Fluorescent Properties:

- Highly visible under **UV light**, making it useful in **scientific and industrial applications**.

2. Dyeing Efficiency:

- Produces **vibrant, long-lasting colors** widely used in commercial applications.

3. Non-Biodegradable:

- Persistent in the environment, contributing to **pollution risks** and harming ecosystems.

4. Global Regulation:

- Categorized as **toxic** and **banned worldwide** for use in **food products** and consumables.

Harmful Impacts of Rhodamine B:

1. Carcinogenic Properties:

- Associated with **DNA damage, mutations**, and potential **tumor growth** in animal studies.

2. Toxic Effects:

- Prolonged exposure may damage vital organs like the **liver, kidneys, and bladder**.

3. Oxidative Stress:

- Causes **cellular damage** by increasing oxidative activity, leading to health complications.
4. **Environmental Hazards:**
 - Residual dyes in wastewater contaminate **soil and aquatic ecosystems**, disrupting biodiversity.
 5. **Vulnerable Groups:**
 - **Children and immunocompromised individuals** are more susceptible to adverse health effects.

Regulatory Action:

1. **Global Bans:**
 - Rhodamine B is banned for use in **food products and cosmetics** by major regulatory agencies like the **FDA**.
2. **Indian Restrictions:**
 - Several **Indian states** prohibit its usage in consumables due to its **toxicity** and **non-biodegradability**.
3. **Environmental Monitoring:**
 - Stringent monitoring of **industrial wastewater discharge** is necessary to limit environmental contamination.

Challenges in Regulation and Compliance:

1. **Industrial Resistance:**
 - Industries relying on **cost-effective dyes** may resist transitioning to safer alternatives.
2. **Lack of Alternatives:**
 - Limited availability of **eco-friendly substitutes** hinders full-scale replacement.
3. **Unregulated Usage:**
 - In regions with weak enforcement, **illegal use** in consumables poses public health risks.

Way Forward:

1. **Promote Safer Alternatives:**
 - Encourage the development and adoption of **biodegradable, non-toxic dyes**.
2. **Strengthen Enforcement:**
 - Ensure strict compliance with **bans and regulations** through regular monitoring.
3. **Awareness Campaigns:**
 - Educate industries and consumers about the **health and environmental risks** of Rhodamine B.
4. **Incentivize Eco-Friendly Practices:**
 - Provide subsidies and support to industries shifting to **sustainable dyeing practices**.
5. **International Collaboration:**
 - Partner with global organizations to share **best practices** for dye safety and environmental sustainability.

Dhanauri Wetland – A Crucial Habitat Awaiting Conservation

UPSC Syllabus: General Studies Paper III (Environment – Conservation, Biodiversity, and Environmental Pollution)

Context:

The **National Green Tribunal (NGT)** has directed the Uttar Pradesh government to submit a **status report** on the **notification of the Dhanauri Wetland** as a protected wetland under the **Wetlands (Conservation and Management) Rules, 2017**.

About Dhanauri Wetland:

1. **Location:**
 - Situated in **Dhanauri village**, near **Dankaur**, in **Gautam Buddha Nagar district**, Uttar Pradesh.
 - Part of the **Yamuna River basin ecosystem** but primarily a **standalone wetland**.
2. **Features and Uniqueness:**
 - **Avian Biodiversity:**
 - Habitat for **217 bird species**, including **150 Sarus Cranes** (Uttar Pradesh's state bird).
 - Recognized as an **Important Bird Area (IBA)** by **BirdLife International**.
 - **Migratory Waterfowl Hub:**
 - During peak migratory seasons (**November–March**), it hosts up to **50,000 waterfowl**.
 - **Ecological Significance:**
 - Documented by the **Bombay Natural History Society (BNHS)** for its vital role in maintaining regional biodiversity.

About Ramsar Sites:

1. **What is a Ramsar Site?**
 - Wetlands designated as having **international importance** under the **Ramsar Convention (1971)**, focusing on **wetland conservation and sustainable use**.

- Ramsar sites are chosen based on criteria like:
 - **Ecological uniqueness, biodiversity richness, or cultural significance.**
- 2. **Ramsar Convention Goals:**
 - Promote **conservation** and **wise use** of wetlands globally.
 - Recognize wetlands as vital ecosystems for biodiversity, water security, and climate regulation.
- 3. **Who Declares Wetlands?**
 - Wetlands are notified and conserved under **State Government** jurisdiction in line with **Wetlands Rules, 2017**.

Importance of Dhanauri Wetland:

1. **Ecological Value:**
 - Supports **rare and threatened bird species**, including **Sarus Cranes** and other migratory birds.
 - Acts as a **natural flood regulator** and **groundwater recharge zone**.
2. **Cultural Significance:**
 - Sarus Cranes are revered in local traditions, making the wetland culturally valuable.
3. **Economic Importance:**
 - Boosts **eco-tourism** opportunities.
 - Supports **livelihoods** of local communities through fishing and sustainable harvesting.
4. **Climate Regulation:**
 - Wetlands like Dhanauri act as **carbon sinks**, helping mitigate climate change impacts.

Current Challenges Facing Dhanauri Wetland:

1. **Lack of Notification:**
 - Despite being identified as a **potential Ramsar site**, it remains **unnotified**, leaving it vulnerable to **encroachments and degradation**.
2. **Urbanization Pressure:**
 - Proximity to **Jewar Airport** and rapid development threaten its ecological balance.
3. **Pollution and Habitat Loss:**
 - Runoff from nearby agricultural and industrial areas leads to **pollution** and the loss of biodiversity.
4. **Insufficient Protection Framework:**
 - Absence of **legal protection** under **Wetlands Rules** or the **Ramsar Convention** hinders conservation efforts.

Way Forward:

1. **Expedite Notification:**
 - The Uttar Pradesh government must **fast-track notification** of Dhanauri Wetland under **Wetlands Rules, 2017**, and nominate it as a **Ramsar site**.
2. **Strengthen Conservation Measures:**
 - Enforce **buffer zones** to mitigate urbanization impacts and protect the habitat.
3. **Community Participation:**
 - Engage local communities in **wetland management** and promote sustainable practices.
4. **Pollution Control:**
 - Implement stringent **pollution control measures** in the surrounding areas.
5. **Promote Ecotourism:**
 - Develop Dhanauri Wetland as an **eco-tourism destination**, ensuring **sustainable revenue** generation while preserving biodiversity.
6. **Scientific Monitoring:**
 - Regularly monitor the wetland's **biodiversity** and **ecological health** in collaboration with organizations like **BNHS**.

