INSIGHTSIAS

SIMPLIFYING IAS EXAM PREPARATION

KONARK SUN TEMPLE

RECENTLY, SINGAPORE PRESIDENT THARMAN SHANMUGARATNAM VISITED THE SUN TEMPLE, HIGHLIGHTING ITS GLOBAL PROMINENCE AND ODISHA'S RICH CRAFTSMANSHIP.

INSIGHTS CURRENT AFFAIRS

JAN 2025

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SPORTS CORNER

MAPPING

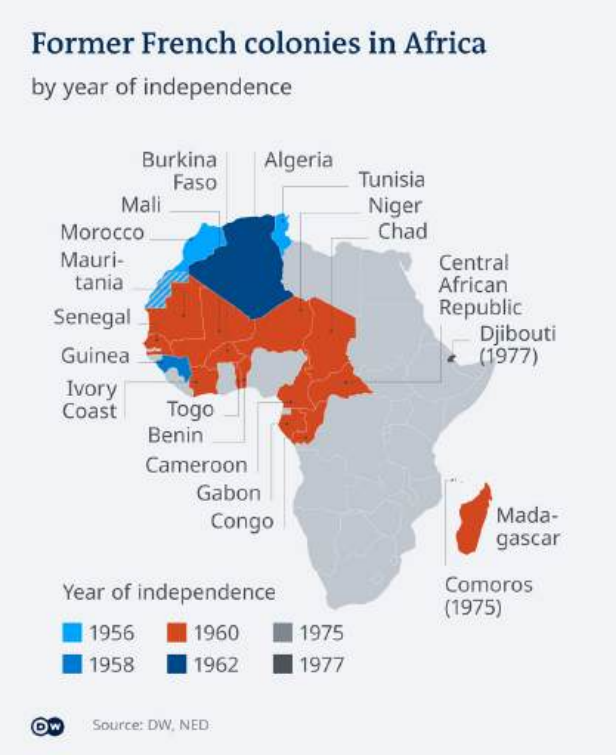
GENERAL STUDIES – 1

Topics: History of the world will include events from 18th century such as industrial revolution, world wars, redrawing of national boundaries, colonization, decolonization, political philosophies like communism, capitalism, socialism etc.- their forms and effect on the society.

1. FRANCE COLONIZATION AFRICA

Context:

West African countries are moving away from traditional colonial ties with France, seeking partnerships with global powers for security and economic cooperation.



How France Colonized Africa?

1. **Early Ventures (1830)**: France began its colonization with the capture of **Algiers** in 1830, marking the expansion of French influence in North Africa.
2. **Expansion in West Africa**: Territories such as **Gambia, Ivory Coast, and Senegal** were brought under French control.
3. **Berlin Conference (1884-85)**: France formalized its territorial claims, acquiring vast regions in **North, West, and Central Africa**.
4. **Direct Rule**: France imposed a centralized administrative system modelled on European governance, weakening traditional power structures in African colonies.
5. **Economic Exploitation**: Extensive use of forced labour and resource extraction, especially in **gold, cocoa, groundnuts, and timber**, ensured that colonies served as economic hubs for France.

Consequences of French Colonization:

1. **Economic:**
   - **Resource Extraction:** African resources were exported to France, leaving minimal local development.
   - **Monoculture Economies:** Colonies were forced to rely on single crops like groundnuts (Senegal) and cocoa (Ghana).
   - **Taxation:** Harsh fiscal policies drained local economies, exacerbating poverty.
2. **Social and Cultural**
   - **Racial Discrimination:** Africans were treated as second-class citizens under French rule.
   - **Erosion of Traditional Systems:** Indigenous governance structures were replaced by European models, disrupting local societies.
   - **Cultural Looting:** Thousands of African artifacts were smuggled to France, leaving African nations bereft of their heritage.
3. **Political**
   - **Artificial Borders:** Arbitrary boundaries drawn by colonial powers created ethnic divisions, fuelling post-independence conflicts.
   - **Exploitation of Labor:** Forced labour systems led to mass displacements and population decline in many regions.

Decolonization of Africa:

- **Post-WWII Pressures:** Global anti-colonial movements and African resistance catalysed decolonization.
- **Independence Movements:** Countries like **Senegal, Algeria, and Guinea** gained independence through negotiation or conflict.
- **Continued Influence:** Despite granting independence, France maintained strong economic and political ties through the **Françafrique system**, ensuring African nations remained reliant on France.

Present Role of France in Africa:

1. **Military:**
   - **Troop Presence**: French troops were stationed in **Chad, Senegal, and Ivory Coast**, aiming to combat insurgencies.
   - **Recent Withdrawals**: Anti-French sentiments and failures in addressing regional terrorism led to troop withdrawals from several nations.
2. **Economic:**
   - **Economic Dependence**: Many African countries still trade heavily with France. However, competition from **China's Belt and Road Initiative** and **Russia's military alliances** is reducing French dominance.
3. **Declining Influence:**
   - **Shift in Alliances:** African nations are partnering with global powers like **Russia and China**, moving away from colonial ties.
   - **Françafrique in Crisis:** The model of dependency is being rejected as nations demand sovereignty and equitable partnerships.

Conclusion:

France's colonial history left deep scars on Africa, shaping its political and economic systems. While the decolonization movement ended formal colonialism, France's waning influence highlights Africa's push for sovereignty and diversification of partnerships. The shift reflects a changing global order, with new players stepping into Africa's geopolitical landscape.

PYQ:

1. Explain how the foundations of the modern world were laid by the American and French revolutions. (UPSC-2019)

Topics: Urbanization, their problems and their remedies.

2. SMART CITIES, SMARTER CITIZENS? THE URBAN BEHAVIOURAL REVOLUTION

Context:

India's urban population is projected to reach 40% by 2030, posing challenges like infrastructure strain and climate impact. Beyond policy and technology, fostering behavioral change is crucial to tackle these issues effectively.

Need for Behavioural Change Officers

- **Enhancing Urban Service Delivery:** Cities like **Indore's transformation in waste management** highlight the role of behavioural nudges.
  E.g. Awareness campaigns, viral initiatives like 'Kachra Gadi'

1. **Driving Sustainability:** Encouraging citizens to adopt **public transport** or conserve energy can significantly reduce emissions and operational costs.
   E.g. Delhi's odd-even scheme reduced traffic congestion by 30%.

- **Improving Public Safety:** Community-driven policing practices like empathy-driven engagements build trust and safer neighbourhoods.
  E.g. Kerala's 'Janamaithri Suraksha' project improved police-citizen relations.
- **Institutional Efficiency:** Embedding behavioural insights within urban governance ensures operational efficiency in service delivery.
  E.g. NITI Aayog's Behavioural Insights Unit successfully incorporated data-driven nudges in welfare schemes.

To induct behavioural changes in officers:

- **Training Programs:** Organize behavioural science workshops for municipal officers to familiarize them with frameworks like **MINDSPACE**.
- **Dedicated Roles:** Establish **Chief Behavioural Officers (CBOs)** within urban local bodies to integrate insights into policies and programs.
- **Data-Driven Approach:** Leverage citizen surveys and big data to identify key behavioral bottlenecks.
- **Public Engagement:** Launch campaigns to promote **co-creation of solutions**, empowering citizens to be active participants.
- **Policy Experimentation:** Pilot behavioural nudges at small scales before city-wide implementation.
  E.g. Bihar's nudge-based schemes for maternal health enhanced institutional deliveries.

Challenges to behavioural change:

- **Resistance to Change:** Cultural and social inertia among citizens and officials.
  E.g. Hesitation in adopting waste segregation due to lack of awareness.
- **Insufficient Training:** Lack of expertise in behavioural science among public servants.
- **Resource Constraints:** Limited budgets and infrastructure for behavioural interventions.
- **Fragmented Coordination:** Difficulty in aligning multiple urban stakeholders (e.g., public transport agencies, sanitation departments).

Way ahead:

- **Institutionalize behavioural roles:** Make behavioural insights a core part of urban governance through dedicated teams.
- **Collaborate with Experts:** Partner with behavioural scientists and organizations to design effective interventions.
- **Use technology:** Deploy digital platforms to track progress and ensure targeted citizen engagement.
  E.g. Mobile apps for real-time feedback on waste collection.
- **Scale Proven Models:** Expand successful pilots like Indore's waste management model to other cities.

Conclusion:

In the words of Mahatma Gandhi, "Be the change that you wish to see in the world." Institutionalizing behavioural insights within urban governance can revolutionize city management, enhance sustainability, and empower citizens to drive change collaboratively.

Topics: Salient features of world's physical geography.

3. RIVERS REIMAGINED: THE INTERLINKING STORY

Context:

Prime Minister in December laid the foundation stone for the Ken-Betwa River Link Project, which aims to solve the water scarcity in the Bundelkhand region.

Origin of Interlinking Rivers:

- **Sir Arthur Cotton** (19th Century) proposed inter-basin water transfer to address irrigation issues.
- **M. Visvesvaraya** (19th Century) advocated linking rivers to solve water scarcity and flooding.
- **K.L. Rao** (1970s) suggested a National Water Grid for surplus water transfer to drought-prone regions.
- **Dinshaw J. Dastur** (1980) expanded the idea with plans for Himalayan and Peninsular links.
- **National Perspective Plan** (1980) formalized the National Water Development Agency (NWDA) in 1982.

Components of the Interlinking of Rivers Project:

- **Himalayan Rivers Component:** 14 proposed links, including Ganga-Brahmaputra basin rivers. Focus: Flood control, hydropower generation, and water transfer to central India.
- **Peninsular Rivers Component:** 16 proposed links, including Krishna, Godavari, and Cauvery rivers. Aim: Irrigation, drought mitigation, and inter-basin water sharing.

What is the Interlinking of Rivers Project?

The ILR Project involves transferring water from surplus river basins to deficient regions via a network of canals, dams, and reservoirs.

- Managed by the **National Water Development Agency (NWDA)** under the **Ministry of Jal Shakti**, it aims to enhance water availability, agricultural productivity, and disaster mitigation.

Features:

- **Divided Himalayan and Peninsular links** for water redistribution.
- Addresses state-specific water demands through **intra-state links**.
- **Infrastructure development** includes canals, reservoirs, and hydropower facilities.
- **Integrated approach** combines irrigation, hydroelectric power, and water supply.

- **Massive scale** project covering 30 river links.

Benefits of Interlinking Rivers:

- **Flood and Drought Mitigation:** Redistributes excess water from flood-prone regions like Bihar to drought-prone areas like Bundelkhand.
- **Boosts agriculture** by increasing irrigated land.
- Facilitates **renewable energy generation** from dams and reservoirs.
- **Enhances economic growth** by improving water availability for industries.
- Promotes **waterway expansion**, reducing transportation costs and environmental impact.

Challenges of Interlinking Rivers: Environmental Concerns

- **Loss of biodiversity** and threats to protected areas, Ex - Panna Tiger Reserve.
- **High costs** for construction, maintenance, and rehabilitation.
- **Social displacement** affecting livelihoods and social structures.
- **Escalation of inter-state disputes** over water-sharing agreements.
- **Ecosystem disruption** impacting aquatic life and downstream delta health.

Way Ahead:

- **Comprehensive Impact Assessment:** Multidisciplinary studies for environmental, social, and economic impacts.
- **Stakeholder Engagement:** Collaboration for equitable decision-making.
- **Modern Water Management:** Innovative solutions like drip irrigation, watershed management, desalination.
- **Climate Change Adaptation:** Integrating climate-resilient policies.
- **Regional Projects:** Implementing state-specific water-sharing initiatives.

Conclusion:

While the **Interlinking of Rivers Project** holds promise for addressing water scarcity and boosting agricultural productivity, it demands a balanced approach to mitigate environmental and social impacts. A sustainable and inclusive strategy is essential to achieve long-term benefits without compromising ecological integrity or societal harmony.

PYQ:

1. The interlinking of rivers can provide viable solutions to the multi-dimensional inter-related problems of droughts, floods, and interrupted navigation. Critically examine. (UPSC-2020)

GENERAL STUDIES – 2

Topics: Parliament and State Legislatures – structure, functioning, conduct of business, powers & privileges and issues arising out of these.

1. WAQF (AMENDMENT) BILL, 2024

Context:

The Joint Committee on the Waqf (Amendment) Bill, 2024 adopted its report by a majority vote, clearing the way for the government to move the Bill during the upcoming Budget Session of Parliament.

What is a Waqf Board?

- **Established in:** The concept of Waqf Boards was formalized under the **Waqf Act, 1954**, and further strengthened by the Waqf Act, 1995. **(It is statutory body)**
- **Governed by:** The Ministry of Minority Affairs, Government of India, oversees the functioning of Waqf Boards.
- **Functions and Powers:**
  - **Administration:** Manages and supervises Waqf properties.
  - **Recovery:** Recovers lost or encroached Waqf properties.
  - **Transfer:** Sanctions the transfer of immovable Waqf properties through sale, gift, mortgage, exchange, or lease.
  - **Appointment:** Appoints custodians to ensure Waqf revenues are used for designated purposes.
  - **Legal Authority:** Can sue and be sued in court.

- **Board and Members:**
  - **Chairperson:** Appointed by the state government.
  - **Members:** Include Muslim legislators, parliamentarians, members of the state Bar Council, Islamic scholars, and **mutawalis (managers)** of Waqfs with an annual income of ₹1 lakh and above.
  - **Central Waqf Council (CWC):** Established in 1964 to oversee and advise state-level Waqf Boards.

Proposed Amendments in the 2024 Bill:

1. **Inclusion of Non-Muslim Members:**
   - Mandates at least two non-Muslim members in the **Central Waqf Council** and **State Waqf Boards**.
   - Allows non-Muslim members to form a majority in these bodies.
2. **Removal of Waqf by User:** Eliminates the concept of **Waqf by User**, which recognized properties used for religious or charitable purposes over time as Waqf.
3. **District Collector's Role:** Grants District Collectors the authority to determine ownership of disputed properties and update revenue records.
4. **Composition of Tribunals:** Removes the requirement for an expert in Muslim law from Waqf Tribunals.
5. **Appeals Process:** Allows direct appeals to High Courts against Tribunal decisions, removing the finality of Tribunal rulings.

Need for Amendment in 2024:

- **Transparency and Efficiency:** Aims to improve transparency and efficiency in the management of Waqf properties.
- **Inclusivity:** Seeks to promote inclusivity by involving non-Muslim members in Waqf governance.
- **Dispute Resolution:** Enhances dispute resolution mechanisms by granting District Collectors authority over property disputes.
- **Legal Clarity:** Provides clarity on the creation and management of Waqf properties.
- **Modernization:** Aligns Waqf governance with contemporary legal and administrative practices.

Issues Surrounding the New Bill:

- **Dilution of Muslim Control:** Opposition argues that including non-Muslim members dilutes Muslim control over Waqf properties.
- **Violation of Article 26:** Critics claim the Bill violates Article 26 of the Constitution, which guarantees religious communities the right to manage their own affairs.
- **Removal of Waqf by User:** Eliminating **Waqf by User** could lead to disputes over the status of existing Waqf properties.
- **Expertise in Muslim Law:** Removing the requirement for an expert in Muslim law from Tribunals may affect the adjudication of Waqf-related disputes.
- **Potential for Misuse:** Granting District Collectors authority over property disputes could lead to misuse and bias.

Way Ahead:

- **Stakeholder Consultation:** Engage with Muslim community leaders and stakeholders to address concerns.
- **Legal Safeguards:** Introduce safeguards to prevent misuse of District Collectors' powers.
- **Capacity Building:** Provide training to District Collectors and Tribunal members on Waqf laws.
- **Transparency Measures:** Implement measures to ensure transparency in the management of Waqf properties.
- **Review and Monitoring:** Establish a mechanism for regular review and monitoring of Waqf governance.

Conclusion:

The **Waqf (Amendment) Bill, 2024** aims to modernize Waqf governance but faces significant opposition over concerns of dilution of Muslim control and potential misuse of powers. A balanced approach, incorporating stakeholder feedback and legal safeguards, is essential to ensure the effective and fair management of Waqf properties.

PYQ:

1. How is the Indian concept of secularism different from the western model of secularism? Discuss. (UPSC-2018)

Topics: Welfare schemes for vulnerable sections of the population by the Centre and States and the performance of these schemes.

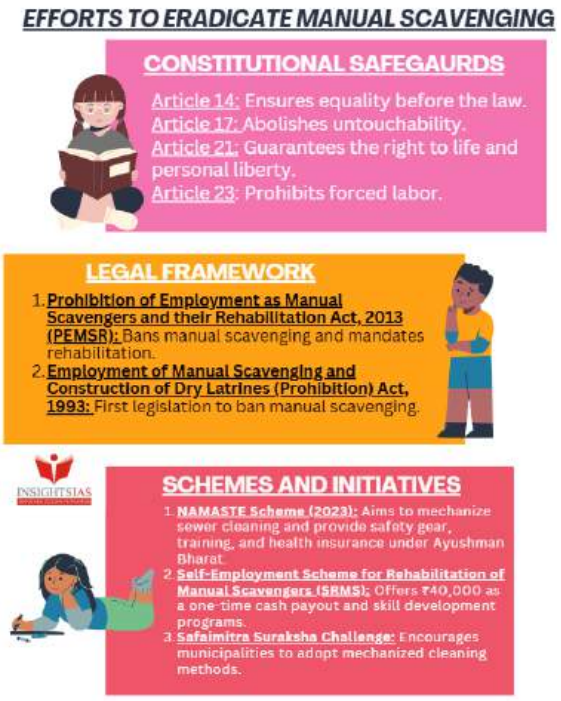
2. MANUAL SCAVENGING

Context:

The Supreme Court has ordered a complete stop to the practice of manual scavenging and hazardous cleaning of sewers and septic tanks in **six major metropolitan cities:** Delhi, Mumbai, Chennai, Kolkata, Bengaluru, and Hyderabad.

About manual scavenging and its recent data in India:

Definition: Manual scavenging refers to the **manual removal of human excreta** from dry latrines, sewers, and septic tanks. It is a **dehumanizing practice** often linked to caste-based discrimination, as it is predominantly carried out by **Dalits** and other marginalized communities.



Manual Scavenging Statistics

- Ministry of Social Justice reports 443 deaths from manual scavenging between 2018-2023.
- RTI response shows 94 deaths in Delhi in 15 years, with one conviction.
- 97% of manual scavengers belong to Scheduled Castes, with 42,594 SCs, 421 STs, and 431 OBCs involved.

Safai Karamchari Andolan v. Union of India (2014):

- Supreme Court mandated ₹10 lakh compensation for sewer workers' families.
- Court emphasized violation of Article 21 and 17 of Constitution.
- **Health Hazards for Manual Scavengers**
- Exposure to life-threatening diseases like cholera, typhoid, hepatitis.
- Direct contact with human waste and toxic gases.

Manual Scavenging Persists in India:

- Lack of Enforcement: Contractors and municipalities often bypass regulations, employing manual scavengers at low wages.
- Caste Hierarchy: Dalits forced into the occupation due to social stigma and lack of alternatives.
- Inefficient Sewage Systems: Inefficient sewage systems in Indian cities make manual cleaning unavoidable.
- Economic Dependence: Limited access to alternative livelihoods traps unskilled and illiterate manual scavengers in poverty.
- Lack of Awareness: Many scavengers are unaware of their legal rights and government schemes.

Manual Scavenging Challenges:

- Health Risks: Exposure to toxic gases and human waste leads to chronic illnesses and premature deaths.
- Social Discrimination: Limited access to education and employment opportunities.
- Legal Loopholes: Weak enforcement and lack of accountability.
- Technological Gaps: Limited availability and high costs hinder safer methods.
- Data Inaccuracy: Underreporting leads to incomplete data and ineffective policy implementation.

Way Ahead for PEMSR Act Implementation:

- Strengthen enforcement: Hold contractors and municipalities accountable for violations.
- Promote mechanization: Invest in sewer-cleaning robots and modern equipment.
- Provide vocational training and alternative livelihood options: Implement schemes like MNREGA.
- Conduct awareness campaigns: Educate manual scavengers about rights and government schemes.
- Engage community: Combat caste-based discrimination and promote social inclusion.

Conclusion

Manual scavenging in India perpetuates caste-based oppression and human rights violations. Effective implementation and community involvement are crucial, as highlighted by the Supreme Court's intervention.

PYQ:

1. What are the impediments in disposing of the huge quantities of discarded solid waste which are continuously being generated? How do we safely remove the toxic wastes that have been accumulating in our habitable environment? (UPSC-2018)

Topics: Issues relating to development and management of Social Sector/Services relating to Health, Education, Human Resources.

3. UDISE+ 2023-24: A DEEP DIVE INTO INDIA'S SCHOOLING SYSTEM

Context:

The Unified District Information System for Education Plus (UDISE+), a data aggregation platform under the Ministry of Education, has released its 2023-24 report.

About UDISE+:

- It is a comprehensive database for school education in India, launched to collect, analyse, and track data at the national level.
- Ministry of Education, Government of India.
- **Aim:** To ensure transparency, monitor progress, and identify gaps in education through accurate, student-wise data collection.

Key data insights:

- **Enrolment Drop (Overall):**

Category	2022-23 (in Cr)	2023-24 (in Cr)
Total Enrolment	25.17	24.8
Girl Students	12.09	11.93
Boy Students	13.08	12.87

- **Enrolment Drop by Category:**

Category	2022-23 (in Cr)	2023-24 (in Cr)
Scheduled Castes	4.59	4.47
Scheduled Tribes	2.48	2.46
OBCs	11.45	11.2
Muslim Students	3.93	3.92
Minorities	5.01	4.98

Issues in Indian Education:

- **High dropout rates** hinder consistent student progression.
- Significant **enrolment declines among marginalized communities**.
- **Uneven utilization of school infrastructure**.
- **Gaps in teacher training** and availability reduce learning outcomes.
- **Gross Enrolment Ratios for marginalized groups decline**.

Way Ahead:

- **Strengthen NEP 2020 initiatives** for universal Gross Enrolment Ratio by 2030.
- **Ensure equitable education access** for SC, ST, OBC, and minority students.
- Enhance teacher quality and **bridge student-teacher ratio gaps**.
- **Optimize school resources** to align with enrolment trends.
- **Utilize student-wise data** tracking for efficient resource allocation.

Conclusion:

The UDISE+ 2023-24 report highlights critical gaps in India's education system, including declining enrolment and inequities in access. By focusing on inclusive policies, quality education, and infrastructure optimization, India can work towards a more robust and equitable education system.

PYQ:

1. How have digital initiatives in India contributed to the functioning of the education system in the country? Elaborate on your answer. (UPSC-2020)
2. Discuss the main objectives of Population Education and point out the measures to achieve them in India in detail. (UPSC-2021)

4. PREVENTIVE HEALTHCARE: SMALL STEPS, BIG IMPACT

Context:

India's rising life expectancy and growing Non communicable disease (NCD) burden demand focus on preventive healthcare for early detection and cost reduction.

What is Preventive Healthcare:

Preventive healthcare focuses on identifying and mitigating potential health risks before they develop into severe conditions.

Types of Preventive Healthcare:

1. **Primary Prevention:** Prevents diseases through immunization, lifestyle changes, and health education.
2. **Secondary Prevention:** Focuses on early detection via screenings and diagnostic tests.
3. **Tertiary Prevention:** Aims to manage and reduce complications of existing conditions.

Need for Preventive Healthcare in India:

- **Rising Disease Burden:** NCDs account for 65% of deaths, often affecting individuals earlier than global averages.
- **Economic Impact:** WHO estimates the economic burden of NCDs in India will exceed ₹280 lakh crore by 2030.
- **Healthcare Access:** Early detection can reduce the financial burden on individuals and the healthcare system.
- **Productivity Loss:** Chronic diseases lead to significant loss of productivity in the workforce.

Government Schemes for Preventive Healthcare:

- **Ayushman Bharat:** Includes Health and Wellness Centres (HWCs) for early screenings of NCDs.
- **National Programme for Prevention and Control of Cancer, Diabetes, Cardiovascular Diseases and Stroke (NPCDCS):** Focuses on awareness, screenings, and management of NCDs.
- **National Tobacco Control Programme (NTCP):** Aims to reduce tobacco use and associated diseases.
- **Pradhan Mantri Jan Arogya Yojana (PM-JAY):** Provides financial assistance for secondary and tertiary care.
- **Mission Indradhanush:** Ensures immunization coverage for preventable diseases.
- **Rashtriya Bal Swasthya Karyakram (RBSK):** Targets health conditions in children through early intervention services.

Challenges in Preventive Healthcare:

- **High Costs:** Preventive screenings and diagnostics are expensive for lower-income groups.
- **Limited Awareness:** Low awareness about the benefits of preventive healthcare, especially in rural areas.
- **Insufficient Coverage:** Current schemes do not fully cover preventive diagnostics or screenings.
- **Infrastructure Gaps:** Inadequate healthcare facilities in remote and underserved regions.
- **Behavioral Barriers:** Resistance to regular health checkups due to cultural and lifestyle factors.

Way Ahead:

- **Expand Public Screenings:** Scale up screenings at Ayushman Bharat HWCs using AI-enabled imaging and cost-efficient tools.
- **Incentivize Private Sector Participation:** Encourage private providers to offer subsidized preventive health packages, especially for high-risk age groups.
- **Enhance Tax Incentives:** Increase tax deduction limits for preventive health checkups under Section 80D to ₹15,000.
- **Targeted Funding:** Utilize healthcare cess or GST proceeds from harmful products like tobacco and sugar to finance preventive initiatives.
- **Raise Awareness:** Conduct national campaigns on the importance of preventive healthcare and early screenings.

Conclusion:

Investing in preventive healthcare can significantly reduce the disease burden, lower healthcare costs, and boost productivity. By prioritizing early intervention and fostering public-private collaboration, India can pave the way for a healthier and economically stronger future.

PYQ:

1. "Besides being a moral imperative of a Welfare State, primary health structure is a necessary precondition for sustainable development." Analyse. (UPSC-2021)

5. ASER REPORT, 2024

Context:

The Annual Status of Education Report (ASER) 2024 highlights a significant recovery in foundational literacy and numeracy (FLN) after COVID-19-induced learning losses.