Asan Wetland – Uttarakhand's Biodiversity Hotspot

UPSC Syllabus: General Studies Paper III (Environment and Biodiversity)

Context:

The **Asan Wetland** in Uttarakhand hosted the **Asian Waterbird Census (AWC)**, documenting **5,225 birds across 117 species**, emphasizing its role as a vital ecological site.

About Asan Wetland:

1. **Location:**
 - Found in **Dehradun district**, Uttarakhand.
 - Located at the **confluence of the Asan River and the Eastern Yamuna Canal**, near the border of Himachal Pradesh.
2. **Historical Background:**
 - Created in **1967** due to the **damming of the Asan River** during the construction of the **Dhalipur powerhouse**.
 - Declared **Uttarakhand's first Ramsar site** in **2020**, recognizing its ecological importance.

3. **Rivers Associated:**
 - Asan River.
 - Eastern Yamuna Canal.
4. **Significance:**
 - Recognized as a **wetland of international importance** under the Ramsar Convention.

Unique Features of Asan Wetland:

1. **Biodiversity Hub:**
 - Hosts **330 bird species**, including critically endangered ones such as:
 - **White-rumped vulture.**
 - **Red-headed vulture.**
 - **Baer's pochard.**
2. **Migratory Birds:**
 - A sanctuary for globally endangered migratory species, including:
 - **Brahminy duck, red-crested pochard, gadwall, and mallard.**
 - Birds migrate from **Central Asia**, highlighting its global ecological importance.
3. **Fish Species:**
 - Houses **49 fish species**, including the **endangered Putitor mahseer.**
4. **Ecosystem Importance:**
 - Supports **wetland biodiversity, hydrological regimes**, and maintains the **ecological balance.**

About the Asian Waterbird Census (AWC):

1. **Conducted By:**
 - Coordinated by **Wetlands International** as part of the global **International Waterbird Census (IWC).**
2. **Purpose:**
 - Monitors **waterbird populations** and **wetland health.**
 - Supports the conservation of wetlands under frameworks like the **Ramsar Convention** and **Convention on Migratory Species.**
3. **Frequency:**
 - Held **annually in January**, coinciding with the **migration season** of waterbirds.
4. **Citizen Science Initiative:**
 - Engages **volunteers and researchers** in data collection, raising public awareness about wetland conservation.

Challenges Faced by Asan Wetland:

1. **Urbanization:**
 - Encroachment and pollution threaten the wetland's natural habitat.
2. **Climate Change:**
 - Alters migration patterns and reduces water availability.
3. **Invasive Species:**
 - Growth of invasive aquatic plants affects biodiversity.
4. **Overfishing:**
 - Impacts the population of native fish species like **Putitor mahseer.**
5. **Lack of Awareness:**
 - Limited public engagement in wetland conservation efforts.

Way Forward:

1. **Strengthen Conservation:**
 - Enforce stricter measures under the **Ramsar Convention** to protect biodiversity.
2. **Promote Ecotourism:**
 - Develop sustainable tourism that educates visitors about the wetland's ecological significance.
3. **Community Involvement:**
 - Involve local communities in conservation efforts to ensure long-term sustainability.
4. **Research and Monitoring:**
 - Conduct regular biodiversity surveys and strengthen scientific research on wetland ecosystems.
5. **Global Cooperation:**
 - Collaborate with international organizations like **Wetlands International** for technical and financial support.

Mitigating Human-Elephant Conflicts

UPSC Syllabus: General Studies Paper III (Environment, Agriculture), Essay, Ethics

Context:

A recent **Namibian study** highlights how **separate water points** and upgraded infrastructure can reduce **human-elephant conflicts**, offering valuable lessons for conservation and coexistence.

Methods to Mitigate Human-Animal Conflicts

- Designating Separate Resource Zones:**
 - What it is:** Create water points or resources for wildlife away from human settlements to minimize interactions.
 - Example:** Namibia's **National Elephant Conservation Plan**, which includes **exclusive water dams for elephants** far from villages.
- Upgrading Infrastructure:**
 - What it is:** Strengthen critical infrastructure to prevent damage by wildlife.
 - Features:**
 - Protective walls around water points.
 - Solar-powered pumps** to replace vulnerable manual systems.
 - Reinforced **concrete dams** to withstand damage.
 - Example:** Solar pump systems in Namibia, reducing elephant damage to pipes and tanks.
- Community Participation:**
 - What it is:** Engage locals in **monitoring, decision-making, and conservation activities**.
 - Outcome:** Fosters a sense of **ownership** and responsibility for wildlife.
 - Example:** Namibia's **Community Conservation Programme (1990s)** enabled locals to manage conflicts and benefit economically through ecotourism.
- Buffer Zones and Barriers:**
 - What it is:** Develop **buffer zones** around settlements with physical or natural barriers to deter wildlife intrusion.
 - Techniques:**
 - Bio-fencing using **thorny plants**.
 - Trenches or **moats**.
 - Use of **chili-based deterrents**.
 - Example:** **Bio-fencing in Karnataka, India**, has significantly reduced elephant incursions into farmlands.

Additional Examples in India

- Kerala's Rail Barriers:**
 - Elevated rail tracks to prevent elephant crossings and reduce accidents.
- Odisha's Early-Warning Systems:**
 - Use of drones and **thermal cameras** to monitor elephant movement and warn villagers.
- Assam's Community Elephant Task Force:**
 - Involves locals in managing elephants that stray into human settlements.
- Tamil Nadu's "Eco-bridges":**
 - Wildlife corridors to provide elephants safe passage between forested areas.

Challenges in Addressing Human-Elephant Conflicts

- Urbanization:**
 - Encroachments into forests reduce habitat availability, increasing interactions.
- Climate Change:**
 - Altered rainfall patterns and drying water sources push elephants toward villages.
- Resource Intensity:**
 - Cost of implementing measures like solar pumps and buffer zones can strain budgets.
- Community Resistance:**
 - Locals often resist conservation projects due to immediate economic losses or lack of awareness.

Way Forward

- Integrated Conservation Approach:**
 - Combine **scientific methods** with **traditional knowledge** to address conflicts.
- Technology Use:**
 - Expand **early-warning systems, drone monitoring, and AI-based tools** for real-time tracking.
- Sustainable Livelihoods:**
 - Promote **eco-tourism** to incentivize locals in conservation efforts.
- Collaborative Governance:**

- Engage **community stakeholders**, local governments, and NGOs for inclusive solutions.
- 5. **Policy Alignment:**
 - Integrate wildlife conflict resolution in **national biodiversity policies** and **state forest plans**.

Olive Ridley Turtles

UPSC Syllabus: General Studies Paper III (Biodiversity and Conservation, Environmental Pollution)

Context

Recently, a **large number of olive ridley turtles** were found dead along Tamil Nadu's coast, particularly in **Chennai**, raising concerns about conservation efforts and marine habitat management.

About Olive Ridley Turtles

1. **What it is:**
 - **Scientific Name:** *Lepidochelys olivacea*.
 - Smallest and most abundant **sea turtles**, known for their synchronized **mass nesting**, called **arribadas**.
2. **Habitat:**
 - Found in **tropical regions** of the **Pacific, Indian, and Atlantic Oceans**.
 - Frequently nest on beaches in **India, Mexico, and Costa Rica**.
3. **Physical Features:**
 - **Olive-green, heart-shaped shell**.
 - Omnivorous diet, feeding on **crabs, jellyfish, mollusks, and algae**.
 - Capable of diving up to **500 feet** to forage on the ocean floor.
4. **Mating and Nesting:**
 - **Season:** November to March in India.
 - Famous for **mass nesting** at Odisha's **Gahirmatha, Rushikulya, and Devi River** beaches.

Protection Status

1. **National:**
 - Listed in **Schedule 1** of the **Wildlife Protection Act, 1972**, offering the **highest protection** in India.
2. **International:**
 - **CITES Appendix I:** Prohibits international trade of olive ridley turtles and their products.
 - **IUCN Status:** Classified as **Vulnerable** due to habitat degradation and overfishing.

Recent Causes of Death

1. **Bycatch in Fishing Nets:**
 - Turtles get trapped in **commercial trawler nets**, leading to suffocation.
 - High casualties during their **breeding season** due to increased fishing activities near nesting grounds.
2. **Entanglement and Collisions:**
 - Discarded **fishing gear** and marine debris injure turtles.
 - Vessel collisions in nearshore waters near **nesting beaches** cause fatalities.
3. **Environmental Stressors:**
 - **Marine pollution**, such as oil spills, plastics, and industrial discharge, degrades nesting habitats.
 - **Overfishing** reduces prey availability, forcing turtles to venture into trawler zones.
4. **Climate Change Impact:**
 - Rising **sea levels** and **temperature changes** threaten nesting sites.
 - Sand temperature variations affect **gender ratios** in hatchlings (warmer sand favors female hatchlings).

Significance of Olive Ridley Turtles

1. **Ecological Role:**
 - Help maintain the **marine food chain** by feeding on jellyfish and other organisms.
 - Contribute to **coastal ecosystem health** by enriching beaches with nutrients from eggshells and hatchlings.
2. **Indicator Species:**
 - Their population trends reflect the **health of marine ecosystems**.
3. **Cultural and Economic Value:**
 - Their nesting sites promote **ecotourism**, benefiting local economies.
 - Revered in many cultures, symbolizing **fertility and harmony**.

Conservation Efforts

1. **Turtle Excluder Devices (TEDs):**
 - Mandated in fishing trawlers to allow turtles to escape while retaining the catch.
2. **Mass Nesting Protection:**
 - Initiatives like **Operation Kachhapa** (Odisha) focus on protecting nesting grounds.
 - Beach patrolling and fencing during the **nesting season**.
3. **Community Participation:**
 - Local fishermen and NGOs are engaged in creating **awareness campaigns**.
4. **Coastal Regulation:**
 - Implementation of **CRZ norms** to prevent habitat destruction from tourism and urbanization.
5. **Global Initiatives:**
 - Collaborations under **IOSEA Marine Turtle Memorandum** for regional conservation efforts.

Challenges in Conservation

1. **Non-Compliance with TEDs:**
 - Resistance from fishing communities to adopt **Turtle Excluder Devices** due to perceived loss of catch.
2. **Coastal Development:**
 - Urbanization and tourism projects disrupt nesting sites.
3. **Illegal Trade:**
 - Despite legal protections, turtles are poached for **meat, eggs, and shells**.
4. **Marine Pollution:**
 - Plastics and debris severely affect feeding and nesting grounds.

Way Ahead

1. **Strengthen Regulations:**
 - Strict enforcement of **mandatory TED usage** in all fishing zones.
2. **Community-Based Conservation:**
 - Involve local communities in **monitoring and patrolling nesting beaches**.
3. **Marine Protected Areas (MPAs):**
 - Expand MPAs to include critical nesting and feeding grounds.
4. **Climate Action:**
 - Invest in **habitat restoration** projects and conduct **long-term climate studies** on nesting sites.
5. **Public Awareness Campaigns:**
 - Educate fishing communities and tourists on the importance of turtle conservation.

BIOTECHNOLOGY & HEALTH

India's Renewable Energy Achievements and Future Pathways

UPSC Syllabus: General Studies Paper III (Environment, Energy Security, and Renewable Energy)

Context:

In **2024**, India achieved **record-breaking milestones** in renewable energy installations and policy advancements, setting a **strong foundation** for achieving its **2030 clean energy goals**.

What is Renewable Energy?

- **Definition:** Energy derived from **natural and replenishable sources** like solar, wind, hydropower, and biomass.
- **Benefits:**
 - **Sustainable and non-polluting.**
 - Reduces **greenhouse gas emissions** and combats climate change.
 - Supports a **cleaner environment** and **energy security**.

India's Renewable Energy Targets:

1. **2030 Goals:**
 - Achieve **500 GW** of **non-fossil fuel-based energy capacity**.

- Ensure **50% of energy capacity** is from renewable sources.
- 2. **Net-Zero Commitment:**
 - Achieve **net-zero carbon emissions** by 2070.
- 3. **Current Progress:**
 - As of **January 2025**, India has achieved **217.62 GW** of **non-fossil fuel-based energy capacity**.

Major Achievements in Renewable Energy (2024):

Category	Achievement	Details
Solar Energy	24.5 GW added	Utility-scale solar grew 2.8x compared to 2023, led by Rajasthan, Gujarat, and Tamil Nadu .
Rooftop Solar	4.59 GW installed	Driven by the PM Surya Ghar: Muft Bijli Yojana , with 7 lakh installations in 10 months.
Off-Grid Solar	1.48 GW added	Achieved a 182% increase , enhancing rural electrification and energy access.
Wind Energy	3.4 GW added	Gujarat, Karnataka, and Tamil Nadu accounted for 98% of new wind installations.
Hydropower	Modernization	Existing plants were upgraded for better efficiency and reliability.
Total Non-Fossil	217.62 GW capacity	Includes solar, wind, hydropower, and biomass, showcasing India's commitment to clean energy goals .