What is ASER Report 2024?

- Conducted by **Pratham NGO**, assessing **reading and arithmetic skills** of students aged **3 to 16 years**.
- Uses **2011 Census** data, selecting **30 villages per district** and **20 households per village** for assessment.
- It covers **rural schools** specifically.
- **Focus on Foundational Literacy and Numeracy (FLN)** and tracks learning outcomes in **government and private schools**.
- **Three groups - Assessment Categories:**
  - Pre-primary (3-5 years)
  - Elementary (6-14 years)
  - Older children (15-16 years).
- **First-Time Digital Literacy Evaluation:** Assesses smartphone access, usage, and safety awareness among **14-16-year-olds**.

Key Data Insights from ASER 2024:

1. **Reading Skills Recovery:** Class 3 students in government schools reading a Class 2 text improved from 16.3% (2022) to 23.4% (2024).
2. **Arithmetic Skills Growth:** Class 3 students able to do subtraction increased from 28.1% (2018) to 33.7% (2024).
3. **State-Wise Progress:** Gujarat, UP, Uttarakhand, Tamil Nadu, Sikkim, Mizoram showed 10%+ improvement in reading skills.
4. **Smartphone Access Among Teens:** 89% of 14-16-year-olds have access, 57% use it for education, and 76% for social media.
5. **Government vs Private Schools:** Government schools showed a larger learning gain, closing the gap with private schools.

Positives from ASER 2024:

- **Improvement in FLN Skills:** Better literacy and numeracy post-COVID due to focused interventions (e.g., NIPUN Bharat Mission).
- **Government School Enrolment Stabilization:** 66.8% of children enrolled in government schools, close to pre-pandemic levels.
- **Stronger Teacher Training:** 78% of schools reported receiving FLN training and resources, aiding learning recovery.
- **Better Digital Literacy:** 87% of students can find videos online, and 92.1% can share them, improving self-learning capacity.
- **State-Specific Gains:** UP saw a 15% rise in Class 3 reading levels, while Bihar and Odisha improved by 8-10%.

Negatives from ASER 2024:

- **High Learning Gaps Persist:** 76.6% of Class 3 students still cannot read Class 2 text, highlighting slow foundational recovery.
- **Arithmetic Weakness:** 66.3% of Class 3 students and 70% of Class 5 students cannot perform simple arithmetic calculations.
- **Gender Gap in Digital Safety:** Only 55.2% of girls knew how to make their online profile private, lower than boys.
- **Variability Across States:** Himachal Pradesh and Bihar saw only 4-5% gains, compared to 10%+ in Gujarat and UP.
- **Post-Pandemic Drop in Government Enrolment:** Enrolment in government schools fell from 72.9% (2022) to 66.8% (2024).

Way Ahead:

- **Strengthen Foundational Literacy Programs:** Expand NEP 2020 and NIPUN Bharat to bridge learning gaps by 2026-27.
- **Improve Teacher Training and Resources:** Increase focus on pedagogy-based training to boost student engagement.
- **Enhance Digital Literacy and Safety:** Introduce school-level training on cybersecurity awareness, especially for girls.
- **Focus on State-Specific Interventions:** Low-performing states like J&K and Nagaland need customized learning recovery plans.
- **Expand Post-Primary Learning Support:** Middle school and high school reforms required to sustain early learning gains.

Conclusion:

ASER 2024 highlights substantial recovery in reading and arithmetic post-COVID, but major learning gaps remain. Focused government interventions, improved teacher training, and state-specific policies are essential for sustained educational progress.

PYQ:

1. How have digital initiatives in India contributed to the functioning of the education system in the country? Elaborate on your answer. (UPSC-2020)

Topics: Important aspects of governance, transparency and accountability, e-governance applications, models, successes, limitations, and potential; citizens charters, transparency & accountability and institutional and other measures.

6. CASH IN HER HANDS: SOLUTION OR SHORTCUT?

Context:

Cash transfers, such as the Mahila Samman Yojana in Delhi, have sparked debates about their efficacy. Critics view them as populist measures that strain state finances, while proponents argue they empower marginalized communities, especially women.

Cash Transfers:

Cash transfers are direct payments made by governments to individuals or households to provide social protection or incentivize specific actions.

Types of Cash Transfers:

- **Unconditional Transfers:** No strings attached; recipients can use the money as needed (e.g., PM-KISAN).
- **Conditional Transfers:** Linked to specific actions like school attendance or vaccinations (e.g., Maternity Benefit Program).
- **Universal Transfers:** Provided to all citizens regardless of income or status.
- **Targeted Transfers:** Focused on specific vulnerable groups like elderly pensions under NSAP.

Arguments against cash transfers:

- Fiscal Burden: Cash transfers consume funds that could be allocated to critical sectors like health, education, and infrastructure.
- **Populist Measure:** They are often announced for electoral gains, failing to address deep-rooted systemic challenges.
- **Risk of Dependency:** Recipients may become reliant on the transfers, reducing their motivation to seek employment.
- **Limited Impact:** Studies indicate inconclusive outcomes, especially in areas like women empowerment and farm income.
- **Competitive Populism:** Political parties race to introduce larger schemes, causing significant strain on state finances.

Arguments favouring cash transfers:

- **Empowering Women:** Direct payments enhance autonomy and help women access education and jobs.
- **Direct Benefit Delivery:** They bypass bureaucratic inefficiencies and middlemen, ensuring benefits reach recipients.
- **Poverty Alleviation:** Provide immediate financial relief to the poor, improving their quality of life.

- **Economic Stimulus:** Increased purchasing power of beneficiaries boosts demand and supports local economies.
- **Social Equity:** Targets marginalized groups, helping bridge socio-economic disparities in society.

Alternatives to cash transfers:

- **Strengthening Public Services:** Enhance the quality and accessibility of health, education, and nutrition infrastructure.
- **Universal Basic Services (UBS):** Provide essential services at low or no cost instead of direct cash payments.
- **Job Creation Programs:** Develop employment opportunities through initiatives like MGNREGA and skill-based schemes.
- Skill Development: Equip individuals with vocational skills to increase employability and self-reliance.
- **Community-Based Programs:** Tailor interventions to address localized needs and empower communities sustainably.

Way ahead:

- **Balanced Approach:** Combine cash transfers with long-term investments in public services for maximum impact.
- **Evidence-Based Policies:** Implement schemes based on data-driven assessments and measurable outcomes.
- **Targeted Implementation:** Prioritize the most vulnerable populations for targeted and effective interventions.
- **Monitor and Evaluate:** Regularly track program performance to identify gaps and improve efficiency.
- **Fiscal Prudence:** Ensure schemes do not compromise developmental goals or fiscal sustainability.

Conclusion:

Cash transfers are not a panacea but can complement social safety nets when designed and implemented responsibly. A balanced approach integrating cash transfers with robust public investment can ensure both immediate relief and long-term progress.

PYQ:

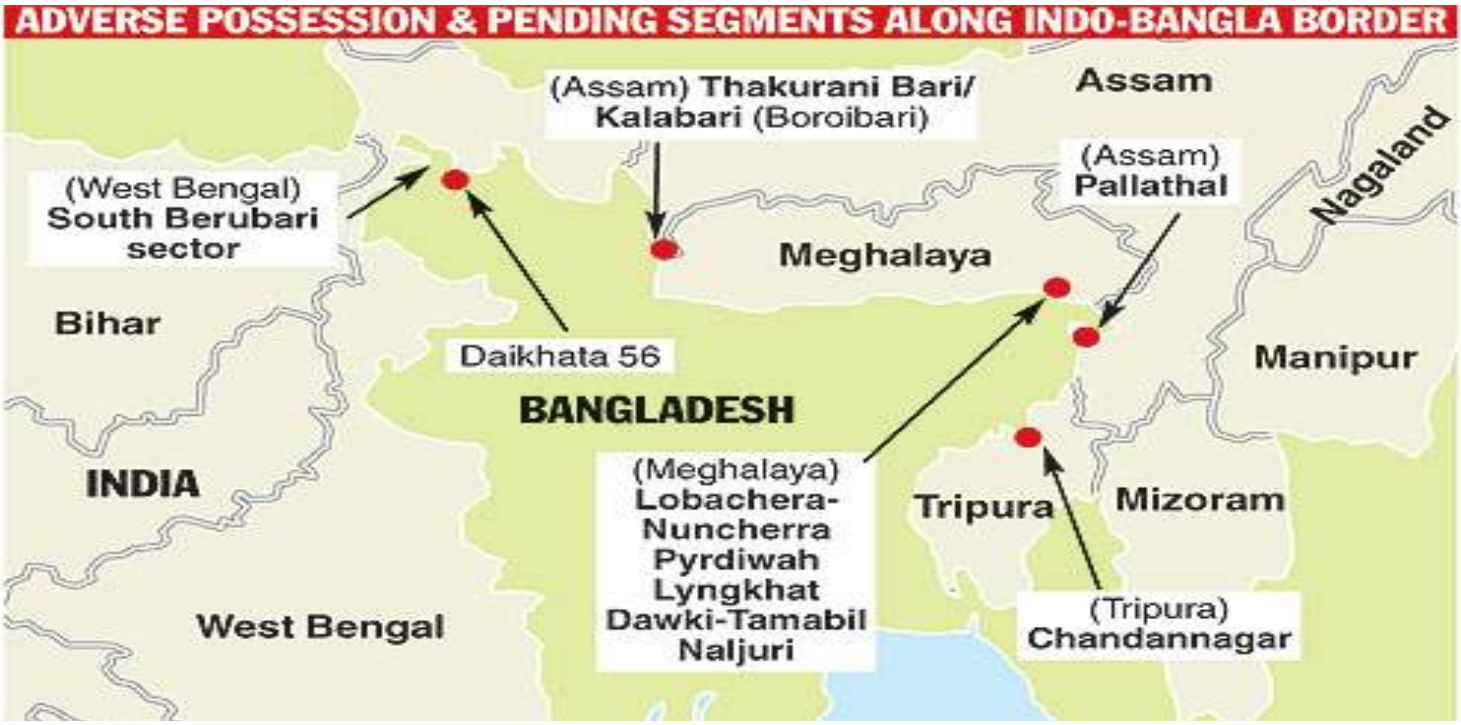
1. Reforming the government delivery system through the Direct Benefit Transfer Scheme is a progressive step, but it has its limitations too. Comment. (UPSC-2022)

Topics: India and its neighbourhood- relations.

7. REDRAWING RELATIONS: INDIA-BANGLADESH BORDER

Context:

Recently, Border Guards Bangladesh (BGB) had attempted to obstruct the construction of a barbed wire fence on the international border in West Bengal's Malda.



India-Bangladesh Border Region:

- **Covers five Indian states for 4096 kms**: West Bengal, Assam, Tripura, Meghalaya, and Mizoram.
- **Border Typology:** Mix of plains, rivers, and forests, 180 km of riverine boundary.
- Resolved most enclave issues with **2015 Land Boundary Agreement.**
- Facilitates trade, cultural exchanges, and strategic connectivity under **regional cooperation frameworks like SAARC & BIMSTEC.**
- **Shared ecosystem** with shared rivers and unique biodiversity requiring cooperative management.

Issues Surrounding the India-Bangladesh Border:

- Bangladesh views India's fencing as **violation of 1975 border guidelines**.
- **Porous border facilitates** illegal migration, escalating socio-political tensions.
- **Trans-border crimes** include cattle, drugs, and arms smuggling.
- **Unresolved land and riverine disputes** complicate fencing efforts.
- **Disruption of local livelihoods** and resource access due to fencing and border disputes.

Existing Security Measures to Guard India-Bangladesh Borders:

- Fenced approximately 3,141 km of border to curb illegal activities.
- Implemented **smart surveillance** using CCTV, sensors, and drones in sensitive areas.
- **BSF's water wing** patrols riverine border regions.
- **Joint operations and flag meetings** between BSF and BGB promote coordination.
- Utilized advanced radar systems, thermal imaging, and **electronic surveillance** for enhanced security.

Way Ahead:

- Regular **consultations and confidence-building** for dispute resolution.
- Efficient completion of border fencing by **addressing land acquisition and terrain issues**.
- Implementation of **technology-driven border management solutions**.
- **Community engagement** for balancing security and livelihoods.
- **Collaborative agreements** on water sharing and riverine border demarcation.

Conclusion:

The India-Bangladesh border symbolizes both shared history and modern challenges. Strengthening bilateral cooperation, resolving disputes amicably, and leveraging technology for border management can transform this boundary into a bridge of mutual prosperity and security.

PYQ:

1. Analyse internal security threats and transborder crimes along Myanmar, Bangladesh and Pakistan borders including Line of Control (LoC). Also discuss the role played by various security forces in this regard. (UPSC-2018)

Topics: Bilateral, regional and global groupings and agreements involving India and/or affecting India's interests.

8. INDIA – INDONESIA

Context:

Indonesian President Prabowo Subianto visits India for the 76th Republic Day celebrations on January 26, 2025, his official visit aims to deepen cooperation in economic, defense, cultural, and strategic domains.

Historical Background:

- **Early Civilizational Ties:** India and Indonesia share millennia-old cultural and trade links, reflected in shared religious traditions of Hinduism and Buddhism and the maritime legacy of festivals like Bali Yatra.
- **Modern Diplomatic Relations:** Formal diplomatic ties were established in 1950, followed by the **Treaty of Friendship in 1951** and joint participation in the **Bandung Conference of 1955**, laying the foundation for the Non-Aligned Movement.
- **Strategic Partnership:** The relationship was elevated to a **Strategic Partnership in 2005**, further enhanced to a

Comprehensive Strategic Partnership in 2018, focusing on economic and security collaboration.

- **Act East Policy:** Indonesia's inclusion in India's **Act East Policy (2014)** highlights its importance in India's regional engagement strategy.

Positives in India-Indonesia Relations:

- **Economic Cooperation:** Bilateral trade reached **$29.4 billion in FY 2023-24**, with plans to increase it to **$50 billion by 2025**. India is a key importer of Indonesian coal and palm oil.
  - **Example:** India's $1.56 billion investments in Indonesian sectors like infrastructure and textiles.
- **Strategic and Defense Collaboration:** Joint military exercises like **Samudra Shakti** and **IND-INDO CORPAT** enhance maritime security in the Indian Ocean.
  - **Example:** Defense Cooperation Agreement (2018) facilitates regular military exchanges and joint patrols.
- **Cultural Ties:** Shared traditions of Hinduism and Buddhism foster cultural diplomacy, while events like the participation of an Indonesian contingent in India's Republic Day Parade strengthen people-to-people ties.
- **Connectivity and Tourism:** Direct flights introduced in 2023 have boosted tourism, making India the **second-largest source of international tourists to Bali**.
- **Space and Healthcare Collaboration:** ISRO supports Indonesia's satellite missions, and Indian hospitals like Apollo are investing in Indonesia's healthcare infrastructure.

Challenges in Bilateral Ties:

- **Trade Imbalance:** Indonesia's trade volume with China ($139 billion in 2023) far outpaces its trade with India, highlighting underutilized potential.
  - **Example:** India's dependence on limited imports like palm oil and coal lacks diversification.
- **Geopolitical Competition:** Regional tensions in the Indo-Pacific and Indonesia's partnerships with other nations pose strategic challenges.
- **Maritime Security Threats:** The shared maritime domain faces threats like piracy, illegal fishing, and geopolitical tensions, requiring enhanced cooperation.
- **Limited Investment:** Despite improving economic ties, India's investment in Indonesia remains modest compared to other regional players.
- **Bureaucratic Hurdles:** Regulatory challenges in both countries slow down joint infrastructure and trade projects.

Way Ahead:

- **Boost Economic Diversification:** Expand bilateral trade to include technology, renewable energy, and agriculture.
- **Enhance Defense Cooperation:** Strengthen joint maritime security initiatives under India's **SAGAR** framework and expand military exercises.
- **Leverage Connectivity:** Promote business and tourism through expanded flight networks and cultural exchanges.
- **Focus on Green Energy:** Collaborate on renewable energy projects to address climate goals and energy security.
- **Deepen People-to-People Ties:** Strengthen educational exchanges through scholarships like **ITEC** and promote Indian diaspora contributions to bilateral cooperation.

Conclusion:

India and Indonesia's multifaceted partnership stands as a cornerstone of regional security, economic growth, and cultural diplomacy. With shared civilizational ties and strategic alignment, both nations are poised to enhance their global and regional influence. Strengthened collaboration will not only boost bilateral ties but also contribute significantly to Indo-Pacific stability.

PYQ:

1. How far are India's internal security challenges linked with border management particularly in view of the long porous borders with most countries of South Asia and Myanmar? (UPSC-2013)

9. CLEANING OUT GAZA PROPOSAL

Context:

U.S. President Donald Trump has proposed a controversial plan to "clean out" Gaza by relocating Palestinians to neighbouring countries like **Egypt** and **Jordan**.

Trump's Gaza Cleanse Proposal

- Resettlement of over 1.5 million Palestinians to neighbouring Arab countries.
- Construction of housing for displaced Palestinians.

- Objective: Resolve conflict by removing Palestinians from Gaza.
- Rationale: Create stability and peace, eliminate Gaza as a conflict zone.

Neighbouring Nations' Views on Palestine's Plan:

- Jordan: Opposed due to demographic risk and rejection of forced displacement.
- Egypt: Warned of potential "elimination of the Palestinian cause" and concerns over Gaza's militants using Sinai Peninsula for attacks.
- Palestinians: Viewed plan as a repeat of 1948 Nakba, fearing permanent displacement and further loss of home-land.

Positive Outcomes of Relocation in Gaza:

- • Reduced conflict: Temporarily reduces Gaza clashes.
- • Humanitarian Aid: International support for better living conditions.
- • Security for Israel: Enhances security.

Challenges and Limitations of Forced Displacement for Palestinians

- • Violation of International Law: Forced displacement violates UN Resolution 194, denying Palestinians the right to return.
- • Regional Instability: Relocation could destabilize host nations, straining resources and security.
- • Loss of Palestinian Identity: Permanent resettlement could undermine Palestinian claim to Gaza.
- • Resistance from Palestinians and global human rights organizations: Plan impractical.
- • Historical Precedents: Similar resettlement attempts in Lebanon led to prolonged conflict.

Way Ahead:

- **Two-State Solution:** Revive peace negotiations for a viable two-state solution respecting Palestinian sovereignty and Israel's security.
- **International Mediation:** Engage global stakeholders like the **UN** and **Arab League** for a consensus-driven approach.
- **Humanitarian Support:** Provide immediate humanitarian aid to Gaza while ensuring long-term rehabilitation without forced displacement.
- **Conflict Resolution:** Address core issues like **Israeli settlements**, **blockades**, and **militant activities** to foster lasting peace.

Conclusion:

Trump's resettlement proposal for Gaza raises significant humanitarian, legal, and geopolitical concerns. Instead of displacement, a solution rooted in dialogue, mutual respect, and international law is crucial to address the decades-long Israel-Palestine conflict sustainably.

PYQ:

1. "India's relations with Israel have, of late, acquired a depth and diversity, which cannot be rolled back." Discuss. (UPSC-2018)

Topics: Effect of policies and politics of developed and developing countries on India's interests, Indian diaspora.

10. FROM GIRMITYAS TO GLOBAL LEADERS: THE DIASPORA JOURNEY

Context:

Prime Minister highlighted the importance of the Indian diaspora at the Pravasi Bharatiya Divas 2025 in Odisha.

What is the Indian Diaspora?

The term refers to individuals of Indian origin residing outside India. It includes:

- **Non-Resident Indians (NRIs):** Indian citizens residing abroad temporarily.
- **Overseas Citizens of India (OCIs):** Individuals of Indian origin granted permanent residency in India.
- **People of Indian Origin (PIOs):** Persons of Indian ancestry who are citizens of other nations.

Indian Diaspora and Its Global Distribution:

- **Largest Diaspora:** 18 million Indians live abroad (Global Migration Report, 2020).
- **Top Host Countries: UAE > USA > Saudi Arabia > Malaysia > UK**

- **Significant Share in Populations: Qatar> UAE > Bahrain**

Factors Leading to a Large Diaspora:

- Push Factors in Migration
- **Historical Migration:** Indians were indentured labourers in British colonies.
- **Political Instability:** Conflicts in regions pushed migration for safety and stability.
- **Rural-to-Urban Shift**: People migrated abroad to escape poverty and improve living standards.
- **Pull Factors:**
  - **Economic Opportunities**: Gulf countries offer high-paying jobs in construction, healthcare, IT.
  - **Higher Education**: US, UK, Australia attracts quality Indian universities.
  - **Family Networks:** Existing Indian communities ease new migrant integration.

Significance of the Indian Diaspora:

- **Significant economic contributions:** ~$87 billion in 2021.
- **Cultural influence**: Global popularity of Indian traditions, cuisine, music, and films.
- **Political impact**: Indian-origin leaders promote Indian interests.
- **Diplomatic leverage**: Diaspora acts as cultural ambassadors.
- **Soft Power**: Success enhances India's global reputation.

Government Initiatives:

- Pravasi Bharatiya Divas**:** An annual celebration honouring the diaspora's contributions and fostering connections with India.
- **OCI Card:** Provides lifelong visa and property rights to Indians.
- **Know India Program**: Engages diaspora with Indian culture and heritage.
- **Indian Community Welfare Fund:** Offers financial aid during emergencies.
- **Social Security Agreements**: Ensures welfare for Indian workers in bilateral agreements.

Challenges:

- **Exploitation:** Many labourers in Gulf countries face harsh working conditions, low pay, and limited rights.
- **Integration Issues:** Cultural and linguistic differences hinder smooth integration into host societies.
- **Legal Protection:** Limited access to legal aid leaves Indian migrants vulnerable to exploitation abroad.
- **Brain Drain:** Migration of skilled professionals benefits host nations while depriving India of talent.
- **Political Sensitivities:** Diaspora communities sometimes get entangled in tensions between India and host countries, affecting bilateral relations.

Way Ahead: Diaspora Engagement Strategy

- **Enhance Consular Services:** Increase accessibility and efficiency of Indian embassies.
- **Foster Diaspora Engagement:** Foster cultural, social, and economic interaction.
- **Promote Educational Initiatives:** Promote Indian languages, traditions, history.
- **Implement Policy Frameworks:** Implement stronger labour protections and legal safeguards.
- **Leverage Diaspora for Growth**: Encourage investments and knowledge sharing.

Conclusion:

The Indian diaspora is a valuable asset, bridging India with the world economically, culturally, and diplomatically. Strengthening ties with them while addressing their challenges is crucial for leveraging their potential in shaping India's global role.

PYQ:

1. 'Indian Diaspora has a decisive role to play in the politics and economy of America and European Countries'. Comment with examples. (UPSC-2020)

Topics: Important International institutions, agencies and fora, their structure, mandate.

11. US WITHDRAWAL FROM WHO

Context: Recently, the United States, under President Donald Trump, has signed an executive order to withdraw from WHO, citing reasons such as mishandling of the COVID-19 pandemic and the lack of reforms within the organization.

About WHO: Aim and Functions

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

WHO's Role in Global Health:

- **Global Coordination:**
  - Leads international efforts in combating pandemics, such as **COVID-19** and **Ebola**.
  - Collaborates with governments, NGOs, and private entities to strengthen healthcare systems.
- **Disease Eradication:** Played a key role in eradicating **smallpox** and reducing **polio cases** by 99%.
- **Capacity Building:** Assists low- and middle-income countries in improving **health infrastructure**, access to medicines, and training healthcare workers.
- **Health Policy Advocacy:** Advocates for funding and policies addressing **non-communicable diseases**, **mental health**, and **nutrition improvement**.

USA's Decision to Leave WHO:

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

Process to Leave WHO:

- The WHO Constitution does not explicitly outline a withdrawal process.
- However, the US Congress established conditions in 1948 allowing withdrawal with a **one-year notice** and payment of any outstanding financial commitments.

Impact of USA's Exit:

- **On WHO:**
  - **Financial Strain**
    - US withdrawal could lead to a loss of approximately **20% of WHO's funding**.
    - Affects ongoing health programs globally, particularly in disease eradication and pandemic preparedness.
  - **Expertise Gap**
    - Loss of collaboration with US agencies like **CDC** reduces WHO's effectiveness in health surveillance.
- **On Global Health:**
  - **Pandemic Preparedness**
    - Disruption in global frameworks for managing pandemics and health emergencies.
    - Reduced resources for equitable vaccine distribution and treatment initiatives.
  - **Increased Global Inequity**
    - The vacuum created by the US could lead to greater reliance on philanthropy or nations like China, potentially shifting the balance of influence in global health governance.
- **On India:**
  - **Health Programmes**
    - Reduced WHO support for India's programs on **tuberculosis**, **malaria**, **HIV**, and **maternal health**.
    - Challenges in implementing WHO guidelines for vaccine coverage and disease prevention.
  - **Collaborative Research**
    - Loss of expertise impacts India's capacity-building partnerships with WHO.

Way Ahead:

- **Strengthen Global Partnerships:** Nations like **India**, along with countries from the Global South, should enhance their contributions and leadership roles in WHO initiatives.
- **Diversify Funding:** WHO must reduce reliance on single-member contributions and increase voluntary funding from **philanthropic organizations** and **regional coalitions**.
- **Transparency and Reform:** Address concerns regarding governance, accountability, and equitable representation of member states in decision-making processes.

Conclusion:

The US withdrawal from WHO presents significant challenges to global health governance and international cooperation. However, it also highlights the need for structural reforms within WHO to enhance efficiency, transparency, and equitable resource allocation. By leveraging collective leadership and sustainable funding, nations can safeguard WHO's critical role in addressing global health crises.

PYQ:

1. Appropriate local community-level healthcare intervention is a prerequisite to achieve 'Health for All' in India. Explain. (UPSC-2018)

GENERAL STUDIES – 3

Topics: Indian Economy and issues relating to planning, mobilization of resources, growth, development and employment.

12. THE GREAT INDIAN LEAP: HOW INDIA'S ECONOMY IS SOARING

Context:

India's economy has undergone a transformative journey over the past decade, marked by robust policy measures, increasing global integration, and substantial economic growth.