Government Schemes Driving Success:

1. **PM Surya Ghar: Muft Bijli Yojana:**
 - Promoted **rooftop solar installations** in urban areas.
2. **Green Energy Corridor (GEC):**
 - Strengthened **transmission systems** for renewable-rich states.
3. **FAME (Faster Adoption and Manufacturing of Electric Vehicles):**
 - Promoted **electric mobility**, indirectly supporting renewable energy usage.
4. **International Solar Alliance (ISA):**
 - Fostered **global cooperation** in solar energy deployment.
5. **National Smart Grid Mission (NSGM):**
 - Enhanced grid integration for **variable renewable energy sources**.
6. **Hydrogen Energy Mission:**
 - Pushed for **green hydrogen production** as an alternative fuel.

Challenges to Renewable Energy in India:

1. **Land Acquisition Issues:**
 - Resistance from local communities over **large-scale solar and wind parks**.
2. **Grid Stability:**
 - Intermittency of solar and wind strains the **grid's reliability**, especially during peak production.
3. **Storage Limitations:**
 - Lack of **large-scale energy storage solutions** hinders efficient utilization of renewable power.
4. **E-Waste Management:**
 - Rising deployment of solar panels and batteries poses challenges in **end-of-life recycling**.
5. **Resource Dependency:**
 - Heavy reliance on **imported critical minerals** like **lithium** and **cobalt** affects supply chains.
6. **Policy and Regulatory Hurdles:**
 - Delayed approvals and **state-level policy inconsistencies** slow project execution.

Way Forward:

1. **Floating Solar Projects:**
 - Utilize **reservoirs and water bodies** for solar installations, conserving land and enhancing efficiency.
2. **Decentralized Energy Systems:**
 - Encourage **peer-to-peer energy trading** using **blockchain technology** to support small-scale generators.
3. **Green Hydrogen Push:**
 - Develop **hydrogen highways** and use surplus renewable energy for **hydrogen production**.
4. **Circular Economy for E-Waste:**
 - Implement policies for **recycling solar panels and batteries**, reducing environmental risks.
5. **Urban Renewable Energy Integration:**
 - Provide incentives for **rooftop solar** and **wind turbines** in urban areas.
6. **Regional Energy Hubs:**
 - Establish **Renewable Energy Special Economic Zones (RE-SEZs)** for localized manufacturing and innovation.

Understanding ADHD – Symptoms, Causes, and Management

UPSC Syllabus: General Studies Paper II (Health and Education – Issues Related to Mental Health)

Context:

A UK-based study, published in the **British Journal of Psychiatry**, reveals a **stark disparity in life expectancy** among adults with **Attention Deficit Hyperactivity Disorder (ADHD)**, highlighting its profound impact on mental and physical health.

About Attention Deficit Hyperactivity Disorder (ADHD):

1. What is ADHD?

- **Definition:** A **neurodevelopmental disorder** affecting **focus, impulsivity, and hyperactivity**.
- **Prevalence:**
 - Commonly diagnosed in **childhood**, but often persists into **adulthood**.
 - Affects approximately **3-4% of adults worldwide**.

Causes of ADHD:

1. Genetics:

- **Family history** significantly increases the risk of ADHD.

2. Brain Structure:

- Alterations in brain regions responsible for **attention** and **behaviour regulation** contribute to the disorder.

3. Prenatal Factors:

- Exposure to **tobacco, alcohol, or drugs** during pregnancy increases susceptibility.

4. Environmental Factors:

- Exposure to **lead** and **low birth weight** are associated with ADHD.

Symptoms of ADHD:

1. Inattention:

- Difficulty focusing and paying attention.
- Forgetfulness and frequent mistakes in daily tasks.
- Easily distracted, even during important activities.

2. Hyperactivity:

- Restlessness and **excessive movement**, even in inappropriate settings.
- Inability to stay still in **quiet situations**.

3. Impulsivity:

- Interrupting conversations or acting without thinking.
- **Risky behaviours**, such as unsafe driving or engaging in dangerous activities.

Treatment of ADHD:

1. Medication:

- **Stimulants:**
 - Examples: **Methylphenidate** and **amphetamines**.
 - Boost dopamine and norepinephrine levels to improve focus and attention.
- **Non-Stimulants:**
 - Examples: **Atomoxetine**.
 - Used for individuals who do not respond well to stimulants.

2. Behavioural Therapy:

- Focuses on developing:
 - **Coping mechanisms**.
 - **Organizational skills** for managing daily responsibilities.

3. Lifestyle Changes:

- **Balanced Diet:** Proper nutrition supports brain health.
- **Regular Exercise:** Improves focus, mood, and overall mental health.
- **Adequate Sleep:** Enhances focus, emotional regulation, and mood stability.

4. Counselling:

- Provides support to manage:
 - **Impulsivity**.
 - **Emotional difficulties**.
 - **Risky behaviours**.

Significance of the UK Study:

1. **Life Expectancy Disparity:**
 - The study highlights that adults with ADHD are at a **higher risk of premature mortality**, primarily due to **accidental injuries, substance abuse, and mental health issues**.
2. **Mental and Physical Health Link:**
 - ADHD is often associated with **comorbid conditions** such as:
 - **Anxiety disorders.**
 - **Depression.**
 - **Cardiovascular risks** due to lifestyle factors.

Additional Insights:

1. **Global Burden of ADHD:**
 - According to the **Global Burden of Disease Study**, ADHD is a leading cause of **disability-adjusted life years (DALYs)** in children and adolescents.
2. **Economic Impact:**
 - ADHD results in significant costs due to:
 - **Lost productivity.**
 - **Healthcare expenses.**
 - **Educational challenges.**
3. **Awareness in India:**
 - Awareness about ADHD in India remains low, leading to **underdiagnosis** and **stigmatization** of individuals with the condition.

Way Forward:

1. **Awareness Campaigns:**
 - Promote **mental health literacy** to reduce the stigma surrounding ADHD.
2. **Early Diagnosis and Intervention:**
 - Implement **screening programs** in schools to identify ADHD early.
3. **Integration into Healthcare Policies:**
 - Include ADHD management under India's **National Mental Health Program (NMHP)**.
4. **Support Systems:**
 - Establish community-based **counselling centers** and **parental support groups**.
5. **Research and Data Collection:**
 - Conduct region-specific studies to better understand the prevalence and challenges of ADHD in India.

Understanding Guillain-Barré Syndrome (GBS)

UPSC Syllabus: General Studies Paper II (Health – Issues and Challenges)

Context:

The health department in **Pune** has reported a surge in cases of **Guillain-Barré Syndrome (GBS)**, a rare **autoimmune nerve disorder**, raising concerns about its causes and impact.

About Guillain-Barré Syndrome (GBS):

1. **What is Guillain-Barré Syndrome?**
 - **Definition:** A rare **autoimmune disorder** where the immune system mistakenly attacks the **peripheral nerves**, leading to **numbness, muscle weakness, and in severe cases, paralysis**.
 - **Non-Contagious:** The condition is not infectious and can affect people of **all ages**, though it is more common in adults.

Symptoms of GBS:

1. **Initial Symptoms:**
 - **Weakness or tingling** sensations starting in the **legs** and often spreading to the **arms and face**.
2. **Progressive Symptoms:**
 - Difficulty in **walking** or maintaining **muscle coordination**.
 - **Limb paralysis** in advanced stages.
3. **Severe Cases:**
 - Paralysis of **respiratory muscles**, requiring **ventilator support**.

Causes of GBS:

1. **Infections:**
 - Often triggered by **bacterial or viral infections**, such as:
 - **Campylobacter jejuni**: A common cause of foodborne illness.
 - **Epstein-Barr Virus (EBV)** and **Cytomegalovirus (CMV)**.
 - **Pneumonia** or **urinary tract infections** caused by certain bacteria.
2. **Triggers:**
 - **Recent Vaccinations**: Rare cases linked to vaccines.
 - **Surgical Procedures**: Post-surgery immune responses may trigger GBS.
 - **Trauma or Stress**: Rare occurrences associated with physical or emotional stress.

Impact of GBS:

1. **Neurological Damage:**
 - Weakens the **peripheral nervous system**, disrupting signals between the brain and muscles.
2. **Temporary Paralysis:**
 - Significantly affects daily life, with patients often requiring **intensive medical care**.
3. **Recovery Period:**
 - Most patients recover within **weeks to months**, but severe cases may result in **prolonged rehabilitation** or residual weakness.

Treatment for GBS:

1. **Intravenous Immunoglobulin (IVIG):**
 - **Mechanism:**
 - Contains **healthy antibodies** from donated blood.
 - Calms the **immune system's attack** on peripheral nerves.
2. **Plasmapheresis (Plasma Exchange):**
 - **Mechanism:**
 - Removes harmful antibodies from the bloodstream.
3. **Supportive Care:**
 - **Ventilator Support**: For respiratory paralysis in severe cases.
 - **Physical Therapy**: Helps regain muscle strength and mobility during **rehabilitation**.

Additional Insights:

1. **Incidence Rate:**
 - GBS affects approximately **1 in 1,00,000 people annually**, though spikes in cases often correlate with **outbreaks of infections**.
2. **Post-Infection Complication:**
 - Often develops **weeks after infections**, making early diagnosis and treatment critical.
3. **COVID-19 Link:**
 - Cases of GBS have been reported as a rare complication following **COVID-19 infections or vaccinations**.

Challenges and Way Forward:

1. **Early Diagnosis:**
 - Strengthen awareness among healthcare professionals for **early recognition** of symptoms.
2. **Improved Access to Treatments:**
 - Ensure availability of **IVIG** and **plasmapheresis facilities** in rural and urban healthcare settings.
3. **Awareness Campaigns:**
 - Inform the public about **early symptoms** and the need for timely medical intervention.
4. **Research and Monitoring:**
 - Conduct studies to better understand **infection triggers** and develop **preventive strategies**.
5. **Strengthen Healthcare Infrastructure:**
 - Equip hospitals with advanced **neurology units** and **rehabilitation centers** to manage cases effectively.

Obesity – Moving Beyond BMI to a Holistic Definition

UPSC Syllabus: General Studies Paper II (Health Issues – Public Health)

Context:

The **Lancet Commission** has introduced a **new definition and diagnostic framework for obesity**, emphasizing a **holistic understanding** rather than relying solely on **Body Mass Index (BMI)**.

About Obesity:

1. Old Definition and Diagnostic Method:

- **Old Definition:**
 - **Obesity:** BMI > 30 globally (BMI > 25 for Indians).
 - **Overweight:** BMI 25–29.9 globally (BMI 23–24.9 for Indians).
- **Old Method:**
 - **Formula:** BMI = Weight (kg) ÷ Height² (m²).
 - Diagnosis based entirely on this ratio.
- **Issues with Old Method:**
 - **Inaccurate Diagnosis:** Did not consider:
 - **Body fat distribution.**
 - **Muscle mass** (e.g., muscular individuals misclassified as obese).
 - **Regional Variations Ignored:**
 - Indians have **higher body fat percentages** at lower BMI, increasing their risk of diabetes and cardiovascular diseases.
 - **Overlooked Comorbidities:** Failed to address obesity-related health complications like organ dysfunction.

New Proposed Definition by the Lancet Commission:

- **Broader Understanding:**
 - Obesity is now classified as a **chronic illness** that alters **organ function** and can lead to severe health conditions, even in the absence of **comorbidities**.
- **Focus on Risk Assessment:**
 - Introduces “**pre-clinical obesity**”:
 - Excess body fat exists without organ dysfunction, providing opportunities for **preventive interventions**.

New Proposed Diagnostic Framework:

- **Multiple Parameters for Body Size:**
 - BMI is one of several indicators, including:
 - **Waist circumference.**
 - **Waist-to-hip ratio.**
 - **Waist-to-height ratio.**
 - Advanced tools like **Dexa scans** (measuring body fat directly).
- **Holistic Diagnosis:**
 - Physicians assess:
 - **Physical symptoms:** Breathlessness, sleep apnea, joint pain.
 - **Associated comorbidities:** Diabetes, hypertension.
 - **Daily life limitations.**
- **Staged Diagnosis (specific to India):**
 - **Stage 1 Obesity:**
 - BMI > 23.
 - Optional waist circumference check.
 - No associated organ dysfunction.
 - **Stage 2 Obesity:**
 - BMI > 23, with additional parameters (e.g., high body fat percentage, organ dysfunction).
 - Accompanied by health limitations like diabetes or cardiovascular issues.

Key Insights and Implications:

1. **Global Context:**
 - The new framework recognizes **regional differences**, ensuring better accuracy for populations like **Indians**, who have distinct body composition profiles.
2. **Preventive Focus:**
 - By introducing **pre-clinical obesity**, the framework encourages **early interventions**, reducing the burden on healthcare systems.
3. **Comprehensive Risk Assessment:**
 - Moves beyond weight and height, addressing **metabolic health** and **organ function**, which are critical to obesity-related conditions.

Challenges in Adopting the New Framework:

1. **Awareness Gap:**
 - Physicians and patients may be unfamiliar with advanced diagnostic tools like **Dexa scans**.
2. **Resource Constraints:**
 - Limited availability of tools like **Dexa machines** in rural areas.
3. **Standardization Issues:**
 - Ensuring uniform application of the framework across different healthcare systems and regions.