Data Insights on India's Economic Dominance:

- **GDP Growth:**
  - **Nominal GDP:** Increased from $2.04 trillion (2014) to $3.57 trillion (2023). *(Source: World Bank)*
  - **Per Capita Income:** Grew from $1,554 to $2,481 during the same period.
  - **Projected Growth:** Expected to reach $5 trillion by 2027 and $30 trillion by 2047.
- **FDI Inflows:**
  - Total FDI inflows (2014–24): $709.84 billion, a 69% increase over the previous decade. *(Source: Ministry of Commerce & Industry)*
- **Global Rankings:**
  - **Ease of Doing Business:** Improved from 142 (2014) to 63 (2019). *(Source: World Bank)*
  - **Global Competitiveness Index:** Rose from 71st (2015) to 40th currently. *(Source: WEF)*
- **Capital Market Growth:**
  - BSE Sensex surged from 27,507 points (2015) to 78,507 points (2025), reflecting a 185% growth.
  - Market capitalization increased to $5 trillion (2024).

Government Initiatives Driving Economic Growth:

- **Make in India:** Boosted domestic manufacturing, making India the second-largest global mobile phone producer.
- **Startup India:** Fostered over 100 unicorns and 1.5 lakh startups, valuing ecosystem at $349.67 billion.
- **PLI Scheme:** Improved sectoral competitiveness, attracting foreign investments.
- **Gati Shakti Master Plan:** Enhanced infrastructure connectivity.
- **Digital India:** Promoted digital payments and financial inclusion.

Positives of India's Economic Growth:

- **Job Creation: Increased** employment opportunities through manufacturing and service sector expansions.
- **Innovation Hub:** Improved rank on the Global Innovation Index from 76th (2014) to 39th (2024), fostering R&D.
- **Financial Stability:** Reduced Gross NPAs to 2.6% in 2024, indicating stronger banking sector health.
- **Global Presence:** Ranked as the third-largest economy in PPP terms, enhancing India's global economic influence.

Limitations of India's Economic Growth:

- **Inequitable Distribution:** Economic growth benefits often fail to reach marginalized and lower-income groups.
- **High Inflation:** Persistent food inflation impacts affordability and erodes purchasing power.
- **Unemployment:** Rising joblessness, with insufficient creation of high-quality employment opportunities.
- **Governance Issues:** Weak regulatory frameworks and favoritism allegations hinder equitable economic progress.

Way Ahead:

- **Inclusive Growth:** Develop policies to address inequality and ensure fair distribution of economic benefits.
- **Green Economy:** Invest in renewable energy and sustainable practices to support long-term growth.
- **Focus on MSMEs:** Strengthen micro, small, and medium enterprises to create localized employment.
- **Skilling Initiatives:** Train youth for emerging global opportunities and address skill mismatches in the workforce.

Conclusion:

India's economic trajectory highlights significant progress driven by robust policies and global integration. However, addressing limitations such as inequality and unemployment is essential to sustain inclusive growth and achieve the vision of a $30 trillion economy by 2047.

PYQ:

1. "Industrial growth rate has lagged behind in the overall growth of Gross-Domestic-Product (GDP) in the post-reform period" Give reasons. How far the recent changes in Industrial Policy capable of increasing the industrial growth rate? (UPSC-2017)
2. Normally countries shift from agriculture to industry and then later to services, but India shifted directly from agriculture to services. What are the reasons for the huge growth of services vis-a-vis the industry in the country? Can India become a developed country without a strong industrial base? (UPSC-2014)

13. NINE YEARS OF START UP INDIA

Context:

On January 16, 2025, India marks nine years of Startup India, a transformative journey that began in 2016. Designated as National Startup Day, this occasion celebrates the nation's strides in fostering a robust and inclusive entrepreneurial ecosystem.

What is Startup India?

Startup India is a **flagship initiative of the Government of India**, launched on **January 16, 2016**, to promote a robust entrepreneurial culture. Its aim is to simplify processes, provide funding support, and foster innovation to help startups grow and create employment opportunities.

Startup India Features:

- **Ease of Doing Business:** Simplified compliance processes and single-window clearances.
- **Tax Benefits:** Eligible startups enjoy tax exemptions for three consecutive years.
- **Funding Support**: ₹10,000 crore Fund of Funds for Startups provides early-stage funding.
- **Sector-Specific Policies:** Special focus on biotechnology, renewable energy, and agriculture.
- **Capacity Building:** Programs like iGOT Karmayogi and workshops support skill enhancement.

Startup India Milestones:

- Over 1.59 lakh startups recognized by DPIIT as of 2025.
- Startups created 16.6 lakh jobs across sectors.
- 73,151 startups with at least one-woman director.
- Flagship programs like BHASKAR platform centralize resources.

Government Schemes Supporting Startups:

- **Startup India Seed Fund Scheme (SISFS)**: Financial assistance for proof of concept, prototype development, and market entry.
- **Credit Guarantee Scheme for Startups (CGSS)**: Offers collateral-free loans to ensure financial stability for startups.
- **NIDHI**: Promotes student-led entrepreneurship with funding and incubation support.
- **Make in India**: Eases compliance for manufacturing startups and promotes innovation.

Digital India: Creates digital infrastructure for startups to thrive and scale operations.

Startup Ecosystem Challenges:

- Heavy reliance on foreign funding and limited domestic investment.
- Regulatory bottlenecks due to bureaucratic delays and unclear compliance frameworks.
- Skill gap in AI, data science, and product development.
- Unequal regional growth in Tier II and III cities.
- Corporate mismanagement raising sustainability concerns.

Way Forward for Digital Transformation:

- **Encourage Domestic Investment:** Leverage insurance, pension, and family offices funds.
- **Foster Innovation:** Strengthen R&D incentives and improve intellectual property protection.
- **Build Capacity:** Promote industry-academia collaboration.
- **Promote Regional Inclusion:** Develop infrastructure and digital access.
- **Streamline Compliance:** Establish ethical business practices.

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- Streamline Compliance: Establish ethical business practices.

Conclusion:

Startup India has been a transformative force, driving **innovation, job creation, and economic growth** across India. With favourable policies, increased domestic funding, skill enhancement, and a focus on inclusivity, India is well-positioned to become a global hub for entrepreneurship and innovation.

PYQ:

1. Faster economic growth requires increased share of the manufacturing sector in GDP, particularly of MSMEs. Comment on the present policies of the Government in this regard. (UPSC-2023)

14. BURNOUT VS. BREAKTHROUGH: THE LONG WORKING HOURS PARADOX

Context:

Proposals such as a 90-hour workweek, presented by L&T Chairman S.N. Subrahmanyan, have sparked controversy, highlighting concerns about workplace culture, employee well-being, and productivity.

Indian Business Leaders Call for Extended Work Hours

- Narayana Murthy, S.N. Subrahmanyan, Bhavish Aggarwal advocate for extended work hours.
- Suggests 70-90 hours per week to boost productivity and global competitiveness.

Positives of long working hours:

1. **Boosts Output**: Extended hours could increase work volume and project completion speed.
   E.g. Manufacturing industries in India show higher outputs during peak seasons with overtime work.
2. **Economic Growth**: Longer hours contribute to higher GDP by increasing workforce participation and productivity.
   E.g. India's IT sector thrives on high-pressure deadlines to meet global client demands.
3. **Skill Development:** Extended work periods provide opportunities for employees to acquire and refine skills.
   E.g. Startups in Bengaluru often use extended work hours for rapid upskilling.
4. **Job Security:** Employees who commit to long hours may gain better job stability in competitive industries.
   E.g. Contract workers in construction projects benefit from extended work schedules.
5. **Workplace Resilience:** A culture of hard work builds resilience and adaptability.
   E.g. Infosys employees working extra hours during critical projects led to client retention.

Limitations of long working hours:

1. **Health Risks**: Extended hours lead to physical and mental health issues like burnout and stress.
   E.g. A Pune-based Ernst & Young employee reportedly died from workplace stress in 2024.
2. **Declined Productivity**: Fatigue from overwork reduces focus, creativity, and overall efficiency.

E.g. Reports from the ILO link long hours to lower productivity in South Korea.

3. **Poor Work-Life Balance**: Excessive work hours strain personal relationships and reduce social engagement.
   E.g. Employees in Japan's "karoshi" culture face rising loneliness and depression.
4. **High Attrition Rates**: Long hours increase turnover rates as employees seek balanced work environments.
   E.g. India's IT sector experienced talent migration to companies offering flexible hours.
5. **Negative Societal Impact**: Overwork culture discourages family building and community participation.
   E.g. Japan's aging population is partially attributed to its demanding work culture.

Way ahead:

1. **Balanced Work Hours:** Introduce flexible working models that balance output with personal well-being.
   E.g. Indian startups implementing hybrid work schedules enhance productivity.
2. **Employee Wellness Initiatives:** Promote mental and physical health programs in workplaces.
   E.g. TCS offers stress management workshops for employees.
3. **Enhanced Efficiency:** Encourage tools and technologies to optimize work processes.
   E.g. AI-driven project management tools reduce workload in India's IT sector.
4. **Cultural Shift:** Foster a mindset valuing quality of work over quantity.
   E.g. Microsoft's four-day workweek experiment in Japan boosted productivity.
5. **Legislative Safeguards:** Introduce labour laws to regulate maximum working hours.
   E.g. India's existing laws under the Factories Act provide for limited work hours.

Conclusion:

Promoting smarter work practices, focusing on efficiency and employee well-being, is crucial for sustainable growth and fostering creativity and innovation in the evolving Indian workforce.

PYQ:

1. "The growth of cities as I.T. hubs has opened up new avenues of employment, but has also created new problems". Substantiate this statement with examples. (UPSC- 2017)

15. THE SINKING RUPEE: IS IT A LEAK OR A LIFEBOAT?

Context:

The Indian rupee recently experienced a sharp decline in value against the US dollar after a period of relative stability.

What is Devaluation?

Devaluation refers to the deliberate downward adjustment of a country's currency value against foreign currencies, typically carried out by the central bank. It is used to enhance export competitiveness and reduce trade deficits but may increase the cost of imports and domestic inflation.

What is Depreciation of Rupee?

Depreciation of the rupee occurs when its value declines relative to foreign currencies in the open market. Unlike devaluation, which is a policy-driven move, depreciation is influenced by market forces such as supply-demand dynamics, capital flows, and global economic conditions.

Internal Factors Impacting Indian Exchange Rate

- **Rising inflation:** Higher domestic prices reduce rupee's value and make exports less competitive.
- **Widening trade deficit**: Increased imports, especially crude oil, increase foreign currency demand.
- **Fiscal deficit:** Persistent imbalances pressure rupee downwards.
- **Policy uncertainty:** Frequent shifts in RBI's exchange rate policy.

External Factors

- **Capital Outflows**: Foreign investors withdraw due to global economic uncertainties and rising US interest rates.
- **Geopolitical Tensions:** Russia-Ukraine war impacts global energy prices, increasing India's import bill.
- **Global Economic Slowdown:** Lower export demand adds to rupee's issues.
- **US Dollar Strength:** Aggressive rate hikes by the Federal Reserve weaken rupee.

Falling Rupee Impact on India

- **Increased import costs:** Rupee weakens crude oil, electronics, and raw materials, worsening India's current account deficit.

- **Inflationary pressures:** Rising import costs increase domestic inflation.
- **Negative impact on export competitiveness:** High inflation-induced input costs negate initial benefits.
- **Capital flight:** Depreciated rupee reduces investor confidence, prompting foreign capital withdrawal.
- **Impact on borrowing:** Increased repayment burdens on government and businesses.

RBI's Monetary Policy Measures:

- **Foreign Exchange Intervention:** RBI sells forex reserves to manage demand-supply imbalances and stabilize rupee.
- **Interest Rate Hikes:** Higher repo rates attract investments, strengthening rupee.
- **Currency Swap Agreements:** Reduces reliance on dollar, stabilizes foreign currency flows.

Fiscal Policy Measures:

- **Reducing Import Dependency**: Enhancing domestic production of high-demand imported goods.
- **Boosting Exports:** Offering incentives and subsidies to increase foreign currency earnings.
- **Infrastructure Development:** Developing efficient logistics and supply chains.
- **Encouraging Foreign Investments**: Implementing policies for a stable investor environment.

Way Ahead for India:

- Implement a stable exchange rate policy to reduce volatility.
- Strengthen domestic production through programs like 'Make in India'.
- Manage inflation using targeted fiscal and monetary tools.
- Diversify forex reserves to minimize dependence on the US dollar.

Conclusion:

A stable rupee is vital for economic growth, fiscal stability, and global competitiveness. While immediate interventions are essential, long-term strategies focusing on domestic production, export growth, and robust policy frameworks will ensure sustained economic resilience.

PYQ:

1. How would the recent phenomena of protectionism and currency manipulations in world trade affect macroeconomic stability of India? (UPSC-2018)

16. EXTERNAL COMMERCIAL BORROWING

Context:

A recent State Bank of India (SBI) report highlights the rising contributions of private sector investments and the role of External Commercial Borrowing (ECBs) in driving corporate financing, modernization, and capital expansion.

What is External Commercial Borrowing (ECB)?

External Commercial Borrowing (ECB) refers to loans or funding raised by Indian entities from foreign sources, including commercial banks, export credit agencies, and international markets. ECBs are typically used for capital expansion, modernization, and infrastructure projects and are governed by the Reserve Bank of India (RBI) guidelines.

Parameter	Data
Total Outstanding ECBs	$190.4 billion (as of Sept. 2024)
Private Sector Share	63% ($97.58 billion)
Public Sector Share	37% ($55.5 billion)
Hedging (Private Sector)	74% of hedged corpus
ECBs Registered (Apr-Nov 2024)	$33.8 billion
Decline in ECB Costs	6.6% (April-Nov 2024 average)
	5.8% (Nov. 2024)

Need and Significance of ECB:

1. **Capital Expansion:** ECBs provide long-term funding to finance infrastructure and industrial growth.

2. **Cost-Effective Financing:** ECBs offer competitive interest rates compared to domestic loans, reducing the cost of borrowing.
3. **Modernization and Import of Capital Goods:** Corporates use ECBs to modernize operations and import advanced machinery.
4. **Foreign Currency Access:** ECBs allow Indian firms to access foreign currency, helping in trade and international competitiveness.
5. **Private Sector Growth:** With 63% of ECBs attributed to private companies, they play a vital role in supporting private sector expansion.

Challenges and Limitations of ECB:

- **Exchange Rate Risk:** ECBs expose borrowers to currency fluctuations, increasing repayment costs in volatile markets.
- **High Hedging Costs:** Hedging to mitigate exchange rate risk often adds to the borrowing cost.
- **Global Market Dependence:** ECBs make Indian corporates reliant on global financial conditions, which can be unpredictable.
- **Potential for Over-Borrowing:** Mismanagement of ECBs can lead to high corporate debt, affecting financial stability.
- **Policy Restrictions:** Regulatory limitations may hinder flexibility in fund utilization.

Way Ahead:

- **Policy Refinement:** Simplify ECB regulations to encourage strategic borrowing for productive sectors.
- **Focus on Hedging:** Promote affordable and accessible hedging mechanisms to minimize exchange rate risks.
- **Sustainable Borrowing:** Ensure ECBs are utilized for long-term infrastructure and modernization projects to avoid unsustainable debt.
- **Enhanced Monitoring:** Strengthen oversight mechanisms to prevent mismanagement of funds and over-leveraging.

Conclusion:

ECBs have been instrumental in financing India's industrial and infrastructural growth. While challenges like exchange rate risks persist, with sound policies and prudent borrowing practices, ECBs can remain a crucial tool for India's economic development.

PYQ:

1. Do you agree with the view that steady GDP growth and low inflation have left the Indian economy in good shape? Give reasons in support of your arguments. (UPSC-2019)

Topics: Major crops cropping patterns in various parts of the country, different types of irrigation and irrigation systems storage, transport and marketing of agricultural produce and issues and related constraints; e-technology in the aid of farmers.

17. FROM FIELDS TO POLICY: THE IMPACT OF MSP ON INDIAN AGRICULTURE

Context:

Farmer leader Jagjit Singh Dallewal's indefinite fast entered its 43rd day as the Parliamentary Standing Committee on Agriculture, has recommended a "legally binding" MSP.

What is MSP?

- **Definition:** MSP is the price at which the government purchases crops from farmers to ensure they do not incur losses.
- **Established by:** Recommended by the **Commission for Agricultural Costs and Prices (**CACP**)** under the Ministry of Agriculture, final approval by the Cabinet Committee on Economic Affairs (CCEA).
- **Crops Covered:** MSP is declared for **23 crops**, including cereals, pulses, oilseeds, and commercial crops like cotton and jute.
- **Purpose:** Protect farmers from price fluctuations, provide income stability, and ensure agricultural growth.

Need for MSP for Farmers:

- **Income Stability:** MSP protects farmers from losses due to **market price dips** caused by overproduction or low

demand.
E.g. In 2024, moong prices in Rajasthan were ₹6,467 per quintal, far below the MSP of ₹8,682 (Indian Express).

- **Inequitable Market Dynamics:** Farmers lack bargaining power compared to traders, leading to lower price realization.
  E.g. CACP data shows over 80% of farmers rely on local markets, where prices often fall below MSP.
- **Cost of Production:** Rising input costs and stagnant yields necessitate MSP to ensure profitability.
  E.g. Fertilizer and diesel prices increased by **15-20%** between 2020 and 2024 (Ministry of Agriculture).
- **Addressing Rural Poverty:** With **86% of farmers being smallholders**, MSP prevents distress sales, ensuring sustainable livelihoods.

Feasibility of Legalizing MSP:

- **High fiscal cost:** Procuring all MSP crops could consume 17% of the Union Budget.
- **Direct Compensation Model**: Implementing a compensation mechanism for price differences would require ₹30,000-₹50,000 crore annually.
- **Market Intervention:** Establishing floor prices in APMC auctions can stabilize market prices and reduce government procurement burden.
- **Private Sector Role:** Mandating private buyers to ensure purchases at or above MSP could distribute financial responsibility.
- **Dependent Payment Scheme**: Compensating farmers for price difference between market price and MSP.

Limitations of Legalizing MSP:

- **Budgetary Stress:** Allocating 17% of budget for MSP could strain fiscal resources, impacting health, education, and infrastructure investments.
- **Market Disruption:** Enforcing MSP could deter private sector engagement, reducing agricultural market efficiency.
- **Administrative Challenges:** Monitoring and implementing MSP transactions would require significant infrastructure and human resources.
- **Regional Inequity:** Current procurement disproportionately benefits states, sidelining less developed regions.
- **Risk of Overproduction:** Guaranteed MSP could lead to over-cultivation, causing environmental degradation and water scarcity.

Way ahead:

- **Targeted Procurement:** Expand MSP-backed procurement to pulses, oilseeds, and millets to ensure inclusivity.
- **FPO Strengthening:** Empower **Farmer Producer Organizations** for collective bargaining and market access.
- **Digital Platforms:** Utilize e-NAM and blockchain for transparent price discovery and efficient monitoring.
- **Market Reforms:** Enhance APMC efficiency and integrate with global markets to stabilize prices.
- **Awareness Campaigns:** Educate farmers on MSP mechanisms and alternative income sources like Agro-processing.

Conclusion:

A legally binding MSP can address farmers' income insecurity but requires balancing fiscal prudence, market efficiency, and inclusivity. Leveraging technology, targeted interventions, and stakeholder collaboration can ensure a sustainable agricultural future for India.

PYQ:

1. What are the reformative steps taken by the Government to make the food grain distribution system more effective? (UPSC-2019)

Topics: Issues related to direct and indirect farm subsidies and minimum support prices; Public Distribution System- objectives, functioning, limitations, revamping; issues of buffer stocks and food security; Technology missions; economics of animal-rearing.

18. GRAIN BY GRAIN: REFORMING INDIA'S PDS

Context:

Recent reports from states like **Jharkhand**, **Odisha**, and **Bihar** highlight the challenges of exclusion, inefficiency, and exploitation in the PDS, affecting marginalized communities such as the Musahars.

Recent Issue: Removal from PDS

- **Exclusion from Ration Cards:** Over 5.8 crore ration cards were removed due to digitization, Aadhaar-seeding, and e-KYC requirements, leaving many without access to essential food supplies.
- **Marginalized Communities Affected:** Groups like the Musahars in Bihar struggle with enrolment due to documentation demands and digital barriers.
- **Corruption in Distribution:** Instances of Fair Price Shops (FPS) distributing lower quantities of food grains or poor-quality rice have been reported.
- **Document Overload:** States like Bihar and Uttar Pradesh demand unnecessary documents, violating the National Food Security Act (NFSA), **2013**.

About Public Distribution System:

- **Historical Context:** Established during the **inter-war period**, the PDS gained prominence in the 1960s to combat food shortages.
- **Evolution:** Initially focused on urban areas, the PDS expanded to rural poverty zones with initiatives like the **Revamped Public Distribution System (RPDS)** in 1992.
- **Structure:**
  - **Central Government:** Procurement, storage, and bulk allocation through the **Food Corporation of India** (FCI).
  - **State Governments:** Distribution to beneficiaries via **Fair Price Shops (FPS)**.
- **Coverage:** It provides subsidized food grains like rice, wheat, and sugar to over 80 crore people through 5.4 lakh FPS.

Challenges Faced by PDS:

- **Exclusion Errors:** Aadhaar-based authentication excludes millions, especially marginalized groups.
- **Leakages and Corruption:** 28% of food grains fail to reach beneficiaries.
- **Limited Nutritional Focus:** PDS primarily offers staples, neglecting diverse nutritional needs.
- **Infrastructure Issues**: Poor storage, transportation, and monitoring systems hinder effective implementation.
- **Over-Coverage and Mismanagement**: High coverage leads to inefficiency and misuse.

Measures Taken by the Government:

- **Digitization:** Aadhaar seeding and e-KYC to reduce duplication and ensure targeted delivery.
- **Point-of-Sale (PoS) Machines:** Installed at FPS to track transactions and curb leakages.
- **National Food Security Act (NFSA), 2013:** Covers 75% of rural and 50% of urban populations, ensuring subsidized food grains.
- **Pradhan Mantri Garib Kalyan Anna Yojana (PMGKAY):** Provides free food grains to over 80 crore beneficiaries during the COVID-19 pandemic.
- **Integration of Technology:** Real-time tracking, inventory management, and improved supply chain efficiency.

Judgment and Right to Food:

- The **Right to Food** was recognized as a fundamental right in the **People's Union of Civil Liberties vs Union of India (2001)** case. The judgment mandated the government to ensure access to food for all citizens, leading to the **NFSA, 2013**.

Way Ahead:

- **Enhance Coverage:** Ensure no exclusion due to digitization barriers by simplifying the documentation process.
- **Strengthen Monitoring:** Use technology to track real-time distribution and curb corruption at FPS.
- **Diversify Offerings:** Include pulses, millets, and fortified foods to address nutritional security.
- **Community Involvement:** Engage local stakeholders for grassroots monitoring and grievance redressal.
- **Invest in Infrastructure:** Modernize storage and transport facilities to reduce wastage and ensure timely delivery.

Conclusion:

India's Public Distribution System is pivotal to food security, but systemic inefficiencies and exclusion issues undermine its effectiveness. With targeted reforms, community involvement, and technological integration, the PDS can fulfil its mission of ensuring food and nutritional security for all, particularly the most vulnerable.

PYQ:

1. In what way could replacement of price subsidy with Direct Benefit Transfer (DBT) change the scenario of subsidies in India? Discuss. (UPSC-2015)

Topics: Infrastructure: Energy, Ports, Roads, Airports, Railways etc.

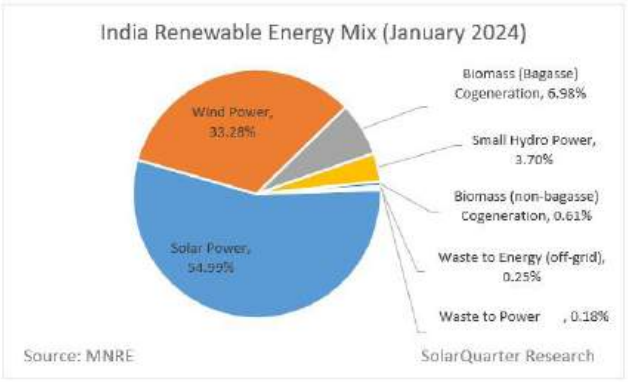
19. INDIA RENEWABLE ENERGY ACHIEVEMENT

Context:

In 2024, India achieved record-breaking milestones in renewable energy installations and policy advancements, setting a robust foundation for future growth.

What is Renewable Energy?

Renewable energy refers to energy derived from natural and replenishable sources like solar, wind, hydropower, and biomass. Unlike fossil fuels, renewable energy is sustainable, reduces greenhouse gas emissions, and supports a cleaner environment.



India Renewable Energy Target:

- **2030 Goal:** Achieve 500 GW of non-fossil fuel-based energy capacity.
- **Short-Term Milestones:** Reach 50% of energy capacity from renewable sources by 2030.
- **Current Progress:** As of January 2025, India has achieved **217.62 GW** of non-fossil fuel-based energy capacity.
- **Net-Zero Commitment:** Attain net-zero carbon emissions by 2070.

Major achievements in renewable energy in India:

Category	Achievement	Details
Solar Energy	24.5 GW added	Utility-scale solar grew by 2.8x compared to 2023, led by Rajasthan, Gujarat, and Tamil Nadu.
Rooftop Solar	4.59 GW installed	Facilitated by the **PM Surya Ghar: Muft Bijli Yojana**, with 7 lakh installations in 10 months.
Off-Grid Solar	1.48 GW added	Recorded 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	Significant modernization	Existing plants upgraded for better efficiency.
Total Non-Fossil Energy	Achieved 217.62 GW capacity	Includes solar, wind, hydropower, and biomass, reflecting India's commitment to its clean energy goals.

Government schemes driving renewable energy success:

- **PM Surya Ghar: Muft Bijli Yojana:** Facilitated rooftop solar installations, especially in urban areas. Nearly a year after the ₹75,000-crore PM Surya Ghar scheme was launched, 8.5 lakh households have installed rooftop solar connections.
- **Green Energy Corridor (GEC):** Strengthened transmission systems for renewable energy-rich states.
- **Faster Adoption and Manufacturing of Electric Vehicles (FAME):** Promoted electric mobility, indirectly supporting renewable energy adoption.
- **International Solar Alliance (ISA):** Aimed to foster global cooperation in solar energy deployment.
- **National Smart Grid Mission (NSGM):** Enhanced grid integration to accommodate variable renewable energy sources.
- **Hydrogen Energy Mission:** Pushed for green hydrogen production as an alternative fuel.

Challenges to renewable energy in India:

- **Land Acquisition Issues:** Large-scale projects like solar parks face resistance from local communities over land use.
- **Grid Stability:** Intermittency of Renewable Energy sources like solar and wind strains grid reliability, especially

during peak production.

- **Storage Limitations:** Lack of large-scale energy storage solutions hinders efficient utilization of renewable power.
- **E-Waste Management:** Rising deployment of solar panels and batteries creates challenges in end-of-life recycling.
- **Resource Dependency:** Dependence on imported critical minerals like lithium and cobalt affects the supply chain.
- **Policy and Regulatory Hurdles:** Delayed approvals and inconsistencies in state-level policies slow down project execution.

Way ahead:

- **Floating Solar Projects:** Utilize reservoirs and water bodies for solar installations, preserving land and enhancing efficiency.
- **Decentralized Energy Systems:** Promote blockchain-enabled peer-to-peer energy trading to support small-scale renewable generation.
- **Green Hydrogen Push:** Establish hydrogen highways and integrate surplus renewable energy for hydrogen production.
- **Circular Economy for E-Waste:** Develop comprehensive policies for recycling solar panels and batteries to reduce environmental risks.
- **Urban Renewable Energy Integration:** Create incentives for rooftop solar and wind turbines in densely populated urban areas.
- **Regional Energy Hubs:** Establish Renewable Energy Special Economic Zones (RE-SEZs) for localized manufacturing and innovation.

Conclusion:

India's renewable energy sector has achieved significant progress in 2024, with record-breaking installations and supportive policies. As the country advances towards its 2030 targets, addressing infrastructural, regulatory, and environmental challenges will be crucial to sustaining momentum and ensuring a clean energy future.

PYQ:

1. "Access to affordable, reliable, sustainable and modern energy is the sine qua non to achieve Sustainable Development Goals (SDGs)". Comment on the progress made in India in this regard. (UPSC- 2018)

Topics: Awareness in the fields of IT, Computers, robotics, nano-technology, bio-technology and issues relating to intellectual property rights.

20. AI REVOLUTION

Context:

DeepSeek, a Chinese AI startup, has gained global attention by challenging U.S. AI dominance with its low-cost, high-efficiency AI models, DeepSeek-V3 and DeepSeek-R1.

AI Works: The Fundamentals

1. **Data Processing & Learning:** AI models process **large datasets** to detect **patterns and relationships**, mimicking human cognition.
   E.g., AI in Google Search analyzes user behavior to improve results.
2. **Neural Networks & Deep Learning**: AI uses **multi-layered neural networks** to learn complex patterns, improving over time.
   E.g., ChatGPT learns from vast internet text to generate human-like responses.
3. **Machine Learning Algorithms:** AI models rely on **supervised, unsupervised, and reinforcement learning** to enhance accuracy.
   E.g., Tesla's Autopilot refines driving decisions using ML.
4. **Natural Language Processing (NLP):** AI understands and processes human language, enabling chatbots and translation tools.
   E.g., OpenAI's ChatGPT and DeepSeek-V3 enhance real-time language translation.
5. **Edge Computing & AI Optimization:** AI is shifting towards **edge computing** for faster processing, reducing cloud dependency.
   E.g., Apple's Siri processes some voice commands locally on iPhones.

Some types of AI models:

1. **Large Language Models (LLMs)**: AI models like **DeepSeek-V3, GPT-4o, and Claude 3.5** excel in text generation, answering queries, and automating tasks.
2. **Generative AI**: AI models create **images, videos, and text**, revolutionizing content creation.
   E.g., MidJourney generates realistic AI-generated artwork.
3. **Autonomous Systems**: AI powers **self-driving cars, drones, and robots** for automation.
   E.g., Tesla's Full Self-Driving (FSD) improves vehicle autonomy.

AI is Revolutionizing Key Sectors:

Agriculture

- **Precision Farming:** AI-driven **drones and sensors** optimize irrigation, reducing water waste.
  E.g., IBM's Watson predicts crop diseases using satellite data.
- **Automated Harvesting:** AI-powered **robotic arms** pick fruits and vegetables, improving efficiency.
  E.g., John Deere's AI-driven tractors optimize field operations.

Healthcare & Education

- **AI Diagnostics:** AI detects diseases like **cancer and COVID-19** with higher accuracy than humans.
  E.g., Google's DeepMind diagnoses eye diseases with 94% accuracy.
- **Smart Education:** AI personalizes **learning experiences** for students.
  E.g., Byju's AI-based learning adapts to students' needs.

Defense & Security

- **AI-Powered Warfare:** AI enhances **autonomous drones, cyber warfare, and battlefield strategy**.
  E.g., Russia uses AI-driven military drones in Ukraine.
- **Threat Detection & Surveillance:** AI identifies potential threats in real-time.
  E.g., India's AI-driven border surveillance improves national security.

Economy & Finance

- **Stock Market Predictions:** AI analyzes financial trends for **high-frequency trading**.
  E.g., Goldman Sachs uses AI for risk assessment.
- **Fraud Detection:** AI secures transactions by **identifying anomalies** in banking.
  E.g., Mastercard's AI prevents credit card fraud in real-time.

Governance & Public Services

- **Smart Cities:** AI manages **traffic, waste, and energy consumption** in urban areas.
  E.g., Singapore's AI-driven smart traffic system reduces congestion.
- **AI in Policy Making:** AI assists governments in **formulating data-driven policies**.
  E.g., Estonia's AI system drafts legal documents for policymaking.

Challenges Due to AI Revolution:

1. **Job Displacement**: AI threatens **traditional employment** in manufacturing, finance, and customer service.
2. **Ethical & Bias Issues:** AI models inherit **biases from training data**, leading to discrimination.
3. **Data Privacy & Cybersecurity Risks:** AI-driven **deepfakes and hacking** raise security concerns.
4. **Geopolitical AI Arms Race:** Countries **compete for AI supremacy**, leading to tech cold wars.
5. **Regulatory & Legal Challenges:** AI laws struggle to keep up with rapid advancements.

India's Status in AI Development:

1. **AI Research & Development**: India has **AI hubs in IITs, IISc, and NITI Aayog-led AI programs**.
   E.g., Bhashini project promotes AI-driven Indian language translation.
2. **Startup Ecosystem:** India has **over 4,500 AI startups**, fostering **innovation in healthcare, fintech, and governance**.
   E.g., Reliance Jio's AI initiatives in telecom.
3. **Government AI Policy:** India's **AI Mission** focuses on **data security and AI adoption in governance**.
   E.g., AI-powered Gram Panchayats for rural development.
4. **AI in Défense & Cybersecurity:** India invests in **AI-driven surveillance, UAVs, and cyber defence**.
   E.g., DRDO developing AI-powered drones for border security.
5. **Collaboration with Global AI Leaders:** India partners with **Google, Microsoft, and NVIDIA** for AI advancements.
   E.g., India-U.S. AI partnership for quantum computing.

Reinforcement Learning Model

- Reinforcement Learning (RL) is a type of machine learning where an AI model learns to make decisions by interacting with an environment and receiving feedback in the form of rewards or penalties. The goal is to maximize cumulative rewards over time.
- **How it works:**
  - The AI model, or "agent," takes actions in an environment.
  - Based on these actions, it receives **feedback (rewards or penalties).**
  - The model adjusts its strategy to maximize rewards, improving its decision-making over time.
  - DeepSeek's R1 model uses RL to automate the **"reinforcement learning from human feedback" (RLHF) process**, reducing the need for extensive human intervention.
- **How it is superior to existing AI models:**
  - **Cost-Effectiveness:** DeepSeek's R1 model achieves advanced reasoning capabilities at a significantly lower cost compared to models like OpenAI's o1.
  - **Autonomy:** By automating the RLHF process, DeepSeek reduces reliance on human annotators, making the training process faster and more scalable.
  - **Efficiency:** The model can «rethink» its approach to problems, leading to more accurate and adaptive responses.
  - **Scalability:** DeepSeek's techniques allow for the creation of smaller, efficient models that can run on devices like smartphones, making AI more accessible.

Way Ahead:

1. **Strengthening AI Regulations:** Develop **ethical AI frameworks** for privacy, security, and bias mitigation.
2. **AI Skill Development:** Upskilling workforce to **adapt to AI-driven jobs** in the new economy.
3. **Boosting AI Infrastructure:** Enhance **cloud computing and GPU access** for AI startups.
4. **Public-Private AI Collaboration:** Encourage **joint AI research between academia and industry**.
5. **AI for Social Impact:** Use AI for **poverty reduction, healthcare access, and rural development**.

Conclusion:

DeepSeek's success challenges big tech's AI monopoly and raises geopolitical tensions in the AI race. While AI is revolutionizing industries, its ethical, legal, and security challenges require urgent policy intervention. For India, leveraging AI for economic growth and global leadership is the key to future technological dominance.

PYQ:

1. With the print state of development, Artificial Intelligence can effectively do which of the following?
   1. Bring down electricity consumption in industrial unit
   2. Create meaningful short stories and songs
   3. Disease diagnosis
   4. Text -to -Speech Conversion
   5. Wireless transmission of electrical energy

   Select the correct answer using the code given below:
   A. 1, 2, 3 and 5 only
   B. 1, 3 and 4 only
   C. 2, 4 and 5 only
   D. 1, 2, 3, 4 and 5

   Ans) Option D

Topics: Conservation related issues, environmental pollution and degradation, environmental impact assessment.

21. ENVIRONMENT SUMMITS OF 2024

Context: In 2024, global environmental efforts faced a series of setbacks as key UN climate summits failed to deliver impactful resolutions.

2024 Climate Summits:

- **Biodiversity (Colombia):** Failed to finalize financing mechanisms for sustainable land-use practices, falling short of the $700 billion annual goal.
- **Climate Change (Azerbaijan):** Divisions over fossil fuel transition and inadequate funding pledges for developing nations.
- **Land Degradation (Saudi Arabia):** Lack of consensus on a legally binding drought protocol.
- Plastic Pollution **(South Korea):** No agreement due to opposition from nations reliant on plastic-based economies, favouring recycling over reduction.

Role of Youth in Environmental Pacts:

- **Youth-led Litigation:** Cases like *Held v. Montana* in the U.S. and Ridhima Pandey's petition in India showcase youth challenging inadequate climate policies.
- **Advocating Human Rights:** Emphasizing climate inaction as a violation of rights, demanding systemic, science-based reforms.
- **Global Movements:** Young activists highlight intergenerational equity, inspiring governments and communities to prioritize sustainable policies.
- **Courtroom Success:** Landmark rulings in Canada, the Netherlands, and Germany highlight the potential of youth advocacy to shape policies.

Reasons for Summit Failures:

- **Divergent Priorities:** Developing nations demand greater financial and technological support, while developed nations cite domestic constraints.
- **Economic Pressures:** Global crises like inflation, geopolitical conflicts, and post-pandemic recovery divert attention and resources.
- **Lack of Consensus:** Disagreements on accountability frameworks and operational mechanisms stalled progress.
- **Inequitable Commitments:** Wealthier nations failed to meet financial and emission reduction targets.

Road Ahead:

- Climate Finance**:** Wealthier nations must honour commitments to fund and support developing countries.
- **Integrated Strategies:** Address interlinked issues like biodiversity loss, land degradation, and pollution alongside climate action.
- **Accountability Mechanisms:** Robust frameworks to track commitments and enforce agreements.
- **Youth Inclusion:** Amplify youth voices in policymaking to ensure equity and innovation in solutions.
- **Focus on Implementation:** Shift from pledges to actionable and measurable outcomes.

Conclusion:

The failures of 2024 highlight the need for urgent, unified global action on environmental issues. Empowering youth, ensuring equitable financial commitments, and prioritizing collaborative strategies can pave the way for meaningful progress.

PYQ:

1. 'Climate change' is a global problem. How India will be affected by climate change? How Himalayan and coastal states of India will be affected by climate change? (UPSC-2017)

22. ECO-FUNDS: THE BANKS THAT GROW GREEN

Context:

The Global South, including India, struggles to secure adequate climate finance despite COP29 commitments. Establishing a Green Bank in India offers a market-driven solution to support sustainable development and decarbonization.

Green Banks:

Green Banks are mission-driven financial institutions designed to accelerate clean energy adoption and fight climate change. Unlike traditional banks, they focus on financing proven, environmentally friendly projects while ensuring capital recovery for reinvestment.

Need for a Green Bank in India:

- **Affordable Credit for Green Projects:** High-interest commercial loans make green financing inaccessible.
- **Localized Climate Finance:** Indian Green Banks can finance local decarbonization efforts.

- **Achieving Net-Zero Goals:** Robust mechanisms for large-scale climate finance.
- **Support for Vulnerable Communities:** Empowering farmers and MSMEs to adopt eco-friendly practices.

How Green Banks Work:

- **Capital Mobilization**: Funds are sourced via government grants, environmental cesses, and issuing green bonds.
- **Targeted Lending**: Loans focus on viable clean energy projects with assured repayment potential.
- **Market Development**: Green Banks identify and finance opportunities to maximize environmental and economic returns.
- **Circular Investment**: Returned capital is reinvested into new green projects, creating a self-sustaining financing loop.

Limitations of Green Banks:

- **Initial Capital Requirement:** Establishing a Green Bank demands significant governmental and institutional funding.
- **Limited Public Awareness:** Lack of awareness among stakeholders can limit the adoption of green financing initiatives.
- **Risk of Loan Defaults:** Green projects carry financial risks, potentially impacting a Green Bank's sustainability.
- **Policy and Regulatory Gaps:** Absence of a clear regulatory framework can impede effective Green Bank operations.

Way Ahead:

- **Policy Framework:** Develop robust guidelines and incentives to promote the efficient functioning of Green Banks.
- **Public-Private Partnerships:** Partner with private institutions to diversify resources and enhance capital mobilization.
- **Awareness Campaigns:** Launch targeted campaigns to educate stakeholders about the advantages of green financing.
- **Focus on Innovation:** Support R&D to broaden the scope of eligible clean energy projects for financing.

Conclusion:

India must take a leadership role in climate finance by establishing a Green Bank to support decarbonization. By addressing challenges and fostering innovation, the nation can achieve sustainable development and set an example for the Global South.

PYQ:

1. Explain the purpose of the Green Grid Initiative launched at the World Leaders Summit of the COP26 UN Climate Change Conference in Glasgow in November 2021. When was this idea first floated in the International Solar Alliance (ISA)? (UPSC-2021)

23. BENEATH THE SURFACE: THE URGENCY OF GROUNDWATER CONSERVATION

Context:

Recent reports by the Central Ground Water Board (CGWB) highlight positive trends in groundwater recharge and reduced extraction, showcasing the potential of collaborative efforts and innovative policies.

- **Improvements (2017–2024): (Source:** National Compilation on Dynamic Ground Water Resources of India, 2024**)**
  - Groundwater recharge increased by **15 BCM**.
  - Extraction decreased by **3 BCM**.
  - Safe assessment units increased from **62.6% (2017)** to **73.4% (2024)**.
  - Over-exploited units declined from **17.24%** to **11.13%**.
- **Government Initiatives for Groundwater Conservation**
  - **Jal Shakti Abhiyan:** Focuses on rainwater harvesting and water conservation under the "Catch the Rain" campaign.
  - Atal Bhujal Yojana **(2020):** Targets groundwater management in water-stressed regions across seven states.
  - **Mission Amrit Sarovar (2022):** Plans to create/rejuvenate **75 Amrit Sarovars** in each district for water harvesting.
  - **Pradhan Mantri Krishi Sinchai Yojana (PMKSY):** Expands irrigation coverage and improves water-use efficiency.
  - **National Aquifer Mapping (NAQUIM):** Covers **25 lakh sq. km**, aiding in better planning for groundwater recharge.
  - **Master Plan for Artificial Recharge (2020):** Proposes **1.42 crore rainwater harvesting structures** to harness **185 BCM of rainfall**.
  - **Watershed Development Component of** PMKSY **(WDC-PMKSY):** Promotes soil conservation and rainwater

harvesting.
  - **National Water Policy (2012):** Advocates rainwater harvesting and efficient water use.
- **Challenges Facing Groundwater:**
- **Over-extraction:** Rapid depletion of groundwater reserves due to irrigation and domestic use.
- **Pollution:** Groundwater contamination by arsenic, fluoride, nitrates, and industrial pollutants.
- **Declining Water Tables:** Unsustainable urban and rural practices causing water levels to drop.
- **Climate Change:** Shifting rainfall patterns disrupting recharge cycles.
- **Urbanization**: Expansion of cities reducing recharge zones and infiltration.

- **Way Ahead:**
  - **Policy Interventions:** Enforce sustainable groundwater use laws and introduce incentives for adopting conservation techniques.
  - **Technology Integration:** Leverage AI and IoT for real-time groundwater monitoring and optimized water resource management.
  - **Community Engagement:** Foster awareness campaigns and involve local communities in groundwater conservation initiatives.
  - **Integrated Water Management:** Encourage the use of surface and rainwater to complement groundwater and reduce dependence.

Conclusion:

India's significant progress in groundwater recharge and conservation underscores the importance of collaborative efforts. By continuing sustainable practices, technological innovations, and community participation, India can secure its water future and lead the way in global water management.

PYQ:

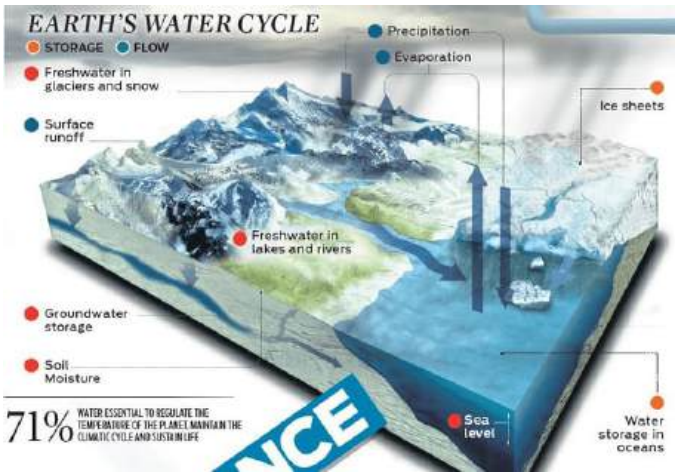
1. What are the salient features of the Jal Shakti Abhiyan launched by the Government of India for water conservation and water security? (UPSC-2020)
2. Suggest measures to improve water storage and irrigation system to make its judicious use under the depleting scenario. (UPSC-2020)

24. RAIN, RIVERS, AND WARMING REALITIES: THE WATER CYCLE IN PERIL

Context:

Climate change has intensified the Earth's water cycle, leading to extreme precipitation, severe droughts, and disruptions in water availability.

- The **2024 Global Water Monitor Report** highlights the grave implications of these changes for ecosystems, agriculture, and global economies.



What is the Water Cycle?

The **water cycle** is the continuous movement of water in different states (solid, liquid, gas) across the Earth and its atmosphere, driven by solar energy and gravity. It ensures water availability and regulates weather patterns.

Components of the Water Cycle:

- **Evaporation:** Water transforms from liquid to vapor, primarily from oceans, driven by solar energy.
- **Transpiration:** Plants release water vapor into the atmosphere, adding to the moisture content.
- **Condensation:** Water vapor cools in the atmosphere, forming clouds and setting the stage for precipitation.
- **Precipitation:** Water returns to Earth as rain, snow, or sleet, replenishing surface and groundwater.
- **Infiltration:** Water seeps into the soil, recharging aquifers and sustaining vegetation.
- **Runoff:** Water flows over the land into rivers, lakes, and seas, contributing to the hydrological balance.

Recent Data on Water Cycle and Climate Change:

Water Disasters (2024): Over 8,700 fatalities and displacement of 40 million occurred due to extreme water-related events.

- **Record-Dry Months:** A 38% increase in record-dry months was observed in 2024 compared to 1995-2005.
- **Rainfall Records:** Rainfall records were broken 52% more often in 2024 than in the year 2000, indicating heightened precipitation intensity.
- **Economic Losses:** Water-related disasters caused over $550 billion in global economic damages in 2024.
- **IPCC & Nature Reports:** Climate change has intensified the water cycle by up to 7.4%, with long-term effects on rainfall and drought patterns.

Impacts of Climate Change on the Water Cycle:

- **Negative Impacts:**
  - **Increased Evaporation:** Higher temperatures cause more evaporation, leading to frequent and severe storms and floods.
  - **Drought:** Accelerated evaporation and dry air result in prolonged droughts and arid soils.
  - **Glacial Melt:** Melting glaciers reduce freshwater availability and contribute to rising sea levels.
  - **Water Scarcity:** Nearly 3 billion people globally face water shortages due to erratic precipitation and depleted sources.
  - **Soil Erosion:** Heavy rainfall increases runoff, washing away fertile soil and disrupting agriculture.
- **Positive Impacts:**
  - **Enhanced Vegetation:** Regions like the Sahara Desert now support vegetation due to increased precipitation.
  - **Improved Rainfall:** Wetter areas such as the Sahel benefit from increased rainfall, boosting water availability.

Solutions to Mitigate Impacts:

- **Improved Water Management:** Implementing efficient irrigation and conservation practices ensures sustainable water use.
- **Reforestation:** Planting trees restores green water sources and enhances carbon sequestration.
- **Reducing Emissions:** Cutting greenhouse gases slows global warming and mitigates climate-driven water cycle changes.
- **Enhancing Infrastructure:** Building resilient infrastructure prevents damage from floods and ensures water storage during droughts.
- **Global Cooperation:** Countries must enforce water-sharing treaties and adhere to international climate agreements.
- **Public Awareness:** Educating communities about water conservation methods like rainwater harvesting promotes sustainable practices.

Conclusion:

The intensification of the water cycle due to climate change presents a global challenge with widespread consequences. Mitigating these effects requires collective action, sustainable water management, and adherence to climate goals to secure a balanced and resilient water future.

PYQ:

1. What are the salient features of the Jal Shakti Abhiyan launched by the Government of India for water conservation and water security? (UPSC-2020)
2. Suggest measures to improve water storage and irrigation system to make its judicious use under the depleting scenario. (UPSC-2020)

25. CHARTING CLIMATE ACTION: INDIAN BIENNIAL UPDATE REPORT

Context:

Recently, India submitted its **Biennial Update Report (BUR-4)**, providing a detailed account of its greenhouse gas (GHG inventory), progress on targets, and measures to combat climate change.

What are Biennial Update Reports (BURs)?

BURs are reports submitted by developing countries to the UNFCCC, as per the obligations under the **Paris Agreement**. They include:

1. **National GHG Inventory:** Detailed emission sources, sinks, and trends.
2. **Climate Action Plans:** Updates on policies and programs to mitigate emissions.
3. **Support Received:** Financial, technical, and capacity-building assistance.
4. **Socioeconomic and Forestry Data:** Insights into national circumstances influencing emissions.

Highlights of India's BUR-4:

1. **GHG Inventory for 2020:**
   - **Total** GHG emissions**:** 2,959 million tonnes of CO2 equivalent.
   - **Net GHG emissions (after forestry absorption):** 2,437 million tonnes of CO2 equivalent.
   - Emissions intensity of GDP reduced by **36% from 2005 levels**.
2. **Sectoral Contributions to Emissions:**
   - Energy: **75.66%** (Electricity production alone: 39%).
   - Agriculture: **13.72%**.
   - Industry and Waste: **10.62%**.
3. **Progress on Commitments:**
   - Emissions intensity reduction target of **45% by 2030** is on track.
   - Non-fossil fuel-based power generation capacity: **46.52% as of 2024**.
   - Additional carbon sink creation: **2.29 billion tonnes CO2 equivalent (2005–2021)**.
4. **Energy Efficiency Schemes:**
   - **Perform, Achieve, and Trade (**PAT**):** Saved 7.72 Mtoe and reduced 28.74 million tonnes of CO2 emissions.
5. **Tech Needs for Growth:**
   - Highlighted needs for advanced technologies like ultra-efficient photovoltaics, floating wind turbines, and carbon capture for industrial sectors.

India's Climate Commitments and Status:

Commitment	Status
Reduce GDP emissions intensity by 45% by 2030	Achieved **36% reduction (2005–2020)**
50% installed power capacity from non-fossil fuels	Achieved **46.52% (as of October 2024)**
Create 2.5–3 billion tonnes CO2 sink by 2030	Created **2.29 billion tonnes (2005–2021)**
Net-zero emissions by 2070	On track with incremental progress in renewable adoption and energy savings.

Challenges in achieving commitments:

- **Technology Barriers:** Limited access to advanced, low-carbon technologies due to high costs and intellectual property restrictions.
- **Financial Constraints:** Insufficient funding for large-scale renewable energy projects and carbon sink initiatives.
- **High Dependency on Fossil Fuels:** Transitioning sectors like transportation and industries remains a significant challenge.
- **Agricultural Emissions:** Methane from livestock and rice cultivation continues to be a persistent issue.
- **Urbanization and Population Growth:** Increasing energy demand and waste generation strain existing resources.

Way Ahead:

- **Strengthen Technology Transfer:** Facilitate affordable access to advanced climate technologies.
- **Expand Renewable Energy:** Accelerate investments in solar, wind, and other non-fossil energy resources.
- **Enhance Forest Cover:** Implement robust afforestation programs to meet carbon sink targets.
- **Promote Circular Economy:** Encourage sustainable practices across industries and waste management.
- **Collaborate Globally:** Seek international support for finance, technology, and capacity-building.

Conclusion:

India's BUR-4 underscores its progress toward climate goals, especially in reducing emissions intensity and transitioning to renewable energy. Despite challenges, a collaborative, technology-driven, and resource-efficient approach can help India achieve its commitments and inspire global climate action.