4. **Cost of Diagnosis:**
 - Advanced diagnostic methods might increase **out-of-pocket expenses** for patients.
5. **Lifestyle Barriers:**
 - Addressing behavioral and cultural resistance to lifestyle modifications remains a challenge.

Way Forward:

1. **Awareness Campaigns:**
 - Conduct **public health campaigns** to educate individuals about **obesity risks** and the new diagnostic methods.
2. **Capacity Building:**
 - Train healthcare professionals in using **holistic diagnostic tools** and adopting the staged approach.
3. **Accessible Diagnostics:**
 - Subsidize and make advanced diagnostic tools like **Dexa scans** available in rural healthcare centers.
4. **Lifestyle Interventions:**
 - Promote **balanced diets, regular exercise, and mental health support** through community programs.
5. **Policy Integration:**
 - Incorporate the new framework into **national health policies**, ensuring uniform adoption.

SCIENCE & TECHNOLOGY

India's Deep Ocean Mission

UPSC Syllabus: General Studies Paper III (Science & Technology – Developments and their Applications in Exploration, Environment, and Blue Economy)

Context:

India is preparing to deploy its **first human-operated underwater submersible** as part of the **Deep Ocean Mission (DOM)**, as announced by the Union Minister of State for Science and Technology.

About Deep Ocean Mission (DOM):

1. **What is the Deep Ocean Mission?**
 - **Definition:** An ambitious program initiated by the **Ministry of Earth Sciences (MoES)** to explore the deep sea, develop **marine technologies**, and harness ocean resources for **economic and environmental benefits**.
2. **Launched in:**
 - **2021**, under the **Prime Minister's Science, Technology, and Innovation Advisory Council (PMSTIAC)** framework.
3. **Aims of the Mission:**
 - Develop **advanced deep-sea exploration technologies**.
 - Harness critical underwater resources like **polymetallic nodules, sulphides, and rare metals**.
 - Study marine **biodiversity and ecosystems** for **conservation and sustainable fisheries**.
 - Strengthen India's **blue economy** through innovation and research.

Key Features of the Deep Ocean Mission:

1. **Samudrayaan and Matsya6000:**
 - **Matsya6000:** India's **first crewed submersible**, capable of reaching depths of **6,000 meters**.
 - Focuses on exploring and extracting **polymetallic nodules** and **rare underwater resources**.
2. **Technological Advancements:**
 - **Varaha System:** A deep-sea mining system successfully tested at depths of **5,270 meters**.
3. **Ocean Climate Change Services:**
 - Development of advisory systems to monitor **oceanic climate changes**.
4. **Marine Biodiversity Conservation:**
 - Exploration and **conservation of unique underwater ecosystems**, including coral reefs and marine species.
5. **Renewable Energy and Freshwater Harvesting:**
 - Utilizing **ocean energy** and **desalination technologies** to meet renewable energy and water needs.
6. **Marine Biology Research Station:**
 - Establishment of a **state-of-the-art research station** for advanced studies in **marine ecosystems and biology**.

Significance of the Deep Ocean Mission:

- Economic Benefits:**
 - Boosts the **blue economy** by leveraging oceanic resources like **minerals, fisheries, and renewable energy**.
- Strategic Advantage:**
 - Enhances India's position as a **maritime power** and contributor to **global marine research**.
- Environmental Insights:**
 - Provides vital data for **climate change mitigation** and **sustainable development** in ocean ecosystems.
- Technological Advancements:**
 - Encourages innovation in **robotics, underwater mining, and marine engineering**.
- Global Leadership:**
 - Aligns with **UNCLOS (United Nations Convention on the Law of the Sea)** and strengthens India's voice in **deep-sea resource sharing**.

Challenges:

- High Costs:**
 - Deep-sea exploration requires significant **financial investments** and **specialized equipment**.
- Technological Barriers:**
 - Developing robust **deep-sea technology** for extreme pressures and depths is challenging.
- Environmental Concerns:**
 - Mining and exploration activities may impact **marine ecosystems**, raising **ecological sustainability** issues.
- Global Competition:**
 - Competing with advanced nations like the US, China, and Japan in deep-sea technology and research.

Way Forward:

- Capacity Building:**
 - Train scientists and engineers in **deep-sea exploration technologies**.
- Environmental Safeguards:**
 - Implement **sustainable mining practices** to protect marine ecosystems.
- International Collaboration:**
 - Partner with global organizations and nations to share **technology and knowledge**.
- Focus on Renewable Energy:**
 - Invest in ocean-based **renewable energy projects** to reduce dependency on fossil fuels.
- Strengthen Domestic R&D:**
 - Boost indigenous research and development to lower costs and build **self-reliant technologies**.

LID-568

UPSC Syllabus: General Studies Paper III (Space Technology, Scientific Research)

Context:

The discovery of **LID-568**, a low-mass supermassive black hole feeding at an **unprecedented rate**, has opened new perspectives on **black hole formation and growth in the early universe**.

About LID-568:

- What is LID-568?**
 - A **low-mass supermassive black hole**, existing just **1.5 billion years after the Big Bang**.
 - Discovered through **X-ray and infrared observations**.
 - Resides in a galaxy exhibiting **minimal star formation**, likely influenced by the black hole's outflows.
- Features of LID-568:**
 - Super-Eddington Accretion:**
 - Feeds on surrounding matter at a rate **40 times the Eddington limit**, a theoretical cap on black hole feeding and radiation.
 - Eddington Limit:**
 - The maximum rate at which a black hole can accrete matter before **outward radiation pressure** balances its **gravitational pull**.
 - If exceeded, infalling matter is **pushed away**, limiting further accretion.
 - Distance:**
 - One of the **most distant black holes** observed to exhibit such **extreme feeding behavior**.
 - Impact on Galaxy:**
 - Powerful outflows** from LID-568 prevent the accumulation of matter needed for **new star formation**.

Significance of LID-568:

- Challenges Current Models:**
 - Contradicts the theory that **supermassive black holes** require sustained feeding over hundreds of millions of years to grow.
 - Indicates **short-lived periods of intense feeding** could contribute to rapid black hole formation.
- Insights into the Early Universe:**
 - Offers clues on how massive black holes formed in the **young universe**, just 1.5 billion years post-Big Bang.
- Future Research Opportunities:**
 - Provides a foundation for studying **black hole accretion mechanics**.
 - Helps understand how **black holes influence galaxy evolution**, particularly the suppression of star formation.