PYQ:

1. Describe the major outcomes of the 26th session of the Conference of the Parties (COP) to the United Nations Framework Convention on Climate Change (UNFCCC). What are the commitments made by India in this conference? (UPSC-2021)
2. 'Climate Change' is a global problem. How will India be affected by climate change? How Himalayan and coastal states of India be affected by climate change? (UPSC-2017)

26. THE HEAT IS ON: GLOBAL WARMING & INDIA'S FUTURE

Context:

The year 2024 has been declared the warmest year on record globally, surpassing the critical 1.5°C threshold above pre-industrial levels. While India also recorded its warmest year, the extent of warming was relatively lower compared to the global average.

Global warming trends in 2024:

- **Temperature Records:** Global temperatures in 2024 were 1.28°C higher than NASA's baseline (1951–1980), breaking previous records.
- **Warming Rates:** The temperature rise over land exceeded 1.6°C, while oceans warmed by approximately 0.9°C.
- **El Niño Impact:** A strong El Niño phenomenon further contributed to the temperature surge.
- **Decadal Warmth:** The past decade has been the warmest in recorded history, with every year exceeding previous temperature averages.
- **Regional Variations:** The Arctic and high-altitude regions saw the highest temperature increases due to polar amplification and the albedo effect.

Factors leading to 2024 being the warmest year:

- **Greenhouse Gas Emissions:** Record-high CO_2 and methane emissions from fossil fuel use intensified global warming.
- **El Niño Effect:** A strong El Niño event amplified ocean temperatures, pushing global averages upward.
- **Volcanic Eruption Impacts:** The 2022 Tonga eruption likely altered atmospheric circulation, contributing to warming in subsequent years.
- **Decreased Aerosol Pollution:** Reduced pollution led to lesser cloud cover, allowing more solar radiation to be absorbed by the Earth.
- **Loss of Arctic Ice:** Accelerated melting in the Arctic reduced albedo, causing more heat absorption and increasing temperatures.

Why India experienced comparatively lower warming?

- **Tropical Location:** Less variability in warming compared to polar and temperate regions.
- **Aerosols and Particulate Matter:** High aerosol concentrations scatter sunlight, cooling India.
- **Monsoon Dynamics:** Indian monsoon system regulates surface temperatures through seasonal rainfall.
- **Ocean Influence:** Surrounding oceans act as heat sinks.
- **Landmass Proportion:** India's smaller landmass results in less pronounced warming.

Challenges in controlling global warming:

- **Rising** fossil fuel **consumption and emissions.**
- **Economic dependence on coal and oil**.
- **Global inequity** hindering **unified climate action**.
- **Insufficient funding** for climate adaptation in developing nations.
- **Climate denial** slowing progress on international agreements.

Solutions to control global warming:

- **Accelerate Renewable Energy Transition:** Adopt solar, wind, and hydropower.
- **Combat Deforestation**: Implement large-scale tree-planting as carbon sinks.
- **Strengthen Climate Policies**: Enforce Paris Accord for emissions reductions.
- **Invest in Technology Integration**: Invest in carbon capture, storage, green technologies.
- **Educate Communities:** Drive grassroots action and policy support.

Conclusion:

The record-breaking temperatures of 2024 underline the urgency of addressing climate change. While India's relative warming is lower, its vulnerabilities demand focused mitigation and adaptation efforts. Global cooperation, backed by robust policies and public participation, remains key to combating this existential crisis.

PYQ:

1. 'Climate change' is a global problem. How India will be affected by climate change? How Himalayan and coastal states of India will be affected by climate change? (UPSC-2017)

Topics: Disaster and management.

27. BATTLING THE BLAZE: THE WILDFIRE WAKE-UP CALL

Context:

The Los Angeles wildfires of 2025 have caused widespread devastation, claimed seven lives and destroyed over 10,000 structures.

What Are Wildfires?

Wildfires are uncontrolled fires that spread rapidly across forests, grasslands, or urban areas, fueled by dry vegetation and wind. While they are natural occurrences in ecosystems, human activities and climate change have amplified their frequency and severity.

Geographic Conditions Aiding Wildfires:

- **Dry Climate:** Prolonged droughts in California create arid conditions, drying vegetation and making it highly flammable.
- Santa Ana Winds: Strong, hot winds spread embers and intensify the flames, rapidly increasing the fire's reach.
- **Vegetation Density:** Dense forests and dry shrubs act as natural fuel, accelerating the wildfire's intensity.
- **Topography:** Hilly terrains funnel winds, helping fires move faster uphill and spreading flames over larger areas.
- **Lack of Rainfall:** Extended dry spells reduce soil moisture and weaken vegetation, making them more prone to ignition.

Causes of Wildfires:

- **In California:**
  - **Electrical Equipment Failures:** Sparks from power lines in dry, windy conditions often trigger wildfires.
  - **Urban Expansion:** Development near wildfire-prone regions increases human activity and ignition risks.
  - **Arson:** Intentional or accidental acts, like improper disposal of flammable materials, ignite fires.
- **General Causes:**
  - **Lightning Strikes:** Natural ignitions during thunderstorms often lead to large-scale wildfires.
  - Climate Change: Rising global temperatures and increased droughts have made conditions ripe for frequent fires.
  - **Agricultural Burns:** Poorly managed burns meant for clearing fields can spread uncontrollably, causing wildfires.

Consequences of Wildfires:

- **Human and Economic Losses:** Wildfires cause loss of lives, displace communities, and lead to financial losses exceeding billions of dollars.
- **Environmental Impact:** Destroy ecosystems, habitats, and vegetation, disrupting biodiversity and soil health.
- **Air Quality Deterioration:** Smoke and particulate matter from wildfires pollute the air, causing respiratory and cardiovascular issues.
- **Water Contamination:** Ash and debris from fires contaminate water sources, impacting drinking water and aquatic life.
- **Insurance Challenges:** Frequent and intense wildfires strain the insurance industry, increasing costs for both providers and property owners.

Measures to Mitigate Wildfires:

- **Improved Fire Management:** Use advanced firefighting tools like drones, fire-retardant chemicals, and satellite monitoring for early detection and response.
- **Vegetation Control:** Remove dry vegetation, implement controlled burns, and maintain firebreaks to limit the spread of wildfires.
- **Climate Adaptation:** Enact long-term policies addressing climate change, such as reducing carbon emissions and promoting renewable energy.
- **Public Awareness:** Educate communities on fire prevention, evacuation plans, and the risks of activities like campfires during dry seasons.
- **Stronger Regulations:** Enforce stricter building codes, land use policies, and restrictions on human activities in fire-prone areas to minimize ignition risks.

Conclusion:

Wildfires are a growing challenge due to climate change and urbanization. Addressing their causes, improving response strategies, and investing in long-term climate solutions are essential to minimize their devastating impacts on humanity and ecosystems.

PYQ:

1. Most of the unusual climatic happenings are explained as an outcome of the El-Nino effect. Do you agree? (UPSC-2014)

28. STAMPEDE

Context:

A tragic stampede at Mahakumbh Mela 2025 in Prayagraj on January 29 resulted in 30 deaths and 60 injuries, raising concerns over crowd management failures.

What is Stampede?

- Uncontrollable crowd movement leading to trampling, suffocation, and fatalities.
- Triggered by panic or excitement due to rumors, fear, limited space, or sudden movements.
- Common in religious gatherings, with 79% occurring in India.

Stampedes Causes:

- **Structural Failures:** Weak temporary structures, poor barricading, narrow entry/exits.
- **Poor Crowd Control**: Underestimation of crowd size, lack of staffing, inadequate exits, uncontrolled access.
- **Panic and Rumours**: False alarms, mass hysteria trigger sudden movements.
- **Fire & Electrical Issues**: Short circuits, lack of fire extinguishers, poor lighting create panic situations.
- **Lack of Coordination:** Poor planning, delayed responses, and lack of real-time monitoring worsen the crisis.

NDMA Guidelines on Preventing Stampedes

- **Crowd Estimation and Management:** Assess expected crowd size, control entry points, and regulate footfall.
- **Infrastructure and Safety Measures:** Ensure strong barricades, emergency exits, and adequate ventilation.
- **Security and Surveillance:** Deploy CCTV cameras, public address systems, and trained security personnel.
- **Emergency Preparedness:** Strategically station medical teams, ambulances, and fire-fighting units.
- **Public Awareness and Information Dissemination:** Educate attendees via signboards, helpline numbers, and digital updates.

Preventing Stampedes Challenges

- **Uncontrolled Crowd Surges:** Religious sentiments, lack of discipline, and sudden influx complicate crowd regulation.
- **Inadequate Law Enforcement:** Shortage of trained personnel, coordination issues, and poor sector deployment hinder response.
- **Poor Infrastructure Maintenance:** Narrow passages, weak bridges, illegal encroachments create bottlenecks.
- **Lack of Technology Integration:** Absence of real-time analytics, GPS tracking, and AI-based crowd control systems delays crisis response.
- **Resistance to Pre-Registration Systems:** Overcapacity issues due to resistance.

Way Ahead for Emergency Response:

- Implement strict pre-registration and ticketing for control.
- Use AI and drones for real-time crowd analysis.
- Train security and volunteers in crowd psychology and emergency responses.
- Implement efficient traffic and movement planning.
- Conduct regular stampede response drills for crisis handling.

Conclusion:

As NDMA states, **"Prevention is better than cure."** Proactive crowd management, technology integration, and strict regulation are crucial to preventing future stampedes. Effective policy implementation and coordination can save lives and ensure safer public gatherings.

PYQ:

1. Discuss the recent measures initiated in disaster management by the Government of India departing from the earlier reactive approach. (UPSC-2020)

GENERAL STUDIES – 4

1. ANIMAL DIPLOMACY

Context:

Nepal Prime Minister proposal to gift surplus tigers as a diplomatic gesture has sparked global debate.

About Animal Diplomacy:

- **What is Animal Diplomacy?**
  - Animal diplomacy involves the use of animals as symbols of cultural goodwill or as tools to strengthen international ties. This practice has been widely used to foster relationships between countries.

Features of Animal Diplomacy:

- **Cultural Representation:** Animals symbolize the natural heritage of their home country.
  E.g. China's pandas reflect its culture and conservation success.
- **Strengthening Bilateral Relations:** Gifting animals enhances goodwill and diplomatic ties.
  E.g. Nepal gifting one-horned rhinos to Germany in 2015.
- **Economic Leverage:** Animals can facilitate trade deals or partnerships.
  E.g. China's panda loans often align with trade agreements.
- **Conservation Symbolism:** Animals highlight the donor country's environmental commitment.
  E.g. Bhutan's black-necked crane initiatives promote conservation.
- **Tourism Boost:** Exotic animals in zoos attract global tourists and increase revenue.
  E.g. Zoo's hosting pandas report record attendance.

Role of Animals in Strengthening Diplomacy:

- **Symbol of Goodwill:** Animal gifts signify friendship and cooperation.
  E.g. Nehru gifting an elephant to Japan in 1949 symbolized post-war unity.
- **Soft Power Tool:** Animal diplomacy strengthens global influence and alliances.
  E.g. China's "Panda Diplomacy" enhances its international image.
- **Conservation Partnerships**: Shared conservation goals promote international collaboration.
  E.g. Nepal gifting rhinos to Qatar in 2024 to highlight conservation efforts.
- **Strengthening Bilateral Cooperation:** Wildlife resources are leveraged to build partnerships.
  E.g. Botswana uses its wildlife to foster sustainable tourism collaborations.
- **Promoting Cultural Exchange:** Animal gifts showcase cultural heritage and traditions.
  E.g. Thailand gifting elephants emphasizes its national identity.

Negative Impacts of Animal Diplomacy:

Ethical Concerns:

- **Animal Welfare Risks:** Transport and captivity stress animals, affecting their health.
  E.g. Pandas struggle to adapt to foreign climates, leading to health issues.
- **Exploitation for Political Gains:** Animals are commodified, ignoring their intrinsic value.
  E.g. Animals are traded as diplomatic tools rather than for conservation.
- **Removal from Natural Habitat:** Disrupts ecosystems and hinders biodiversity conservation.
  E.g. Endangered species removed for gifting purposes impact local ecology.
- **Cultural and Ethical Sensitivities:** Gifts may conflict with the recipient country's values.
  E.g. Gifting cows to vegetarian societies may spark cultural controversies.

Non-Ethical Concerns:

- **Illegal Wildlife Trade Risk**: Diplomatic exchanges can fuel black-market trade.
  E.g. Conservation efforts are misused for trafficking exotic species.
- **Risk of Diplomatic Strains:** Mismanagement or death of animals can sour relations.
  E.g. Deaths of pandas loaned by China caused public and diplomatic backlash.

- **Short-Term Gains vs. Long-Term Costs:** Diplomacy often overlooks lasting ecological effects.
  E.g. Gifting apex predators can destabilize ecosystems in recipient countries.

Way Ahead:

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

Conclusion:

Animal diplomacy must evolve with a stronger focus on ethical practices, ensuring that both diplomatic goals and animal welfare are upheld harmoniously.

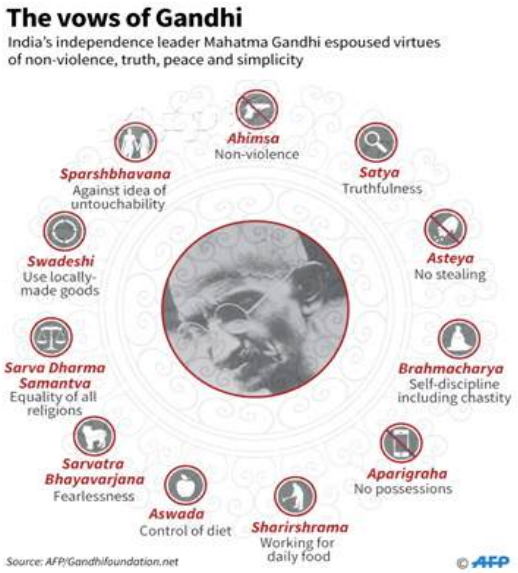
PYQ:

1. Discuss the recent measures initiated in disaster management by the Government of India departing from the earlier reactive approach. (UPSC-2020)

2. GANDHI'S INNER ETHICAL PHILOSOPHIES

Context:

The second volume of **Manu Gandhi's diaries**, translated by **Tridip Suhrud**, provides a rare firsthand account of **Mahatma Gandhi's last years** (1946-1948).



About Gandhi's Inner Ethical Philosophies

1. **Truth (Satya):** Gandhi believed truth was absolute and self-evident, guiding all human actions. He saw it not just as honesty in speech but as a way of life that aligns with moral righteousness.
2. **Non-Violence (Ahimsa):** For Gandhi, non-violence was an active force, not just the absence of violence. It extended beyond physical harm to thoughts, words, and social actions, influencing civil disobedience and satyagraha.
3. **Self-Discipline (Brahmacharya):** He saw self-restraint as essential for ethical living. From dietary restrictions to celibacy, he practiced strict discipline, believing it purified the mind and strengthened spiritual focus.
4. **Minimalism and Simplicity:** Gandhi emphasized renouncing material excess and living in harmony with nature. His self-sufficient lifestyle in ashrams and his use of hand-spun cloth (khadi) embodied this ideal.
5. **Service and Compassion (Sarvodaya):** He believed in uplifting all sections of society, especially the oppressed. His constructive programs, like the upliftment of Harijans (Dalits), reflected his commitment to universal welfare.

Importance of Gandhi's Philosophy in Civil Services

- **Ethical Decision-Making**: Civil servants face moral dilemmas; Gandhi's principle of truth and justice helps navigate complex governance issues.
- **Non-Violent Conflict Resolution**: Bureaucrats deal with public grievances, protests, and policy disagreements; Gandhi's methods teach diplomacy and peaceful resolution.
- **Minimalism and Accountability:** His idea of simple living and high thinking promotes transparency, corruption-free governance, and efficient resource management.
- **Service-Oriented Leadership:** His Sarvodaya model emphasizes inclusive growth, rural development, and people-centric policies, crucial for nation-building.
- **Self-Discipline and Resilience:** Gandhi's strict personal ethics instill dedication, perseverance, and ethical governance, key virtues for public administrators.

Challenges in Adopting Gandhi's Ethics Today:

- **Materialism and Consumerism:** Modern society glorifies wealth and status, making it difficult to follow Gandhi's

minimalistic lifestyle.

- **Political and Bureaucratic Corruption:** In an era of power struggles and unethical practices, practicing truth and non-violence in governance is challenging.
- **Short-Term Pragmatism vs. Long-Term Values:** Policymakers often prioritize immediate political gains over ethical governance, undermining Gandhian principles.
- **Technological Disruptions and Globalization:** The fast-paced digital economy and changing socio-political landscapes create ethical dilemmas that require adaptive moral frameworks.
- **Public Skepticism and Cynicism:** Many views non-violence and self-sacrifice as impractical or outdated, limiting their mainstream acceptance.

To Incorporate Gandhi's Ethics in Life:

- **Practice Honesty Daily:** Be truthful in small decisions to develop a habit of ethical thinking.
- **Adopt Simplicity**: Reduce material dependence, support sustainable living, and focus on inner growth.
- **Promote Peaceful Solutions**: Use dialogue, patience, and empathy in resolving conflicts, whether in personal life or professional settings.
- **Engage in Social Service**: Volunteer for community welfare initiatives and support causes that uplift the underprivileged.
- **Self-Discipline and Reflection**: Follow daily self-assessment, meditate on personal actions, and cultivate self-restraint to enhance moral clarity.

Conclusion:

As Gandhi once said, **"Be the change you wish to see in the world."** His philosophy of **truth, non-violence, and self-discipline** remains timeless and deeply relevant. By integrating these values into daily life, individuals can foster ethical leadership and contribute to a just society.

PYQ:

1. Discuss Mahatma Gandhi's concept of seven sins. (UPSC-2016)

FACTS FOR PRELIMS

GS-1

Art & Culture

1. MAHA KUMBH MELA

Context:

Prayagraj is hosting the Maha Kumbh mela, which occurs every 12 years. Tens of thousands are expected to gather in the city and camp along the banks of the Ganga.

About Kumbh Mela:

- **What it is:**
  - A major **Hindu pilgrimage and festival**, where devotees gather to bathe in sacred rivers, seeking spiritual cleansing and divine blessings.
  - Known as the **"largest gathering of humanity on Earth."**

Maha Kumbh 2025: Four different types of Kumbh Mela:

i. Purna (complete) Kumbh Mela: The Purna Kumbh Mela, conducted every 12 years at four sacred places, is the most. It attracts millions of devotees who converge for religious ceremonies, including a
ii. Ardh (half) Kumbh Mela: The Ardh Kumbh Mela occurs every six years and fills
the 12-year gap between the Purna Kumbh Melas at Haridwar and Prayagraj.
iii. Kumbh Mela: The Kumbh Mela is held every three years on the banks of rivers at these four sites.
iv. Maha (Great) Kumbh Mela: The Maha (great) Kumbh Mela, which takes place once every 12 years, is the festival's rarest and sacred incarnation of the festival. It commemorates 12 cycles of the 12-year Kumbh Mela, drawing a great number of

believers who think that taking the holy plunge during this time enhances spiritual qualities.

- **Historical Origin:**
  - Rooted in the mythological **Samudra Manthan** (churning of the ocean) where drops of **amrita** (elixir of immortality) fell at four locations.
  - Early records suggest it evolved from ancient **Magh Melas** in Prayagraj.
  - Mentioned in the **Skanda Purana** and referenced by Chinese traveller **Xuanzang** in the 7th century CE.
- **Held at (Places and Rivers):**
  - **Haridwar:** River Ganga.
  - **Prayagraj:** Confluence (Sangam) of Ganga, Yamuna, and mythical Saraswati.
  - **Nashik-Trimbakeshwar:** River Godavari.
  - **Ujjain:** River Kshipra.

Feature	Kumbh Mela	Maha Kumbh Mela
Frequency	Every **12 years** at each of the four locations	Once **every 144 years** (after 12 Purna Kumbh Melas)
Held at	Haridwar, Prayagraj (Allahabad), Nashik, Ujjain	Only at **Prayagraj (Allahabad)**
Spiritual Significance	Kumbh Mela is viewed as less potent than the Mahakumbh.	Spiritual benefits, including purification of sins and attainment of salvation. The holy dip during this time is considered particularly powerful.
Scale	Generally, sees fewer participants than the Mahakumbh due to its more frequent occurrence and smaller scale.	Estimated **40 crore (400 million)** devotees, making it one of the largest religious gatherings in the world

2. KONARK SUN TEMPLE

Context:

Recently, Singapore President Tharman Shanmugaratnam visited the Sun Temple, highlighting its global prominence and Odisha's rich craftsmanship.

About Konark Sun Temple:

- **Location:** Situated in Konark, Odisha, near the Bay of Bengal.
- **Built in:** Constructed in the 13th century (1238–1264 CE).
- **Built by:** Commissioned by King Narasimha Deva I of the Ganga dynasty.
- **Kingdom associated:** Represents the strength and stability of the Ganga Empire.
- **Architectural features:**
  - **Chariot Design:** The temple is designed as a grand chariot of Surya, the Sun God, with 24 elaborately carved wheels, each 3 meters in diameter, symbolizing time and celestial movement.
  - **Seven Horses:** The temple features seven sculpted horses pulling the chariot, representing the Sun's journey across the sky.
  - **Intricate Sculptures:** The plinth and walls are adorned with detailed carvings of dancers, musicians, animals, and mythological narratives, showcasing the artistic finesse of the era.
  - **Vimana and Shikhara:** The original principal sanctuary (vimana) was topped with a towering shikhara (crown), which collapsed in the 19th century.
  - **Natmandir and Jahamogana:** The dance hall (natmandir) and audience hall (jahamogana) exhibit pyramidal designs, reflecting the grandeur of Kalinga temple architecture.
  - **Symbolic Motifs:** Depictions of lions, mythical creatures, and erotic sculptures highlight the spiritual, cultural, and symbolic aspects of 13th-century life.
- **Global Recognition:** Listed as a UNESCO World Heritage Site, acknowledged for its artistic ingenuity and cultural relevance, attracting tourists worldwide.

3. KALARIPAYATTU

Context:
The 38th National Games in Uttarakhand has sparked controversy over the relegation of Kalaripayattu, Kerala's ancient martial art form, to the demonstration section.

About Kalaripayattu:
Kalaripayattu: An Ancient Martial Art
• Originated in Kerala, South India.
• Mythology credits warrior sage Parasurama for creation.
• Key Features: Body conditioning, wooden weapons, metallic weapons, and bare-handed techniques.
• Recognized as an Intangible Cultural Heritage in India.
• Women's participation: Historically trained in Kalaripayattu, still practiced today.

4. LEZIM DANCE

Context:
The upcoming Bollywood film *Chhava*, based on the life of **Chhatrapati Sambhaji Maharaj**, has sparked controversy over a scene where the Maratha king is depicted performing the Lezim dance.

About Lezim Dance:
- Traditional folk-dance from Maharashtra, characterized by vigorous movements and rhythmic beats.
- Performs with a Lezim, a wooden instrument with metallic jingles.
- Primarily performed in Maharashtra, especially during festivals and cultural celebrations.
- Popular in regions along the Konkan coast.
- Features include physical rigor, drum accompaniments, and cultural symbolism.
- Dancers move in circles or synchronized formations, gradually increasing pace with drum beats.

Historical Significance of Lezim Dance:
- Evolved from traditional gymnasiums, initially performed during martial arts training.
- Adapted into cultural and celebratory events.
- Popularized as a military exercise during Chhatrapati Shivaji Maharaj's reign.
- Symbolized Maratha pride and unity, resonating with community's cultural identity.

History

5. SREE NARAYANA GURU

Context:
Kerala Chief Minister's remarks on Sree Narayana Guru have sparked political controversy in Kerala.

About Sree Narayana Guru:
- **Born at:** Chempazhanthy, near Thiruvananthapuram, Kerala, on August 22, 1856.
- **Community:** Belonged to the Ezhava caste, a marginalized group subjected to caste-based discrimination.
- **History and Background:**
  - Known as **'Avarna,'** he cherished solitude and spent time in meditation from a young age.
  - His revolutionary act of installing a **Shivalinga at Aruvippuram in 1888** symbolized the rejection of caste-based restrictions in temple practices.
- **Contributions:**
  - **SNDP Movement:** Founded the Shree Narayana Dharma Paripalana Yogam in 1903 to address issues like education, government service access, and temple entry for Ezhavas.

- **Philosophy:** Coined the famous slogan, ***"One Caste, One Religion, One God for All"*** (Oru Jathi, Oru Matham, Oru Daivam, Manushyanu).
- Advocated for equality without provoking social unrest or forced conversions.
- Opposed animal sacrifices and promoted non-violence.

- **Literary Work:**
  - Authored devotional hymns and philosophical texts that emphasized universal brotherhood and spiritual enlightenment.
  - Wrote the **Atmopadesa Satakam** and other works inspiring moral and spiritual values.

6. INDUS VALLEY SCRIPT

Context:

Tamil Nadu Chief Minister offer of a $1 million prize for anyone who deciphers the Indus Valley script serves a purpose beyond solving the lingering mystery regarding the 5,000-year-old civilization.

About Harappan Script:

- **What it is:**
  - The writing system of the Indus Valley Civilization (c. 2600-1900 BCE), featuring undeciphered symbols with **no confirmed linguistic association**.
- **Material used:**
- Found on **steatite seals, clay impressions, pottery, bronze tools, stoneware** bangles, shells, ivory, and small copper tablets.
  - Seals were often **square, about 2.54 cm**, and occasionally made of materials like silver, faience, and calcite.
- **Features of the script:**
  - Short inscriptions averaging **five symbols**, with the longest known being **26 symbols.**
  - Early forms appeared during the **Ravi and Kot Diji phases** (c. 3500-2700 BCE).
  - The script appears to have fully developed by the Urban period (c. 2600-1900 BCE).
- **Motifs found on script:**
  - Animal motifs such as **unicorns, bulls, tigers, elephants, and mythical creatures**.
  - Depictions of human figures, often in symbolic or narrative contexts, including combat or ritual scenes.