Implications for Scientific Understanding:

- Formation of Supermassive Black Holes:**
 - Suggests an alternative mechanism for their rapid growth, emphasizing **episodic feeding events** over sustained accretion.
- Galaxy Evolution:**
 - Highlights the role of **black hole outflows** in regulating **star formation** within galaxies.
- Cosmic Timeline Insights:**
 - Offers a glimpse into the **conditions of the early universe**, shedding light on interactions between **black holes and their host galaxies**.
- Challenging Limits of Physics:**
 - Testing the **Eddington limit** through observations like LID-568 could refine our understanding of **black hole feeding dynamics**.

Way Forward:

- Advanced Observations:**
 - Utilize **next-generation telescopes** like the **James Webb Space Telescope (JWST)** to study distant black holes and their host galaxies.
- Refined Theories:**
 - Update theoretical models to incorporate **episodic feeding mechanisms** observed in black holes like LID-568.
- Focus on Early Universe:**
 - Conduct targeted studies on galaxies and black holes from the **early cosmic epoch** to understand their formation and co-evolution.
- Collaborative Research:**
 - Promote global collaborations among observatories and institutions to enhance **data analysis and interpretation** of black hole phenomena.

Advanced Driver Assistance Systems (ADAS)

UPSC Syllabus: General Studies Paper III (Science and Technology – Developments and Applications)

Context:

The **Indian automobile market** has seen a significant rise in the integration of **Advanced Driver Assistance Systems (ADAS)** in four-wheelers, transforming vehicle **safety** and **driver convenience**.

About Advanced Driver Assistance Systems (ADAS):

- What is ADAS?**
 - Definition:** A set of **technologies and systems** designed to enhance **driver safety**, improve **convenience**, and minimize **accident risks**.
 - How It Works:**
 - Combines **sensors, cameras, and processors** to monitor surroundings and analyze **real-time data**.
 - Provides **alerts** or takes **automated actions** to avoid accidents or assist drivers.
- How Does ADAS Work?**
 - Sensors and Cameras:**
 - Uses **RADAR, LiDAR, SONAR, and 360-degree cameras** to monitor surroundings.
 - Data Processing:**
 - Onboard computers process real-time data to **assess risks** and make decisions.
 - Response Mechanism:**
 - Based on analysis, ADAS initiates actions like **automatic braking** or **steering corrections**, often faster than human reaction times.

Key Features of ADAS:

- Collision Intervention Systems:** Detect obstacles to **prevent collisions**.
- Automatic Emergency Braking (AEB):** Applies brakes if the driver fails to respond to warnings.
- Blindspot Alert and Avoidance:** Warns about vehicles in blind spots and adjusts movement.
- Lane Departure Alert and Lane Keep Assist:** Alerts the driver if the vehicle deviates and steers it back into its lane.
- Traffic Sign Recognition:** Identifies road signs and informs the driver.

6. **Driver Drowsiness Detection:** Monitors driver fatigue and provides **alerts**.
7. **Adaptive Cruise Control:** Maintains a safe distance from the vehicle ahead by adjusting speed.
8. **Parking Assist:** Automates or assists in parking using **cameras and sensors**.

Levels of ADAS (SAE Classification):

Level	Description
Level 0	No automation; the driver has full control over the vehicle.
Level 1	Driver assistance, such as cruise control and lane centering.
Level 2	Partial automation, with the system controlling steering and acceleration but requiring driver monitoring.

Note: Only Level 2 and below ADAS-equipped cars are available in India.

Advantages of ADAS:

1. **Enhanced Safety:**
 - Reduces collision risks through **forward collision alerts** and **automatic braking**.
2. **Driver Convenience:**
 - Minimizes fatigue with features like **adaptive cruise control** and **automated parking**.
3. **Fuel Efficiency:**
 - Optimizes **acceleration and braking**, improving mileage.
4. **Traffic Compliance:**
 - Alerts drivers about **road signs** and ensures adherence to traffic regulations.
5. **Driver Assistance:**
 - Aids in **navigation** and decision-making in complex traffic conditions.

Limitations of ADAS in India:

1. **Infrastructure Challenges:**
 - Poor **road markings** and uneven **infrastructure** reduce system accuracy.
2. **Unpredictable Hazards:**
 - Stray animals and **unregulated traffic patterns** complicate detection and response.
3. **Weather and Lighting Conditions:**
 - Performance may degrade under **low light** or adverse **weather conditions** like heavy rain or fog.
4. **System Accountability:**
 - Lack of clarity on **liability** during system failures or accidents involving ADAS-equipped vehicles.

Way Forward:

1. **Infrastructure Development:**
 - Improve **road markings, traffic management systems, and smart roads** to enhance ADAS functionality.
2. **Localized ADAS Solutions:**
 - Adapt ADAS features to address **India-specific challenges**, such as stray animals and chaotic traffic.
3. **Driver Awareness Programs:**
 - Educate drivers about the **proper use** of ADAS features to prevent over-reliance or misuse.
4. **Policy and Liability Frameworks:**
 - Develop **clear guidelines** on accountability for accidents involving ADAS-equipped vehicles.
5. **Advanced Research and Innovation:**
 - Encourage **R&D** in affordable and robust ADAS solutions suitable for developing countries.

Mission SCOT

UPSC Syllabus: General Studies Paper III (Science and Technology – Space Technology, Innovations)

Context:

The **Prime Minister of India** lauded **Digantara**, an Indian space startup, for the successful launch of **Mission SCOT** (*Space Camera for Object Tracking*), marking a significant leap in **Space Situational Awareness (SSA)**.

About Mission SCOT:

1. **What is Mission SCOT?**
 - One of the world's **first commercial satellites** dedicated to **Space Situational Awareness (SSA)**.
 - Aims to track and monitor **Resident Space Objects (RSOs)** to ensure safer and efficient space operations.
2. **Developed by:**

- **Digantara**, an Indian space startup, supported by:
 - **Aditya Birla Ventures.**
 - **Small Industries Development Bank of India (SIDBI).**

Aims of Mission SCOT:

1. **Richer Space Monitoring:**
 - Monitor smaller **RSOs**, filling critical gaps in **existing space surveillance systems.**
2. **Enhance National Security:**
 - Strengthen capabilities in **space situational awareness** to safeguard national assets in orbit.
3. **Safer Space Operations:**
 - Minimize collision risks through superior tracking of **space debris** and enabling better **space traffic management.**

Key Features of Mission SCOT:

1. **Launch Vehicle:**
 - Deployed aboard **SpaceX's Transporter-12 mission**, showcasing global collaboration in space technologies.
2. **Orbit Details:**
 - Operates in a **sun-synchronous orbit (SSO)**, ensuring continuous tracking of objects in **Low Earth Orbit (LEO).**
3. **Enhanced Monitoring Capabilities:**
 - Tracks objects as small as **5 cm** with high revisit rates and **unmatched accuracy.**
4. **Technological Edge:**
 - Overcomes limitations of traditional systems like **Field of View (FoV) restrictions, weather dependence, and geographic constraints.**
 - Provides **continuous and reliable surveillance.**
5. **Space Safety Support:**
 - Focuses on:
 - **Tracking space debris.**
 - **Enhancing space traffic management** for reducing collision risks.