7. SAINT NARAHARI TIRTHA

Context:

The discovery of a 13th-century idol of Saint Narahari Tirtha has reignited interest in his multifaceted legacy as a philosopher, statesman, poet, and proponent of Vaishnavism.

About Narahari Tirtha:

- **Born in:** Circa 1243 CE, believed to hail from Chikakolu (modern-day Srikakulam, Andhra Pradesh).
- **Place**: Andhra Pradesh or Odisha (Kalinga), significant in both regions for his contributions.
- **Guru:** Shri Madhvacharya (Ananda Tīrtha), the founder of Dvaita philosophy.
- **Philosophy and Contributions:**
  - **Dvaita Philosophy:** A prominent disciple of Madhvacharya, Narahari Tīrtha composed commentaries and worked to propagate Vaishnavism and Bhagavata Dharma.
  - **Administrative Role:** Served as a minister in the Kalinga Kingdom for 12 years, guiding rulers to align governance with Sanatana Dharma.
  - **Haridasa Movement:** Considered the progenitor of this movement, he popularized devotion through **Kannada songs** under the pen name *Raghukulatilaka*.
  - **Cultural Legacy:** Promoted Yakshagana Bayalata (dance-drama) and classical Kuchipudi dance.
  - **Educational Reforms:** Transformed the Simhachalam temple into a renowned educational hub for Vaishnavism.
  - **Religious Leadership:** Played a pivotal role in acquiring and safeguarding sacred idols like Moolarama and Moola Sita for Madhvacharya.
- **Pen Name:** Raghukulatilaka.

8. KUKA REBELLION

Context:
On January 17, the Punjab Chief Minister paid tribute at a function held at the Namdhari Shaheed Smarak in Malerkotla to commemorate Kuka Martyrs' Day.

About Kuka Rebellion:

- **What it is:**
  - The **Kuka Rebellion** was an anti-British uprising led by the **Namdhari sect**, also known as Kukas, in Punjab. The movement combined religious reform and resistance to colonial authority.
- **Occurred in:** The rebellion reached its peak in **January 1872**, with significant clashes in **Malerkotla** and **Malaudh Fort**.
- **Leaders:** The rebellion was spearheaded by **Satguru Ram Singh**, founder of the Namdhari sect, along with leaders like **Kuka Hira Singh** and **Lehna Singh**.
- **Reason behind the movement:**
  - **Religious Reform:** Opposition to social vices like meat consumption, alcohol, and foreign goods.
  - **Colonial Oppression:** Discontent with British rule and native collaborators loyal to the colonizers.
  - **Cow Slaughter:** Protests against cow slaughter, which deeply offended the sentiments of the Kukas.
- **Events during the movement:**
  - **Attack on Malerkotla** (January 13, 1872): Kukas clashed with officials following a cow slaughter incident.
  - **Assault on Malaudh Fort** (January 15, 1872): A Kuka contingent attacked the fort under a pro-British ruler but faced strong resistance.
  - **Mass Executions:** After their surrender, **49 Kukas were executed on January 17** and **17 more on January 18** by being blown up with cannons.
- **Suppression:** The British, led by **John Lambert Cowan**, acted with extreme brutality. Thousands of people were forced to witness these executions to serve as a deterrent.
- **Changes after the revolt:**
  - **Exile of Leaders:** Satguru Ram Singh and key leaders were exiled to **Rangoon**, Burma, marking the suppression of the movement.
  - **Legacy of Martyrdom:** Stories of bravery, such as the sacrifice of **12-year-old Bishan Singh** and **Waryam Singh**, inspired future resistance movements.

9. RATNAGIRI EXCAVATION

Context:
The Archaeological Survey of India (ASI) recently resumed excavations at Ratnagiri, a significant Buddhist site in Odisha.

About Ratnagiri Excavation:

Location: Ratnagiri is located in **Jajpur district, Odisha**, approximately **100 km northeast of Bhubaneswar**.

  - It is part of the **Diamond Triangle of Odisha**, along with Udaygiri and Lalitgiri.
- **Artifacts found in recent excavations:**
  - **Colossal Buddha Head:** Measuring 3–4 feet in height.
  - **Massive Palm:** Approximately 5 feet long.
  - **Ancient Wall:** Uncovered alongside Buddhist relics.
  - **Inscribed Relics:** Dating back to the 8th and 9th centuries AD.
- **Ratnagiri and the History of Buddhism:**
  - Ratnagiri flourished between the **5th and 13th centuries**, with its peak construction occurring between the **7th and 10th centuries**.
  - It was a center for **Mahayana** and **Tantrayana (Vajrayana)** Buddhism.
  - Buddhism in Odisha gained prominence under **Mauryan Emperor Ashoka** after the Kalinga War (261 BCE).
  - The site likely served as a hub for spreading Buddhism to **Southeast Asia**, supported by Odisha's ancient maritime trade links.
- **Significance of Ratnagiri:**
  - **Historical Significance:** Rivaled **Nalanda** as a Buddhist learning center.

- **Cultural Heritage:** Home to votive stupas, monasteries, and relics, showcasing the evolution of Buddhist art and architecture.
- **Global Links:** Evidence suggests close connections with **Southeast Asia** through trade and religious exchanges.
- **Educational Hub:** Likely visited by Chinese monk **Hiuen Tsang** in 638–639 AD.
- **Maritime Legacy:** Part of Odisha's celebrated **Baliyatra**, commemorating trade links with regions like Java, Sumatra, and Bali.

10. NETAJI SUBHAS CHANDRA BOSE

Context:

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

About Parakram Diwas:

- **Celebrated since:** Introduced in **2021** by the Government of India to commemorate the legacy of Netaji Subhas Chandra Bose.
- **Aim:** To instill **patriotism and courage** in citizens, particularly youth, and inspire them to face challenges with determination.
- **Significance:**
  - Honors Netaji's pivotal role in India's freedom movement.
  - Highlights his philosophy of **fearlessness and sacrifice** for the nation.
  - Encourages citizens to embrace his vision of a self-reliant and united India.

About Subhas Chandra Bose:

- **Birth and Education:**
  - Born on **January 23, 1897**, in **Cuttack, Odisha**.
  - Educated at **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.
- **Role in Freedom Movement:**
  - Active in the **Indian National Congress (INC)**; became its president in **1938 (Haripura)** and **1939 (Tripuri)**.
  - Resigned due to ideological differences with Mahatma Gandhi and formed the **Forward Bloc** in 1939.
  - Founded the **Indian National Army** **(INA)** with Japanese support, issuing the call to arms: *"Give me blood, and I will give you freedom."*
  - Established the **Azad Hind Government** in 1943 to unite Indians against British rule.
- **Literature and Media:**
  - Edited the newspaper **Forward**, advocating for Swaraj.
  - Authored *The Indian Struggle*, detailing India's fight for independence from 1920 to 1934.
- **Associated Parties:**
  - **Indian National Congress (INC):** Advocated complete independence and industrialization.
  - **Forward Bloc:** Founded to unify anti-British forces with socialist ideals.
  - **Indian National Army (INA):** Mobilized overseas Indians and prisoners of war to fight against British forces.

11. IRON AGE

Context:

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

About Iron Age:

- **What is the Iron Age?**
- **Timeframe:** Globally, the Iron Age began around 1200 BCE. However, recent findings in Tamil Nadu push India's Iron Age back to **3,345 BCE**, predating the globally recognized Hittite Empire's use of iron (1380 BCE).
- **Key Locations in India:**
  - **Sivagalai (Tamil Nadu)**: Earliest evidence, dated to 3,345 BCE.
  - **Mayiladumparai (Tamil Nadu)**: Evidence from 2,172 BCE.
  - **Brahmagiri (Karnataka)**: Iron Age evidence from 2,140 BCE.
  - **Gachibowli (Telangana)**: Dated to 2,200 BCE.

- **Phases of the Iron Age in India:**
  - **Early Iron Age (1500 BCE - 1000 BCE)**
    - Introduction of iron tools in agriculture and hunting (e.g., Hallur, Karnataka).
    - Overlaps with the late Vedic period; texts like the **Atharvaveda** composed.
    - **Significant sites:** Atranjikhera (Uttar Pradesh) and Malhar (Chhattisgarh).
  - **Middle Iron Age (1000 BCE - 600 BCE)**
    - Expansion of iron technology and urbanization.
    - Painted Grey Ware (PGW) culture emerges in the **Ganga-Yamuna plains**.
    - Rise of fortified settlements like **Kausambi** and early states (Janapadas).
  - **Late Iron Age (600 BCE - 200 BCE)**
    - Formation of Mahajanapadas and rise of the Mauryan Empire.
    - Spread of Buddhism and Jainism; Ashoka's edicts promote ethical governance.
    - **Significant urban centres:** Pataliputra (Patna) and Ujjain.
- **Key Features of the Iron Age:**
  - **Iron Technology:** Advanced smelting techniques led to the production of durable tools and weapons.
  - **Agricultural Revolution:** Iron ploughs and sickles boosted productivity, enabling surplus food production.
  - **Urbanization:** Fortified cities with sophisticated infrastructure, including drainage systems and public buildings.
  - **Political Structures:** Emergence of Janapadas and Mahajanapadas, followed by the Mauryan Empire's rise.
  - **Cultural Growth:** Composition of texts like the **Upanishads** and emergence of Buddhist and Jain art and philosophy.

12. LIBIA LOBO SARDESAI

Context:

India commemorates **Libia Lobo Sardesai**, a 100-year-old freedom fighter, who was honoured with the **Padma Shri** for her remarkable role in Goa's liberation struggle.

Liberation Struggle in Goa (1954-1961)

- Gained momentum due to Portuguese rule and economic exploitation.
- India imposed an economic blockade in 1954 after Portuguese suppression of satyagrahis.
- Key events: 1954 blockade, 1955 Satyagraha, and 1961 Operation Vijay.
- Leaders: Dr. Ram Manohar Lohia, Libia Lobo Sardesai, Lt. Gen. J.N. Chaudhuri.

Libia Lobo Sardesai:

- **Who is Libia Lobo Sardesai?**
  - **Born:** 25th May 1924, in Portuguese-ruled Goa.
  - Raised in Mumbai, she became actively involved in the **Goan nationalist movement** during her college years.
- **Contribution to Goa Liberation:**
- Libia's Underground Radio Station:
- Ran 'Voice of Freedom of Goa' from 1955-1961.
- Broadcasted counter-Portuguese propaganda.
- Operated from Western Ghats jungles in Amboli and Castle Rock.
- Faced isolation, harsh conditions, and threats.
- Announced Goa's liberation on 19th December 1961.
- **Legacy:** Libia is remembered as a symbol of resilience and courage, inspiring generations to fight for justice and freedom. Her efforts ensured that the voice of the Goan struggle reached the masses, despite heavy Portuguese censorship.

13. DEVI AHILYABAI HOLKAR

Context:

Indira Gandhi National Centre for the Arts (IGNCA)in collaboration with Lokmata Ahilyabai Trishatabdi Samaroh Samiti, hosted a special lecture, 'Devi Ahilya – Empress Renunciate,' to mark the 300th birth anniversary of Devi Ahilyabai Holkar.

About Devi Ahilyabai Holkar:

- **Birth and Early Life:**
  - **Born: May 31, 1725**, in Chondi village, Maharashtra.
  - **Family:** Daughter of Mankoji Shinde, the Patil of Chondi.
  - **Marriage:** Married **Khanderao Holkar** in 1733 at the age of 8.
  - **Mentor:** Trained in **administration, warfare, and diplomacy** by her **father-in-law Malhar Rao Holkar**.
- **Kingdom Associated:**
  - **Ruled the Holkar dynasty of Indore** within the **Maratha Confederacy** from **1767 to 1795**.
  - Established **Maheshwar (Madhya Pradesh)** as the **capital** of the Holkar dynasty.
- **History and Her Rise to Power:**
  - **1754:** Husband **Khanderao Holkar** was killed in the **Battle of Kumbher**.
  - **1766:** Father-in-law **Malhar Rao Holkar** passed away.
  - **1767:** Son **Male Rao Holkar**, who briefly ruled, died, leading to Ahilyabai assuming power.
  - **Ruled for 28 years** with a focus on **justice, administration, and welfare policies**.
- **Her Reign and Administration:**
  - **Good Governance & Public Welfare:**
    - Conducted **daily public hearings** to resolve people's grievances.
    - Ensured **fair justice**, once sentencing her own son for a capital offense.
    - Removed **laws confiscating property from childless widows**, ensuring their rights.
  - **Economic and Industrial Reforms:**
    - Established a **textile industry in Maheshwar**, now famous for **Maheshwari sarees**.
    - Promoted **industrialization and trade** while maintaining financial stability.
  - **Religious and Cultural Contributions:**
    - Rebuilt and restored **Kashi Vishwanath Temple** in **1780**.
    - Constructed **temples, ghats, and dharmashalas** across India, including **Dashashwamedh Ghat (Varanasi)**.
    - Ensured a **steady supply of Ganga water to distant temples**.
- **Military Contributions:**
  - Personally commanded troops to **defend Indore** from external invasions.
  - Appointed **Tukoji Rao Holkar** as Chief of Army to strengthen military defenses.
  - Successfully repelled attacks, preserving the **stability of Malwa**.

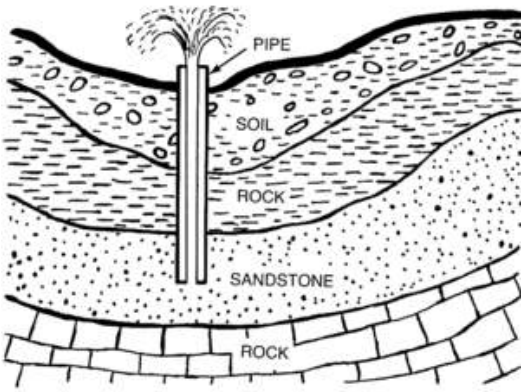
Geography

14. ARTESIAN CONDITION

Context:

In December, artesian water flow in Jaisalmer, Rajasthan, revealed unique geological features, dispelling myths like the Saraswati River.

About artesian condition:



- **Definition:** An artesian condition occurs when groundwater is confined under pressure between layers of impermeable rocks, called an artesian aquifer.
- **Factors leading to artesian condition:**
  - **Confined aquifer:** Water trapped between impermeable rock layers.
  - **Pressure gradient:** Natural geological pressure caused by the weight of overlying impermeable layers.
  - **Rupture or Drilling:** Release of pressure when the top layer is punctured (e.g., during drilling).
- **How it works:**
  - Artesian water flows naturally to the surface when the confining layer is breached, propelled by the **internal pressure.**
  - The water may gush out forcefully, depending on the depth and pressure within the aquifer.
- **Significance:**
  - **Water Source in Arid Regions:** Provides access to groundwater in deserts like Rajasthan.

- **Geological insight:** Reveals subsurface hydrogeological conditions.
- **Agricultural utility:** Enables irrigation without pumping in confined aquifers.
- **Global examples:** Found in Australia, Africa, and historical wells like Artois in France.

15. TIDAL TAIL

Context:
Astronomers have discovered the longest tidal tail ever observed, spanning 1.27 million light-years from the galaxy NGC 3785 in the Leo constellation.

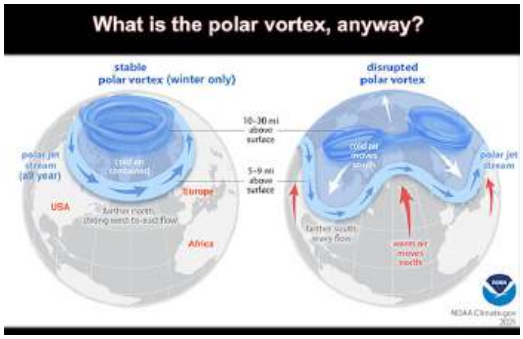
About Tidal Tail:

- **What it is:** A tidal tail is a long, thin stream of stars and interstellar gas formed due to gravitational interactions between galaxies.
- **How it forms:**
  - Gravitational forces during close encounters or mergers between galaxies strip material (stars, gas, and dust) from their outer regions, creating two tidal tails—one leading and one trailing.
- **Significance:**
  - **Galaxy Formation:** Offers insights into how ultra-diffuse galaxies with low surface brightness form.
  - **Galaxy Evolution:** Provides evidence of interactions shaping galaxies, influencing their structure and star formation.

Cosmic History: Acts as a marker of past galactic mergers, helping trace the evolutionary history of galaxies.

16. POLAR VORTEX

Context:
A severe winter storm recently struck the United States, affecting 60 million people across 30 states, causing power outages and dangerous road conditions.



About Polar Vortex:

- **What it is:** The polar vortex is a massive area of low-pressure, cold air swirling in the Earth's polar regions. It is categorized into **tropospheric** (surface to 15 km) and **stratospheric** (15 to 50 km) vortexes.
- **Formation:** Driven by Earth's rotation and temperature differences, it is stabilized by a strong jet stream that separates cold arctic air from warmer regions.
- **Characteristics:**
  - Usually confined to the poles but can weaken and expand southward.
  - Strong polar vortex maintains a steady circular jet stream; a weakened vortex causes wavy jet streams.
- **Impacts:**
  - **Cold Weather:** Weakening allows cold air to travel southward, affecting areas as far as Florida.
  - **Extreme Weather:** Disrupts jet streams, leading to unusual weather patterns, including storms and prolonged cold spells.
  - **Economic and Social Disruptions:** Causes power outages, travel delays, and increased heating costs.

17. RECALCULATED COASTLINE

Context:
India's coastline expanded by almost half in just over five decades from 7,516km in 1970 to 11,098km in 2023-24 according to Ministry of Home Affairs.

About Recalculated Coastline of India:

- **Old vs. New Length:** The coastline expanded from **7,516 km (1970)** to **11,098 km (2023-24)**, marking a **47.6% increase**.
- **Revised Parameters:** Updated methodology incorporates bays, estuaries, inlets, and other geomorphological

features, replacing the older straight-line measurement approach.

- **Leading States:**
  - **Gujarat:** Increased from **1,214 km** to **2,340 km**, contributing the most.
  - **West Bengal:** Notable rise of **357%**, from **157 km** to **721 km**.
  - **Tamil Nadu:** Revised to **1,068 km**, overtaking Andhra Pradesh's **1,053 km**.
  - **Puducherry:** Decreased by **4.9 km (10.4%)**, marking a rare contraction.
- **Smallest Increase:** Kerala, with an addition of just **30 km (5%)**.
- **Ministry:** The recalculation was conducted under the Ministry of Home Affairs (MHA), guided by the National Maritime Security Coordinator.
- **Methodology Update:**
  - Based on data from the National Hydrographic Office and Survey of India.
  - Employs advanced technologies for precise measurements, providing a dynamic understanding of the coastline.

18. DEEP OCEAN MISSION

Context:

India is gearing up to deploy its first human-operated underwater submersible as part of the Deep Ocean Mission, according to Union Minister of State for Science and Technology.

About Deep Ocean Mission (DOM):

- **What it is:** The Deep Ocean Mission is a MoES initiative aimed at exploring the deep sea, developing advanced marine technologies, and utilizing ocean resources for economic and environmental benefits.
- **Launched in:** DOM was launched in **2021** as one of nine key missions under the **Prime Minister's Science, Technology, and Innovation Advisory Council (PMSTIAC)** framework.
- **Aims:**
  - To develop advanced deep-sea exploration technologies.
  - To identify and harness critical underwater resources like polymetallic nodules, sulphides, and rare metals.
  - To study marine biodiversity and ecosystems for conservation and sustainable fisheries.
  - To contribute to India's blue economy through innovation and knowledge-building.
- **Key features:**
  - **Samudrayaan and Matsya6000:** India's first crewed submersible, Matsya6000, aims to reach 6,000 meters below the ocean surface, targeting polymetallic nodules and rare resources.
  - **Technological Advancements:** Includes development of underwater mining systems like **Varaha**, which has successfully operated at depths of 5,270 meters.
  - **Ocean Climate Change Services:** Developing advisory systems for ocean climate monitoring.
  - **Marine Biodiversity Conservation:** Exploring and conserving unique underwater ecosystems.
  - **Renewable Energy and Freshwater Harvesting:** Leveraging Ocean resources for energy and water needs.
  - **Marine Biology Station:** Establishing a state-of-the-art marine research station for advanced studies.

19. TIDAL FLOODING

Context:

Tidal flooding has become frequent in Ernakulam district lately. With the invading water staying on longer, more areas are getting affected.

About Tidal Flooding:

- **What is Tidal Flooding?**
  - Tidal flooding refers to the temporary inundation of low-lying coastal areas during high tide events, such as full and new moons. It is often called sunny day flooding or king tide flooding when associated with extreme

high tides.

- **How Does It Occur?**
  - Tidal flooding occurs when the combination of high tide, offshore storms, winds, and full moon cycles leads to a temporary rise in local sea levels. Coastal drainage systems often fail to cope with this sudden increase, resulting in localized flooding.
- **Factors Influencing Tidal Flooding:**
  - **Rising Sea Levels:** Melting glaciers, thermal expansion, and land subsidence increase the baseline sea level.
  - **Storm Surges:** Hurricanes and offshore storms amplify water levels during high tides.
  - **Climate Change:** Warmer oceans contribute to stronger storms and more intense tidal events.
  - **Local Geography:** Coastal erosion and low-lying topography make certain regions more vulnerable.
- **Impacts of Tidal Flooding:**
  - **Infrastructure Stress:** Repeated flooding damages roads, buildings, and drainage systems.
  - **Economic Costs:** Increased maintenance costs and reduced property values in flood-prone areas.
  - **Environmental Degradation:** Flooding disrupts ecosystems and accelerates coastal erosion.
  - **Safety Risks:** While typically not life-threatening, tidal flooding complicates emergency responses during larger storm events.
  - **Managed Retreat Needs:** Vulnerable areas may eventually require relocation to avoid repetitive damage.

20. OCEAN VS SEA COMPARISON

Context:

The article explores the differences between oceans and seas, highlighting their distinct characteristics in size, depth, salinity, geographic location, and impact on climate, despite both being vital components of Earth's aquatic system.

About difference between Sea and Ocean:

Aspect	Sea	Ocean
Geographical Location	Smaller bodies of saltwater, mostly enclosed by land and connected to oceans via straits.	Large, continuous bodies of saltwater covering 71% of Earth's surface, part of the global system.
Size	Smaller in area and volume, typically located along coastal boundaries.	Much larger, spanning vast areas and depths.
Depth	Shallower, with depths ranging from hundreds to a few thousand feet (e.g., Mediterranean Sea: ~4,900 ft).	Deeper, with an average depth of ~12,080 ft and the deepest point, Challenger Deep (~36,070 ft).
Salinity	Higher salinity due to evaporation, minimal water exchange, and river inflow (e.g., Dead Sea).	Stable salinity (average ~35 ppt) due to continuous water movement.
Climate Influence	Impacts local climates, especially coastal regions, by moderating temperatures.	Plays a major role in global climate regulation by absorbing and distributing solar energy.

21. STORM EOWYN

Context:

Storm Eowyn, a bomb cyclone, has caused widespread destruction across the British Isles, particularly in Ireland and Scotland.

About Storm Eowyn:

- **What is Storm Eowyn?**
  - **Definition:** Storm Eowyn is a powerful **bomb cyclone**, characterized by its rapid drop in air pressure (50 millibars within 24 hours), more than double the threshold for "explosive cyclogenesis."
  - **Formation:** It originated on **January 22, 2025**, off the eastern US coast and rapidly traversed the North

Atlantic, covering 2,000 miles to reach western Scotland by **January 24, 2025**.

- **Impacted Region:**
  - The storm has severely affected **Ireland and Scotland**, with gusts reaching up to **114 mph** at Mace Head, Ireland.

What is a Bomb Cyclone and How is It Formed?

- **Definition:**
  - A bomb cyclone is a rapidly intensifying storm where the central air pressure drops by at least **24 millibars in 24 hours**. The explosive pressure drop creates severe winds and intense weather conditions.
- **Formation:**
  - **Jet Stream:** A strong jet stream **(200+ mph winds)** over the North Atlantic provides energy for rapid storm development.
  - **Temperature Contrast:** A clash between cold Arctic air and warm ocean air creates instability.
  - **Moisture and Heat Flux:** Warm Ocean surfaces provide heat and moisture, fuelling deep cloud formations and intensifying the storm.
  - **Pressure Drop:** The low-pressure system moves south to north, aligning with the jet stream and accelerating its intensification.
- **Significance of Storm Éowyn:**
  - **Climate Change Indicator:** Highlights the potential for more frequent and intense storms in a warming world.
  - **Energy of the Jet Stream:** Demonstrates the role of atmospheric conditions in accelerating cyclonic development.
  - **Preparedness:** Red alerts and effective forecasting have minimized loss of life and improved disaster management.
  - **Environmental Impact:** Record-breaking winds and rainfall underscore the challenges posed by extreme weather events on infrastructure and ecosystems.

GS-2

Salient features of Indian Constitution

22. NATIONAL ANTHEM

Context:

The controversy arose in Tamil Nadu's Legislative Assembly when Governor left without delivering the customary address, citing the absence of the National Anthem.

About National Anthem:

- **Written by:** Composed by Rabindranath Tagore in **Bangla**.
- **Adopted in:** The Hindi version was adopted as the **National Anthem of India** by the **Constituent Assembly** on **January 24, 1950**.
- **Procedure for Singing the Anthem:**
  - **Full Version: Time:** Approximately **52 seconds**.
  - **Conditions & Occasions:**
    - During **civil and military investitures**.
    - When the **President or Governor** arrives at or departs from formal state functions.
    - At **parades** or when the **National Flag** is unfurled.
    - On arrival or departure of the President for any **public function**.
  - Preceded by a **drum roll** when played by a band.
  - **Short Version:**
    - ***Short Version of Anthem:***

Jana-gana-mana-adhinayaka jaya he,
Bharata-bhagya-vidhata,
Jaya he, jaya he, jaya he, Jaya jaya jaya jaya he.

    - **Time**: Approximately **20 seconds**.
    - **Conditions & Occasions**: Played during **toasts in Messes**, On occasions with **special orders by the Government of India**.

- **Mass Singing: Conditions & Occasions:**
  - During the **unfurling of the National Flag**.
  - At **cultural or ceremonial functions**, with choirs or public participation.
  - On arrival or departure of the **President** at non-state public functions.
  - **Schools**: Encouraged as part of morning assemblies to instil respect for the nation.

23. BIRTHRIGHT CITIZENSHIP

Context:
Recently, discussions have intensified in the United States, where efforts to alter the interpretation of the 14th Amendment have sparked legal challenges.

About Birthright Citizenship:

- **In USA: 14th Amendment:** The 14th Amendment, ratified in 1868, grants citizenship to all US citizens born or naturalized in the country, ensuring rights for freed slaves post-Civil War.
- **In India: Article 5: I**nitially granted citizenship by birth to anyone born in India before its commencement (January 26, 1950). The **Citizenship Act, 1955**, expanded this to include individuals born after this date, with limited exceptions (e.g., children of foreign envoys or enemy aliens).
  - **Amendments to the Citizenship Act:**
    - **1986 Amendment:**
      - ✓ Restricted citizenship by birth to those with at least one parent as an Indian citizen.
      - ✓ Addressed concerns over migration from Bangladesh and Sri Lanka.
    - **2003 Amendment:**
      - ✓ Further restricted citizenship, excluding children born to illegal immigrants.
    - This change aimed to control unauthorized migration and its impact on demographics.

Constitutional and Non-Constitutional Bodies

24. NATIONAL ORGAN AND TISSUE TRANSPLANT ORGANISATION (NOTTO)

Context:
Central government employees who donate organs are eligible for 42 days of leave, as per the National Organ and Tissue Transplant Organisation (NOTTO).

About National Organ and Tissue Transplant Organisation (NOTTO):

- **What it is:** NOTTO is a **national-level organization** established under the **Directorate General of Health Services**, Ministry of Health and Family Welfare, Government of India.
- **Ministry:** Ministry of Health and Family Welfare.
- **Headquarters:** Located on the Institute of Pathology (ICMR) Building, Safdarjung Hospital, New Delhi.
- **Aim:** To coordinate, regulate, and promote organ and tissue donation and transplantation in India. Facilitate the **safe and efficient allocation and utilization of organs and tissues**.
- **Functions:**
  - **Policy Formation:** Lay down guidelines and protocols for organ donation and transplantation.
  - **Coordination and Networking:** Act as the apex body for coordinating organ procurement, allocation, and distribution across regions.
  - **Registry Maintenance:** Maintain a National Organ and Tissue Donation and Transplant Registry.
  - **Awareness Campaigns:** Promote organ donation through public awareness initiatives.
  - **Training and Support:** Organize training programs for healthcare workers and provide consultancy on legal and non-legal aspects of organ donation.
  - **Monitoring:** Oversee transplantation activities and maintain a data bank for surveillance.

25. NATIONAL TURMERIC BOARD

Context:
The National Turmeric Board was launched by Union Minister of Commerce & Industry to enhance the production, research, and global trade of turmeric.

About the National Turmeric Board:

- **What it is:** A dedicated body established to promote turmeric cultivation, research, and exports.
- **Headquarters:** Nizamabad, Telangana.
- **Ministry:** Operates under the Ministry of Commerce and Industry.
- **Aim:** To enhance turmeric production, support farmers, and boost global exports.
- **Headed by:** Shri Palle Ganga Reddy as its first Chairperson.
- **Functions:**
  - Promote research and development for high-yield and value-added turmeric products.
  - Enhance awareness of turmeric's medicinal and essential properties.
  - Support farmers across 20 turmeric-growing states.
  - Focus on logistics, quality assurance, and boosting exports.
  - Collaborate with ministries like AYUSH, Agriculture, and Commerce for policy alignment.

About Turmeric:

- **Top exporting nations in the world:**
  - **India** (Leading with **67% of global exports** in 2023), Myanmar, Fiji, Indonesia, Vietnam
- **Top importing nations in the world:**
  - **USA** (The largest importer, with its share 18.98% in 2023)
  - **India**: Imports significant quantities of turmeric (especially dry) for domestic use.
  - **EU Countries**: Key importers include **Netherlands** and **Germany**.
- **Top producing states in India:**
  - **Telangana,** Tamil Nadu, Andhra Pradesh, Maharashtra and Meghalaya (notable for **Lakadong turmeric**, high in curcumin content).
- **India's turmeric imports:**
  - Major sources: **Vietnam**, **Indonesia**, and **Myanmar**.
  - Imports are primarily in the **dry turmeric form** for value addition and domestic consumption.

26. NATIONAL VOTERS DAY

Context:

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

About 15th National Voters' Day (NVD):

- **Why celebrated:** The day commemorates the establishment of the **Election Commission of India (ECI)** on January 25, 1950, the day before India became a Republic.
- **Aim:**
  - To create awareness about the importance of voting in a democracy.
  - To inspire citizens, especially first-time voters, to actively participate in the electoral process.
- **Theme for 2025:** "Nothing Like Voting, I Vote for Sure."
  - This theme emphasizes the pride and responsibility of voting, continuing the focus on increasing electoral participation, as highlighted in the previous year's theme.
- **Features:**
  - **Best Electoral Practices Awards:** Presented by the President of India to **District Election Officers**, **Superintendents of Police**, and **states** excelling in election management.
  - **Publications Unveiled:**
    - Launch of ECI's coffee table book, **"India Votes 2024: A Saga of Democracy"**.
    - Release of **"Belief in the Ballot: Human Stories Shaping India's 2024 Elections"**, showcasing inspiring voter participation stories.
  - **Voter Awareness Initiatives:** Special focus on **young and first-time voters**, encouraging them to actively engage in the electoral process.
- **Significance:**
  - Reinforces the role of voting in strengthening democracy.
  - Encourages **first-time voters** and marginalized groups to participate in elections.
  - Recognizes and honours exceptional efforts in ensuring **inclusive, free, and fair elections**.
  - Promotes innovation and the use of technology in improving the electoral process.

Functioning of Parliament and State Legislatures

27. PRIVATE MEMBERS BILLS

Context:
During the 17th Lok Sabha (2019–2024), only 9.08 hours were spent discussing Private Members Bills in the Lok Sabha and 27.01 hours in the Rajya Sabha.

What is a Private Member's Bill?

- A legislative proposal introduced by Member of Parliament (MPs) who are not part of the government.
- Represents individual MPs' legislative priorities or public issues outside the official government agenda.
- Can be introduced by both ruling and opposition party MPs.

Features:

- **Non-Binding:** Rejection does not affect the government's confidence or stability.
- **Legislative Independence:** Reflects the independent voice of parliamentarians.
- **Historical Significance:** Only 14 Private Members' Bills have become law; the last was passed in 1970.
- **Scheduling:** Reserved for discussion on Fridays, limiting its time and priority.

Procedure in the House:

- **Drafting and Notice:** The member drafts the Bill and gives a one-month notice before introduction.
- **Introduction:** Introduced in the House, followed by initial discussion and possible referral to a committee.
- **Debate:** If selected, the Bill is debated during the allotted Friday session.
- **Decision:** The member may withdraw it on the minister's request or proceed for voting.

Governance

28. PRAVASI BHARATIYA DIVAS

Context:
The 18th Pravasi Bharatiya Divas (PBD) Convention, the largest gathering of the Indian diaspora, will be held in Bhubaneswar, Odisha, from January 8 to 10, 2025.

About Pravasi Bharatiya Divas (PBD):

- **What it is:**
  - PBD is celebrated to recognize the contributions of Non-Resident Indians **(NRIs)** to India's growth and development.
  - Observed annually on **January 9,** marking Mahatma Gandhi's return from South Africa in **1915.**
- **Started in:** First celebrated in 2003 and revised to a biennial event in 2015.
- **Ministry:** Organized by the Ministry of External Affairs (MEA).
- **Aim:** To strengthen engagement with the Indian diaspora and celebrate their achievements globally.
- **2025 Host City:** Bhubaneswar, Odisha.
- **Theme 2025: "Diaspora's Contribution to a Viksit Bharat",** emphasizing the diaspora's role in building a developed India.

29. SECTION 479 OF BNSS, 2023

Context:
The Ministry of Home Affairs (MHA) has issued directives to all states and Union Territories (UTs) for implementing Section 479 of the Bharatiya Nagarik Suraksha Sanhita (BNSS) 2023.

About Section 479 of BNSS, 2023:

1. **Purpose**: Provides relief to undertrial prisoners by mandating their release on bail or bond under certain conditions.
2. **Key Provisions**:
   - **Subsection (1)**:

- Under trail prisoners (UTPs) who have served **half the maximum sentence** prescribed for the offense (except those punishable by death or life imprisonment) shall be released on bail.
- For **first-time offenders**, UTPs serving **one-third of the maximum sentence** are eligible for release on bond.

- **Subsection (3)**:
  - Makes it mandatory for prison superintendents to file applications in the concerned court for the release of eligible prisoners.
- **Superintendent of Jail Responsibility**:

Ensure timely application for bail or bond to the court for eligible prisoners.

30. ENVIRONMENT RELIEF FUND (AMENDMENT) SCHEME, 2024

Context:

The Central Government has announced amendments to the Environment Relief Fund Scheme, 2008, through the Environment Relief Fund (Amendment) Scheme, 2024.

About Environment Relief Fund (Amendment) Scheme, 2024:

- **Launched by:** Ministry of Environment, Forest and Climate Change.
- **Aim:** To improve fund management, ensure efficient disbursement, and enhance environmental restoration efforts.
- **Features:**
  - **Fund Management:** The Central Pollution Control Board **(**CPCB**)** appointed as Fund Manager for five years, replacing United Insurance Company Limited.
  - **Funding Sources:**
    - Compensation under Section 24 of the National Green Tribunal Act, 2010.
    - Penalties under Sections 14, 15, or 17 of the Public Liability Insurance Act.
    - Returns on fund investments.
  - **Digital Integration:** Introduction of an online portal for scheme implementation and fund tracking.
  - **Disbursement Process:** Funds released within **30 days** of District Collector or Central Government orders.
  - **Investment Strategy:** Investments in public financial institutions and savings accounts for liquidity and reinvestment.
  - **Environmental Restoration:** CPCB and SPCBs to create restoration plans for Central Government approval. Funds allocated based on approved plans.
  - **Auditing:** Independent auditor appointed by the Central Government with Comptroller and Auditor-General oversight.
  - **Administrative Allocation:** Increased from 1% to 2% for administrative expenses.

31. BHASHINI INITIATIVE

Context:

The e-Shram portal, designed to provide social security and welfare benefits to unorganized workers, has now been upgraded with multilingual functionality across all 22 scheduled languages, leveraging the Bhashini initiative.

About Bhashini Initiative:

- **Launched in:** 2022.
- **What it is:** A government initiative aimed at providing AI and Natural Language Processing (NLP) tools for translation and digital services in Indian languages.
- **Developed By:** Ministry of Electronics and Information Technology (MeitY).
- **Aim:** To eliminate language barriers in accessing digital services by making AI and NLP tools publicly available.
- **Features:**
  - Local Language Translation Mission for seamless multilingual communication.
  - Open AI and NLP resources for Indian MSMEs, startups, and innovators.
  - Ecosystem development for maintaining data repositories, open models, and tools.
  - **"Bhashadaan"** crowdsourcing platform for contributing to linguistic datasets via **Suno India, Likho India, Bolo India, and Dekho India** modules.
  - Accessible through an online platform and dedicated mobile apps.

32. DE-NOTIFIED TRIBES

Context:
The denotified tribes (DNTs), semi-nomadic tribes (SNTs), and nomadic tribes (NTs) in India are facing significant challenges due to delays in implementing the **Idate Commission** recommendations.

About Denotified Tribes (DNTs):

- **Who they are:** Communities that were classified as "criminal tribes" under the **Criminal Tribes Act, 1871** during British rule and "denotified" after the Act's repeal in 1952.
  - Includes **1,526 communities**, with **269 yet to be categorized** as SC, ST, or OBC.
- **Committee involved:**
  - The **Idate Commission (2015)**, chaired by **Bhiku Ramji Idate**, submitted its report in **2017**, recommending:
    - A **permanent commission** for DNTs.
    - A **caste census column** to count DNT populations.
    - A **sub-quota** for DNTs under SC/ST/OBC categories.
- **Criteria for DNTs:**
  - Historical branding as "criminal tribes."
  - Lack of formal categorization under SC, ST, or OBC.
  - Socio-economic deprivation and nomadic or semi-nomadic lifestyles.

About SEED Scheme:

- **What it is:** A **flagship welfare scheme** designed for the economic empowerment of DNT/NT/SNT communities.
- **Ministry:** Ministry of Social Justice and Empowerment.
- **Launched in:** February 2022.
- **Aim:** To provide assistance for improving the socio-economic conditions of DNT/NT/SNT communities.
- **Features:**
  - **Livelihood Support:** Financial aid for skill development and employment.
  - **Education Assistance:** Scholarships for school and higher education.
  - **Healthcare Access:** Subsidized healthcare services.
  - **Housing Support:** Assistance for building or improving housing.

33. NAUTOR LAND

Context:
The Union Home Ministry is deliberating on a proposal to regularize nautor land in Ladakh, allowing locals to claim ownership over government-owned wastelands they have cultivated or tended to for years.

About Nautor Land:

- **Definition**: Nautor refers to barren or wasteland owned by the government that can be allotted to individuals for cultivation or other productive use, subject to approval by competent authorities.
- **Purpose**: Regularizing nautor land grants legal ownership to locals who have utilized such land over the years.
- **History:**
  - **Jammu and Kashmir**: Originated under a rule established by Hari Singh, the former king of Jammu and Kashmir, in 1932.
  - **Himachal Pradesh**: The nautor policy was adopted in 1968 but later halted due to administrative concerns.
- **Found in:** Predominantly implemented in hilly and remote areas, such as **Leh** and **Kargil** in Ladakh and parts of **Himachal Pradesh**.
- **Features:**
  - **Ownership Transfer:** Aimed at granting ownership to locals using government wastelands.
  - **Preservation of Local Interests:** Prevents the exploitation of resources by outsiders.
  - **Cultural and Economic Value:** Recognizes traditional practices of land use, contributing to local livelihoods.

34. QS WORLD FUTURE SKILLS INDEX 2025

Context:
India has ranked 25th overall in the QS World Future Skills Index 2025, with a standout performance in the **"Future of Work" category**, where it ranked **second globally**, just behind the United States.

About QS World Future Skills Index:

- **What it is:** A global ranking system that evaluates countries' readiness to meet evolving job market demands through skill development, education, and economic transformation.
- **Released by:** London-based **Quacquarelli Symonds (QS)**, known for its education and skills-related rankings.
- **Aim:** To assess how well countries are preparing their workforce for future skills such as **digital competencies, AI, green technologies**, and sustainability.
- **India's Rank:**
  - **25th overall** globally.
  - **2nd in the "Future of Work" category**, showcasing high preparedness for tech-driven roles.
- **Key criteria in the QS Future Skills Index:**
  - **Skills Fit:** Measures how aligned graduates' skills are with current employer demands.
  - **Academic Readiness:** Assesses higher education systems' ability to prepare students for evolving job markets.
  - **Future of Work:** Evaluates preparedness for roles requiring future-focused skills like AI, digital, and green technologies.
  - **Economic Transformation:** Analyses capacity for sustainable growth, innovation, and workforce efficiency.

Key insights from the report:

Skills Fit		Academic Readiness		Future of Work		Economic Transformation	
Country	Score	Country	Score	Country	Score	Country	Score
UK	100.00	UK	100.0	United States	100.0	South Korea	100.0
US	94.4	Germany	99.6	India	99.1	Israel	98.9
Canada	90.9	Netherlands	99.3	Mexico	98.2	United States	97.9
Germany	89.2	Australia	98.9	Canada	97.4	Switzerland	96.8
Netherlands	88.6	United States	98.6	Australia	96.5	Japan	95.8

- **Strengths:**
  - High readiness in integrating AI and attracting venture capital.
  - Robust youth population and dynamic startup culture, positioning India as a key contender globally.
- **Weaknesses:**
  - Poor scores in sustainability-oriented innovation and higher education alignment.
  - Gaps in fostering creativity, problem-solving, and entrepreneurial thinking.
- **Opportunities:**
  - Leveraging the **National Education Policy 2020** to address skill gaps and align curricula with industry demands.
  - Expanding collaborations between academia and industry to foster innovation.

35. FAST TRACK IMMIGRATION – TRUSTED TRAVELLER PROGRAMME (FTI-TTP)

Context:

Union Home Minister inaugurated the Fast Track Immigration – Trusted Traveller Programme (FTI-TTP) at Mumbai, Chennai, Kolkata, Bengaluru, Hyderabad, Cochin and Ahmedabad airports.

About Fast Track Immigration – Trusted Traveller Programme (FTI-TTP):

- **What it is:** FTI-TTP is an advanced immigration clearance system designed to reduce wait times for international

travelers by utilizing automated e-gates.

- **Launched in:** First launched in **June 2024** at Delhi's IGI Airport and later expanded to **seven airports** on January 16, 2025.
- **Ministry:** Implemented by the **Ministry of Home Affairs** through the Bureau of Immigration.
- **Aim:** To enable faster immigration processes, enhance security, and ensure seamless international travel for passengers.
- **Features of the Scheme:**
  - **Automated e-gates:** Allows passengers to complete immigration without manual intervention.
  - **Biometric Authentication:** Ensures secure identification and faster processing.
  - **Online Registration:** Passengers register through an online portal, uploading necessary documents.
  - **Validity:** Registration is valid for the passport's duration or five years, whichever is earlier.
- **Documents Required:**
  - **Passport:** Scanned copy with a minimum validity of six months.
  - **Passport-size photo:** Meeting Indian passport standards, recent (within six months).
  - **OCI Card:** Scanned copies of the biographic and family information pages (for OCI cardholders).
- **How it works:**
  - Passengers register on the **FTI-TTP portal** and complete verification.
  - On arriving at the airport, they scan their **boarding pass** and **passport** at e-gates.
  - Biometrics are authenticated, and upon successful validation, the e-gates open automatically, granting immigration clearance.
- **Phases of Implementation:**
  - **Phase 1:** Covers Indian citizens and OCI cardholders at 21 major airports.
  - **Phase 2:** Extends to foreign travellers.

36. BHARAT RANBHOOMI DARSHAN

Context:

On the 77th **Army Day**, Defense Minister launched **Bharat Ranbhoomi Darshan**, a dedicated website aimed at promoting battlefield and border tourism.

About Bharat Ranbhoomi Darshan:

- **What it is:** A comprehensive website providing information about significant battlefields and border areas in India, offering virtual tours, historical narratives, and travel assistance.
- **Ministry:** Launched under the **Ministry of Defence**, in collaboration with the Ministry of Tourism.
- **Aim:**
  - Promote **battlefield tourism** and **border tourism**.
  - Enhance awareness of India's military history and valour.
  - Drive socio-economic development in border regions.
- **Places included:**
  - **Galwan Valley** (Ladakh), site of the 2020 India-China clash.
  - **Doklam** (tri-junction between India, Bhutan, and China).
  - Sites along the **Line of Control (LoC)** and **Line of Actual Control (LAC)**, including **Nathu La Pass**, **Longewala**, and locations from the 1962 and 1971 wars.
- **Features:**
  - **Virtual Tours:** Visitors can explore battlefields through interactive experiences.
  - **Travel Guidance:** Information on permits and travel arrangements to these locations.
  - **Collaborative Infrastructure:** Joint efforts by the Indian Army and civil authorities to maintain access while preserving operational preparedness.
  - **Tourism Integration:** Included in the **Incredible India campaign** to attract domestic and international tourists.

37. PM-AYUSHMAN BHARAT HEALTH INFRASTRUCTURE MISSION (PM-ABHIM)

Context: The Supreme Court stayed the Delhi High Court's directive for the Delhi government to sign an MoU with the Centre to implement the PM-Ayushman Bharat Health Infrastructure Mission (PM-ABHIM).

PM-Ayushman Bharat Health Infrastructure Mission (PM-ABHIM):

- **What it is:** A **Centrally Sponsored Scheme (CSS)** with some Central Sector components (CS), launched to develop and strengthen healthcare infrastructure across India.
- **Ministry:** Ministry of Health and Family Welfare, Government of India.
- **Launched in:** 2021-22, with a budget of ₹64,180 crore for the period 2021-22 to 2025-26.
- **Aim:** To bridge critical gaps in healthcare infrastructure, strengthen surveillance systems, and enhance health research capabilities at all levels—primary, secondary, and tertiary care.
- **Key Features:**
- **National Components:**
    - Establishment of 12 Central Institutions with 150-bedded Critical Care Blocks.
    - Strengthening the **National Centre for Disease Control (NCDC)** and creation of regional NCDCs and metropolitan health surveillance units.
    - **Expansion of the Integrated Health Information Portal** to link all public health labs.
    - Setting up **15 Health Emergency Operation Centres**, mobile hospitals, and specialized public health units at airports, seaports, and land crossings.
- **State Support:**
    - Construction of **17,788 rural Health and Wellness Centres (HWCs)** for better accessibility in rural and difficult areas.
    - Establishment of **11,024 urban HWCs** focusing on slum-like areas.
    - Development of **3,382 Block Public Health Units (BPHUs)** and **Integrated Public Health Labs (IPHLs)** in 730 districts.
    - Creation of **Critical Care Hospital Blocks (CCBs)** in 602 districts with populations over 5 lakh, ensuring robust referral linkages.
- **Pandemic Preparedness:**
    - Creation of One Health institutions, **new National Institutes for Virology, and Biosafety Level III labs** for research and disaster readiness.
- **Focus on Urban and Rural Areas:**
    - Specific **health infrastructure** targeting slum populations and hard-to-reach rural regions.

38. INTERNET GOVERNANCE INTERNSHIP AND CAPACITY BUILDING SCHEME

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

About Internet Governance Internship and Capacity Building Scheme:

- **What it is:** A bi-annual internship program designed to enhance knowledge and skills in **internet governance**, offering practical exposure and mentorship.
- **Launched by:** National Internet Exchange of India (NIXI)
- **Aim:** To nurture young minds, build expertise in digital policy, and prepare the next generation of **Internet Governance experts** and **tech policy leaders**.

About National Internet Exchange of India (NIXI):

- **What it is:** A **not-for-profit organization** under Section 8 of the Companies Act 2013, working under the aegis of the Ministry of Electronics and Information Technology (MeitY).
- **Established in:** June 19, 2003.
- **Aim:** To **increase internet penetration** and **facilitate digital adoption** in India by building critical infrastructure and improving internet connectivity.
- **Functions:**
    - **Internet Exchange Points (IXPs):** Enhance data exchange and reduce latency by routing domestic internet traffic within the country.
    - **.IN Registry:** Manage and promote India's **.in domain** to strengthen the country's digital identity.
    - **Internet Registry (IRINN):** Support adoption of **IPv4 and IPv6 addresses** for seamless internet connectivity.

- **Data Centre Services:** Provide secure and reliable data storage solutions to support India's digital ecosystem.
- **Key Initiatives:**
  - **IPv6 Expert Panel (IP Guru):** Support Indian entities in adopting **IPv6 protocols**.
  - **NIXI Academy:** Educate individuals on internet technologies like IPv6.
  - **NIXI-IP-INDEX:** Track and showcase IPv6 adoption rates in India and globally

39. ENTITY LOCKER

Context:
The Ministry of Electronics and Information Technology (MeitY) has launched Entity Locker, a digital platform aimed at streamlining document management for businesses and organizations in India.

Entity Locker Overview
• Secure, cloud-based platform developed by National eGovernance Division (NeGD) under MeitY.
• Simplifies business document storage, sharing, and verification.
• Ministry: Ministry of Electronics and Information Technology.
• Aim: Streamlined, efficient business document management system.
• Users: Large Organizations, MSMEs, Startups, Trusts, Societies, Other Entities.

Features:
- **Real-Time Document Access:** Integration with government databases for instant verification.
- **Secure Cloud Storage:** Provides **10 GB of encrypted storage** for document management.
- **Consent-Based Sharing:** Ensures secure sharing of sensitive data with partners and stakeholders.
- **Digital Signature Authentication:** Enables legally valid authentication for documents.
- **Role-Based Access Management:** Aadhaar-authenticated access ensures accountability.
- **Government Integration:** Seamlessly linked with systems like Goods and Services Tax Network (GSTN), Ministry of Corporate Affairs (MCA), and Directorate General of Foreign Trade (DGFT) for compliance processes.

40. BETI BACHAO BETI PADHAO (BBBP) SCHEME

Context:
The Ministry of Women and Child Development is commemorating the 10th anniversary of the Beti Bachao Beti Padhao (BBBP) scheme, a flagship initiative to empower the girl child and promote gender equality.

About Beti Bachao Beti Padhao:
- **What it is:** A government scheme aimed at addressing **gender bias** and promoting the **rights, survival, and education of the girl child**.
- **Launched in:** January 22, 2015, in Panipat, Haryana.
- **Ministry involved:** Ministry of Women and Child Development in collaboration with the **Ministries of Health and Family Welfare** and **Education**.
- **Objectives:**
  - Improve **Child Sex Ratio (CSR)**.
  - Ensure **gender equality** and **empowerment of women**.
  - Prevent **gender-biased, sex-selective elimination**.
  - Promote **education and participation of the girl child**.
- **The scheme is divided into three components:**
  1. Advocacy campaigns were launched to address the issue of declining **Child Sex Ratio (CSR) and Sex Ratio at Birth (SBR).**
  2. Multi-sectoral interventions were planned and are being implemented in gender-critical districts across the country.
  3. A financial incentive-linked scheme—**Sukanya Samriddhi scheme**—was launched to encourage parents to build a fund for female children.
- **Beneficiaries:**
  - **Primary**: Pregnant/lactating mothers, young parents, and girl children.
  - **Secondary**: Adolescents, medical professionals, private hospitals, and families.
  - **Tertiary**: Community leaders, media, NGOs, and the public.
- **Eligibility:**
  - The family must have a girl child below **10 years of age**.

- A **Sukanya Samriddhi Account (SSA)** should be opened in the girl's name.
- The girl must be a **resident Indian**.