Significance of Mission SCOT:

1. **Strengthening Space Situational Awareness (SSA):**
 - Contributes to global efforts in tracking and managing **space debris**, a growing challenge in space exploration.
2. **Boost to National Space Capabilities:**
 - Positions India as a leader in **commercial SSA technologies.**
3. **Support for Commercial Space Ventures:**
 - Encourages **startup-driven innovations**, aligning with India's vision for **self-reliance in space technology (Atmanirbhar Bharat).**
4. **Safer Space Ecosystem:**
 - Reduces risks of collisions, ensuring the sustainability of space as a resource for future generations.
5. **Global Collaboration Potential:**
 - Sets the stage for India to contribute to **international space traffic management frameworks.**

Challenges Ahead:

1. **Scalability:**
 - Ensuring Mission SCOT's capabilities scale up to cover increasing space activities and debris.
2. **Global Coordination:**
 - Requires seamless integration with **international SSA networks** for effective space traffic management.
3. **Sustainability:**
 - Sustaining funding and technological advancements to stay ahead in the **commercial SSA domain.**
4. **Policy Frameworks:**
 - Developing robust policies for **data sharing, space debris mitigation, and commercial space activities.**

Way Forward:

1. **Expand SSA Capabilities:**
 - Develop **next-generation satellites** to monitor a broader spectrum of RSOs, including geostationary and medium Earth orbits.
2. **Encourage Public-Private Partnerships (PPPs):**
 - Collaborate with global space agencies and private players to enhance **technological and financial resources.**
3. **Policy and Regulation Development:**
 - Strengthen India's **space regulatory framework** to foster innovation and safeguard national interests.
4. **Focus on Education and Research:**
 - Encourage **R&D** in SSA technologies by supporting academic institutions and startups.
5. **International Collaboration:**
 - Position India as a key player in global **space sustainability initiatives** and traffic management protocols.

Internet Governance Internship and Capacity Building Scheme

Syllabus: General Studies Paper III – Science and Technology (Awareness in IT and Emerging Technologies)

Context

The **National Internet Exchange of India (NIXI)** has launched the **Internet Governance Internship and Capacity Building Scheme** to enhance awareness and expertise in internet governance among Indian citizens.

About Internet Governance Internship and Capacity Building Scheme

1. **What it is:** A **bi-annual internship program** aimed at building expertise in **internet governance** through **practical exposure** and **mentorship**.
2. **Launched by:** **National Internet Exchange of India (NIXI)** under the **Ministry of Electronics and Information Technology (MeitY)**.
3. **Aim:**
 - To **nurture young professionals**, develop **digital policy expertise**, and create a pool of future **Internet Governance experts** in India.
4. **Key Features:**
 - **Tracks:** Offers **six-month** and **three-month internships**.
 - **Mentorship:** Interns will receive guidance from subject matter experts from organizations like **ICANN** and **IEEE**.
 - **Stipend:** ₹20,000 per month for selected interns.
 - **Capacity Building:** Includes **outreach programs** and opportunities to collaborate with **I-Star organizations** involved in global internet governance.
 - **Focus Areas:** Topics like digital sovereignty, data protection, cybersecurity, and internet standards.

About National Internet Exchange of India (NIXI)

1. **What it is:** A **not-for-profit organization** established under **Section 8** of the Companies Act 2013, functioning under the **Ministry of Electronics and IT (MeitY)**.
2. **Established in:** **June 19, 2003**.
3. **Aim:** To **increase internet penetration** and **strengthen India's digital ecosystem** by providing critical infrastructure and services.
4. **Functions:**
 - **Internet Exchange Points (IXPs):** Reduce latency and improve internet speed by routing domestic internet traffic within India.
 - **.IN Registry:** Promote and manage India's **.in domain**, ensuring a robust **digital identity** for Indian entities.
 - **Internet Registry (IRINN):** Facilitate the adoption of **IPv4 and IPv6** internet protocols.
 - **Data Centre Services:** Provide **secure data storage** solutions to support digital adoption in India.
5. **Key Initiatives:**
 - **IPv6 Expert Panel (IP Guru):** Helps organizations adopt IPv6, ensuring seamless connectivity.
 - **NIXI Academy:** Educates citizens on **internet technologies**, including IPv6 and cybersecurity.
 - **NIXI-IP-INDEX:** Monitors and promotes **IPv6 adoption** both nationally and globally.

Significance of the Scheme

1. **Empowering Young Professionals:**
 - Develops future-ready leaders in **digital governance** and **technology policy**.
2. **Boosting Digital Sovereignty:**
 - Strengthens India's **capacity in global internet governance** and policy frameworks.
3. **Encouraging Research:**
 - Fosters innovation in critical areas like **cybersecurity**, **data protection**, and **digital inclusivity**.
4. **Global Representation:**
 - Equips participants to contribute effectively to international platforms like **ICANN**, **ITU**, and **Internet Governance Forum (IGF)**.
5. **Promoting Internet Penetration:**
 - Supports the vision of a **digitally connected India**, ensuring equitable access to internet services.

Challenges in Internet Governance

1. **Lack of Skilled Professionals:**
 - Insufficient expertise in **policy formulation** and **technical aspects** of internet governance.
2. **Global Inequities:**
 - Limited representation of developing nations in **global decision-making bodies**.
3. **Cybersecurity Threats:**
 - Rising concerns over **data breaches**, **cyberattacks**, and **digital vulnerabilities**.
4. **Technological Gaps:**
 - Slow adoption of emerging technologies like IPv6 and blockchain in some regions.

Way Forward

1. **Strengthen Training Programs:**
 - Expand internship slots and focus on **hands-on learning** through collaborative projects.
2. **Enhance Public Awareness:**
 - Launch awareness campaigns to encourage participation in internet governance discourse.
3. **Global Collaboration:**
 - Partner with global internet organizations to bring best practices to India.
4. **Promote Research and Development:**
 - Encourage research in **AI, cybersecurity, and IoT standards** to advance India's position in global forums.



IQRA
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