- **Features:**
  - Advocacy campaigns for addressing gender bias.
  - Multi-sectoral interventions in **gender-critical districts**.
  - Financial incentives through the **Sukanya Samriddhi Scheme**.
  - Measurable outcomes, such as improving **CSR** and providing **functional toilets for girls in schools**.

  NOTE: The BBBP scheme is now integrated with **Mission Shakti**, a comprehensive program for women's safety and empowerment, for implementation during the 15th Finance Commission period from 2021-2022 to 2025-2026.

41. FISCAL HEALTH INDEX (FHI) 2025

Context:

The Fiscal Health Index (FHI) 2025, launched by NITI Aayog provides an in-depth analysis of the fiscal health of 18 major Indian states.

About Fiscal Health Index 2025:

- **Developed by:** NITI Aayog, with data sourced from the **Comptroller and Auditor General (CAG)**.
- **Base Year:** 2022-23 fiscal data is the reference year for rankings and analysis.
- **Aim:** To evaluate fiscal health, highlight interstate disparities, and encourage targeted interventions for improving fiscal performance and governance.
- **Criteria used:** The FHI evaluates states across **five sub-indices**:
  - **Quality of Expenditure:** Efficiency in capital and social sector spending.
  - **Revenue Mobilization:** States' ability to generate revenue from taxes and other sources.
  - **Fiscal Prudence:** Adherence to fiscal deficit targets and financial management.
  - **Debt Index:** States' total debt burden.
  - **Debt Sustainability:** Debt-to-GSDP ratio and interest burden on revenue.
- **Key Features:**
  - Tracks fiscal trends from **2014-15 to 2022-23**.
  - Focuses on **18 major states** driving India's economy.
  - Provides **state-specific insights** for policy interventions.
  - Highlights **top achievers** and **aspirational states** to promote healthy competition.
  - Aligns with India's vision for **Viksit Bharat @2047**.
- **Top 3 Achievers (2022-23):**

Rank	State	Category	FHI Score
1	Odisha	Achievers	67.8
2	Chhattisgarh	Achievers	55.2
3	Goa	Achievers	53.6

42. UNIFIED PENSION SCHEME (UPS)

Context:

The finance ministry has notified the operationalization of the Unified Pension Scheme (UPS) as an option under the National Pension System (NPS) for central government employees, effective from April 1 of 2025.

About Unified Pension Scheme (UPS):

- **What is it?**
  - The Unified Pension Scheme (UPS) is a contributory pension scheme offering government employees guaranteed retirement benefits, including 50% of their last drawn basic pay as a monthly pension.
- **Ministry:** Introduced by the **Ministry of Finance**, it will be regulated by the Pension Fund Regulatory and Development Authority **(PFRDA)**.
- **Launched in:** The UPS was approved by the Cabinet on **August 24, 2024**, and will be operational from **April 1, 2025**.
- **Aim:** The scheme aims to address employee grievances regarding the market-linked returns of the NPS by providing guaranteed benefits and ensuring financial security post-retirement.
- **Key Features:**

- **Guaranteed Pension:** Employees will receive 50% of their average basic pay during the last 12 months before retirement.
- **Dearness Relief:** Regular hikes to adjust pensions based on inflation trends.
- **Family Pension:** In case of death, family members will receive 60% of the employee's pension.
- **Superannuation Benefits:** A lump sum payout alongside gratuity at retirement.
- **Minimum Pension:** A minimum of ₹10,000 per month for employees completing at least 10 years of service.

- **Contributions Under the Scheme:**
  - Employees contribute **10% of their basic pay**.
  - The government contributes **18.5% of the basic pay**, which can be revised based on actuarial reviews to ensure sustainability.
- **Coverage:**
  - Applicable to **Central Government employees** who were previously covered under the NPS.
  - Employees hired on or after **January 1, 2004**, including retirees, can opt to switch from NPS to UPS.
- **Transition from NPS to UPS:**
  - The NPS linked pensions to **market-driven returns** based on contributions, causing concerns over uncertainty.
  - The UPS eliminates these concerns by guaranteeing lifelong monthly pensions, making it beneficial for an estimated **99% of NPS members**.

International Relations

43. TORRIJOS-CARTER TREATIES

Context:

The Panama Canal, a critical global trade route, has become a point of contention after U.S. President-elect Donald Trump criticized the Torrijos-Carter Treaties as "foolish".

About Torrijos-Carter Treaties:

- **Nations involved:** The treaties were signed between the United States and Panama.
- **Signed in:** September 7, 1977, by U.S. President Jimmy Carter and Panama's General Omar Torrijos.
- **Objectives:**
  1. **Panama Canal Treaty:** Transferred control of the canal from the U.S. to Panama by December 31, 1999, ensuring Panamanian sovereignty over the canal.
  2. **Permanent Neutrality Treaty:** Declared the canal a neutral waterway open to vessels of all nations, with the U.S. retaining the right to defend its neutrality and ensuring priority passage in military emergencies.
- **Significance:**
  - Symbolized Panama's regained sovereignty over its territory.
  - Cemented the canal's importance as a global trade route while ensuring open access.
  - Marked a major shift in **U.S.-Latin America relations** by resolving long-standing tensions over territorial control.

44. ENTITY LIST

Context:

The United States recently removed three Indian nuclear entities Bhabha Atomic Research Centre (BARC), Indira Gandhi Atomic Research Centre (IGCAR), and Indian Rare Earths (IRE) from its restrictive Entity List.

About Entity List:

- **What is the Entity List?**
  - The **Entity List** is published by the U.S. Bureau of Industry and Security (BIS) and includes foreign entities—businesses, institutions, or organizations—subject to stringent licensing requirements for the export, re-export, or transfer of specified items.
  - Entities are listed if they are suspected of engaging in activities against U.S. **national security** or **foreign policy interests**.
- **Impact of Listing:**
  - **Stringent Licensing Requirements**: Entities must secure individual licenses for any export or transaction involving U.S. goods and technologies.
  - **Hindered International Cooperation**: Being on the list complicates access to advanced technologies and

partnerships.
- **Economic and Strategic Limitations**: Limits participation in global supply chains, especially in high-tech sectors.

45. WORLD ECONOMIC FORUM REPORTS

Context:
The World Economic Forum has recently released two reports named "Global Cybersecurity Outlook 2025" and "Global Risks Report 2025."

About Global Cybersecurity Outlook 2025:
- **Published by:** World Economic Forum (in collaboration with Accenture).
- **Aim:** To examine the cybersecurity trends impacting economies, societies, and organizations.

About Global Risks Report 2025:
- **Published by**: World Economic Forum.
- **Aim:** To analyze and prioritize global risks across immediate, short-to-medium, and long-term horizons for informed decision-making.

46. WORLD ECONOMIC FORUM

Context:
The World Economic Forum (WEF) Annual Meeting 2025, hosted in Davos, Switzerland, brings together global leaders from business, politics, and civil society to discuss critical global issues.

About World Economic Forum (WEF):
- **Established in:** The WEF was founded in **1971** as the **European Management Forum**, later renamed the World Economic Forum in **1987.**
- **Headquarters:** The WEF is headquartered in **Cologny, Switzerland**.
- **Established by:** German economist **Klaus Schwab**, who introduced the concept of **"stakeholder capitalism"**.
- **Aim:**
  - To **improve the state of the world** by fostering public-private cooperation.
  - To address **global economic, social, and environmental challenges** through collaboration among stakeholders.
- **2025 Theme:** "Collaboration for the Intelligent Age"
- **Functions:**
  - **Global Dialogues:** Organizes the Annual Meeting in Davos, where leaders brainstorm on solutions to pressing global issues.
  - **Publications and Rankings:** Regularly releases reports like the **Global Competitiveness Report**, **Global Gender Gap Report**, **Future of Jobs Report** and **Energy Transition Index**.
  - **Policy Advocacy:** Promotes sustainability, inclusive development, and technological innovation.
  - **Diplomatic Initiatives:** Facilitates dialogues, such as the historic 1992 meeting between Nelson Mandela and South African President de Klerk.

47. PARIS AI SUMMIT, 2025

Context:
Indian Prime Minister is set to co-chair the Paris AI Summit on February 10-11, 2025, alongside French President Emmanuel Macron.

About the Paris AI Summit 2025:
- **What is the Paris AI Summit?**
  - The **Paris AI Summit 2025** is a high-level global conference focused on **AI regulation, innovation, and ethical governance**.
  - It builds on previous **AI Safety Summits** held in **Bletchley Park (UK) in 2023** and **Seoul (South Korea) in 2024**, aiming to create a **global consensus on AI policies**.
- **Key Details of the Paris AI Summit 2025:**
  - **Host:** France

- **Chair & Co-Chair:** Emmanuel Macron (Chair) & PM Narendra Modi (Co-Chair)
- **Participants:** Heads of state, AI researchers, policymakers, businesses, and civil society leaders

- **Aims of the Paris AI Summit:**
  - **Global AI Governance:** Establish frameworks for AI regulation and ethical use.
  - **Balancing Innovation & Regulation:** Foster AI growth without stifling development.
  - **Addressing AI Market Concentration:** Examine the dominance of big tech companies like Microsoft, Google, Amazon, and Meta in foundational AI models.
  - **Public Interest & AI Safety:** Ensure AI tools align with **security, trust, and responsible use**.
  - **Global Collaboration:** Strengthen cooperation between countries to tackle AI-related challenges.
- **Significance of the Paris AI Summit:**
  - **European AI Strategy:** The summit is critical for Europe to compete with **US tech giants and China's AI leadership**.
  - **Investment in AI Infrastructure:** Discusses major AI projects, such as the $500 billion US Stargate Project.
  - **AI Accessibility & Ethics:** Focuses on **affordable AI models** and reducing AI development costs.
  - **India's Role:** PM Modi's co-chair position highlights **India's growing influence in global AI policy and digital governance**.

News in Short

BHARATPOL Portal: To enable **real-time information sharing** and streamline international police assistance through INTERPOL, addressing challenges posed by transnational crimes.

UN Committee of Experts on Big Data and Data Science for Official Statistics: India has joined the prestigious UN Committee of Experts on Big Data and Data Science for Official Statistics. It is a specialized UN body established to explore the use of big data and data science techniques for enhancing official statistical systems globally.

New Partner to BRICS: Nigeria has been officially admitted as a "partner country" of the BRICS bloc, which now includes nine partner nations alongside its full-time members. **Full-Time Members:** The bloc consists of **Brazil, Russia, India, China, South Africa**, **Iran, Egypt, Ethiopia, United Arab Emirates** and **Indonesia. Partner Nations**: BRICS partner nations include **Nigeria, Belarus, Bolivia, Cuba, Kazakhstan, Malaysia, Thailand, Uganda, and Uzbekistan**.

Indus Water Treaty (IWT), 1960: The World Bank-appointed Neutral Expert (NE) has declared that he is competent to resolve differences between India and Pakistan regarding the design of hydroelectric projects under the Indus Water Treaty (IWT), 1960.

GS-3

Indian Economy

48. LEADS 2024 REPORT

Context:

Union Minister for Commerce and Industry launched the Logistics Ease Across Different States (LEADS) 2024 report to evaluate logistics efficiency across Indian states and union territories.

About LEADS:

- **Full Form:** Logistics Ease Across Different States.
- **Launched In:** 2018.
- **Ministry:** Department for Promotion of Industry and Internal Trade (DPIIT), Ministry of Commerce and Industry.
- **Aim:**
  1. Assess logistics infrastructure and services across states/UTs.
  2. Provide actionable insights for logistics reforms.
  3. Foster competitive federalism to enhance logistics efficiency.
- **Parameters:**
  1. Logistics Infrastructure.
  2. Logistics Services.

3. Operating and Regulatory Environment.

- **Methodology:**
  - Based on over **7,300 responses** from a pan-India survey conducted.
  - Includes inputs from **750+ stakeholder consultations** and associations.
- **LEADS Report 2024 Performance Highlights:**

Category	Achievers	Fast Movers	Aspirers
Coastal States	Gujarat, Karnataka, Maharashtra, Odisha, Tamil Nadu	Andhra Pradesh, Goa	Kerala, West Bengal
Landlocked States	Haryana, Telangana, Uttar Pradesh, Uttarakhand	Bihar, Himachal Pradesh, Madhya Pradesh, Punjab, Rajasthan	Chhattisgarh, Jharkhand
North-Eastern	Assam, Arunachal Pradesh	Meghalaya, Mizoram, Nagaland, Sikkim, Tripura	Manipur
Union Territories	Chandigarh, Delhi	Dadra and Nagar Haveli & Daman and Diu, Jammu and Kashmir, Lakshadweep, Puducherry	Andaman and Nicobar Islands, Ladakh

49. ICEGATE SYSTEMS

Context:

The Indian government revised its goods import data, reducing the previously reported $14.9 billion gold import figure for November 2024 to **$9.9 billion.**

- The overestimation occurred due to double counting of imports into Special Economic Zones (SEZs) and subsequent clearance into the Domestic Tariff Area (DTA).
- Double counting of imports due to **data migration errors** between SEZ Online and ICEGATE systems.

About ICEGATE systems:

- **Full form:** Indian Customs Electronic Gateway.
- **Purpose:** Unified platform for capturing trade data from ports, airports, and container depots.
- **How it works:**
  - Collects EXIM (Export-Import) data from over 500 locations.
  - Ensures real-time trade data transmission to the Directorate General of Commercial Intelligence and Statistics (DGCIS).
- **Departments involved:**
  - Directorate General of Commercial Intelligence and Statistics (DGCIS).
  - Directorate General of Systems (DG Systems).
  - Special Economic Zones (SEZs).
- **Aim of data migration:**
  - Streamline trade data collection.
  - Ensure consistency and eliminate duplication.
- **Functions of ICEGATE:**
  - Captures trade data from all ports and SEZs.
  - Transmits reconciled data to DGCIS for accurate trade statistics.
  - Prevents duplication by integrating SEZ and non-SEZ trade data.

50. SILVER NOTICE

Context:

Interpol has introduced its first-ever Silver Notice, a groundbreaking initiative to track and recover laundered assets across international borders.

About the Silver Notice:

- **What it is:** A colour-coded alert by Interpol to track and recover criminally acquired assets such as properties, vehicles, financial accounts, and businesses.
- **How it works:**
  - Member countries can issue a Silver Notice to request **information about assets** linked to criminal activities.
  - Facilitates the **identification, location, seizure, confiscation, or recovery** of assets under national laws.
  - **Reviewed by Interpol's General Secretariat** to ensure compliance with its rules and prevent misuse for political purposes.
- **Need for Such Notices:**
  - Addresses the challenge of **transnational** organized crime and recovers illicit wealth.
  - Helps combat fraud, corruption, drug trafficking, and other financial crimes.

51. WHITE GOODS

Context:

Government has said, 24 companies have been selected under the Production Linked Incentive, PLI Scheme for White Goods (Air Conditioners and LED Lights) with a committed investment of three thousand 516 crore rupees.

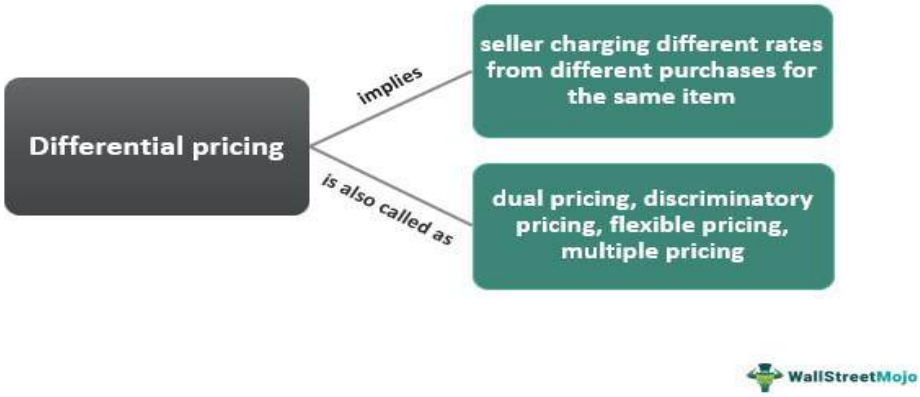
About White Goods:

- **What it is:** White goods are **large home appliances** used for routine domestic chores, such as cleaning, cooking, and climate control. These products are durable and designed to last for years.
- **Appliances Under White Goods:**
  - **Kitchen Appliances:** Refrigerators, ovens, microwaves, dishwashers.
  - **Laundry Room Appliances:** Washing machines, dryers.
  - **Climate Control Devices:** Air conditioners, heaters, dehumidifiers, fans.
  - **LED lights:** Cover core component and components too.
- **Features of White Goods:**
  - **Durability:** Long-lasting and designed for heavy daily use.
  - **Versatility:** Available in various sizes, finishes, and technologies to cater to diverse needs.
  - **Energy Efficiency:** Modern appliances come with energy-saving features to reduce electricity consumption.
  - **Technological Integration:** Smart appliances with IoT connectivity for remote control and monitoring.
  - **Aesthetic Appeal:** Wide range of designs and colours to suit modern interiors.

52. DIFFERENTIAL PRICING

Context:

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



About Differential Pricing:

- **What Is Differential Pricing?**

  Differential Pricing is a strategy where businesses set varying prices for the same product or service based on factors like location, demand, customer demographics, or purchasing behavior. This dynamic approach allows businesses to optimize revenues while catering to different market segments.
- **Types of Differential Pricing:**
  - **Price Localization:** Adapting prices to reflect local purchasing power or competition.
  - **Real-Time Pricing:** Adjusting prices based on demand, competition, and availability.
  - **Subscription-Based Pricing:** Offering discounts for long-term commitments.
  - **Seasonal Discounts:** Reducing prices during specific periods, like holidays.
  - **Volume Discounts:** Incentivizing bulk purchases with lower per-unit costs.
- **Factors Leading to Differential Pricing:**
  - **Consumer Demographics:** Age, income level, and purchasing behavior influence pricing strategies.
  - **Geographic Location:** Local competition and cost structures dictate regional pricing.
  - **Market Demand:** High demand allows businesses to increase prices (e.g., festive seasons).
  - **Technology Integration:** AI-driven dynamic pricing tailors costs to individual customers.
  - **Economic Conditions:** Inflation, currency exchange rates, and tariffs impact pricing.
- **Why Companies Use Differential Pricing:**
  - **Maximize Revenue:** Tailored pricing helps capture maximum consumer willingness to pay.
    E.g. Airlines charging more for last-minute bookings.
  - **Boost Market Penetration:** Lower initial prices attract customers in new markets.
    E.g. Introductory offers for new product launches.
  - **Encourage Bulk Purchases:** Volume-based pricing clears inventory faster.
    E.g. Discounts on combo deals.
  - **Increase Profit Margins:** Higher prices during peak demand maximize profitability.
    E.g. Hotel rates during major events.
  - **Compete Locally:** Adjusting prices to match local purchasing power.
    E.g. Mobile apps offering region-specific pricing.

53. ENHANCED CERTIFICATE OF ORIGIN (ECOO) 2.0 SYSTEM

Context:

The Directorate General of Foreign Trade (DGFT) introduced the Enhanced Certificate of Origin (eCoO) 2.0 System, a digital platform aimed at simplifying export certificationCAROTAR-2020-rules/ and boosting trade efficiency.

About Enhanced eCoO 2.0 System:

- **What is eCoO 2.0?**
  - The eCoO 2.0 system is an upgraded digital platform for issuing **Certificates of Origin (CoO)**, which authenticate the origin of exported goods. It facilitates exporters with seamless access to both **preferential** and **non-preferential CoOs**, ensuring global trade compliance.
- **Administering Ministry/Department:** Directorate General of Foreign Trade (DGFT), Ministry of Commerce and Industry, Government of India.
- **Aims of eCoO 2.0:**
  - **Streamlining Export Processes:** Simplify the CoO certification process for exporters.
  - **Enhancing Trade Efficiency:** Reduce processing times and improve trade documentation accuracy.
  - **Supporting Global Supply Chains:** Provide transparency for intermediary and re-export trade.
- **Key Features of eCoO 2.0:**
  - **Multi-User Access:** Allows exporters to authorize multiple users under a single Importer Exporter Code (IEC).
  - **Aadhaar-Based e-Signing:** Adds flexibility alongside digital signature tokens for document authentication.
  - **Back-to-Back Certificates of Origin:** Enables re-export and transshipment certifications for non-Indian-origin goods based on verified documentation.
  - **Mandatory Electronic Filing:** Non-preferential CoOs are now mandatorily processed online from 1st January 2025.
  - **In-Lieu Certificate of Origin:** Provides correction options for previously issued CoOs via an easy online application.

54. "WHEN-LISTED" PLATFORM

Context:
SEBI plans to introduce a "when-listed" platform to regulate pre-listing share trading, aiming to curb grey market activities and protect investor interests.

About the 'When-Listed' Platform:

- **What it is:** A regulated platform for trading unlisted shares between IPO allotment and official listing.
- **Developed by:** Securities and Exchange Board of India (SEBI) in collaboration with stock exchanges.
- **Aim:** To reduce grey market trading, ensure transparency, and provide a regulated avenue for pre-listing share transactions.
- **Features:**
  - Allows trading of IPO-allotted shares before official listing.
  - Operates within the T+3 timeline (allotment to listing).
  - Replaces informal grey market trading with a formal, regulated mechanism.
- **Significance:**
  - Enhances market transparency and investor protection.
  - Curbs volatility and speculative activities in the grey market.
  - Formalizes pre-listing trading, reducing risks for retail investors.
- **What is the Grey Market?**
  - The grey market refers to the unofficial trading of securities, particularly shares, before they are officially listed on stock exchanges.
  - It operates outside the regulatory framework, relying on demand and supply dynamics.
  - Transactions are based on notional prices, and no physical delivery of shares occurs.
- **Existing Mechanism:**
  - Currently, SEBI mandates that shares must be listed on stock exchanges within three working days (T+3) after the IPO bidding process closes.
  - Allotment of shares is completed on T+1, and trading begins on T+3.

55. SACHETISATION PLAN

Context:
The Securities and Exchange Board of India (SEBI) is introducing a sachetisation plan to enable small-ticket systematic investment plans (SIPs) starting at ₹250 per month.

About Sachetisation of Mutual Fund Investments:

- **What is Sachetisation?**
  - A strategy inspired by FMCG products offering **small, affordable units** (e.g., shampoo sachets) to penetrate price-sensitive markets.
  - Applied to financial services, it allows low-income investors to enter mutual funds through smaller, affordable investments.
- **Need for Sachetisation:**
  - **Financial Inclusion:** Targets underserved, low-income groups to enable investment in mutual funds.
  - **Addressing Barriers:** Overcomes the high entry costs of traditional mutual fund SIPs.
  - **Market Deepening:** Expands the retail investor base in equity markets, stabilizing market flows against foreign investor volatility.
- **Aim of Sachetisation:**
  - Encourage small-ticket SIP investments to democratize access to financial products.
  - Foster long-term savings and wealth creation, particularly for low-income investors.
- **How it works:**
  - **Minimum SIP Amount:** ₹250/month (targeted at new mutual fund investors).
  - **Eligibility Criteria:**
    - Available for new investors only.
    - Maximum of three ₹250 SIPs per investor across asset management companies (AMCs).
  - **Schemes Excluded:** Debt schemes, sectoral, thematic, small-cap, and mid-cap equity funds due to their volatility.
  - **Commitment Period:** Investors encouraged to commit to 5 years (60 instalments), but premature withdrawal is allowed.

- **Technology-Driven Process:** Investments through **UPI auto pay** or **NACH** to minimize costs.

News In short

Trade Enablement and Marketing (TEAM) initiative: The **Trade Enablement and Marketing (TEAM) initiative** is a government scheme designed to help **MSMEs** adopt digital commerce by leveraging the **Open Network for Digital Commerce (ONDC)**. It has been launched under the "Raising and Accelerating MSME Productivity (RAMP)" Programme

Ramesh Chand Committee: The Indian government has formed an 18-member expert panel, led by NITI Aayog member Ramesh Chand, to **revise the Wholesale Price Index (**WPI) and explore a transition to a Producers' Price Index (PPI).

BAANKNET Portal: A centralized platform for the e-auction of properties held by PSBs, designed to boost transparency, efficiency, and accessibility.

Diamond Imprest Authorization (DIA) Scheme: Scheme allows duty-free import of natural cut and polished diamonds under ¼ carat (25 cents) with an export obligation of 10% value addition. The scheme will be effective from April 1, 2025, and will be monitored under the Gems and Jewellery Export Promotion Council (GJEPC).

Energy and Infrastructure

56. JAMMU RAILWAY DIVISION

Context:
Prime Minister will inaugurate the newly established Jammu Railway Division, fulfilling a long-standing demand for better rail management in India's northernmost region.

About Railway Division:

- **What it is:** A railway division is an administrative unit under Indian Railways, managing operations, maintenance, and infrastructure within its jurisdiction.
- **Organizational Hierarchy:**
  - Indian Railways has **19 zones (including Metro Railway, Kolkata)** and **70 divisions.**
  - Each zone is led by a General Manager (GM), while each division is headed by a Divisional Railway Manager (DRM).
- **Jammu Railway Division:**
  - **Zone:** Jammu Division falls under the Northern Railway Zone, previously managed by the Firozpur Division.
  - **Significance:**
    - **Enhanced Connectivity:** Will oversee iconic projects like the ***Anji Khad Bridge*** (India's first cable-stayed rail bridge) and the ***Chenab Rail Bridge*** (world's highest railway arch).
    - **USBRL Project:** Manages the Udhampur-Srinagar-Baramulla Railway Link, critical for connecting Kashmir to the rest of India.
    - **Strategic Importance:** Boosts regional development, accessibility, and tourism in Jammu and Kashmir.
    - **Modern Infrastructure:** Equipped with hi-tech facilities leveraging IT for efficient rail operations.

57. BHARAT CLEANTECH MANUFACTURING PLATFORM

Context:
Union Minister of Commerce & Industry, launched the Bharat Cleantech Manufacturing Platform at the Bharat Climate Forum 2025 in New Delhi.

About Bharat Cleantech Manufacturing Platform:

- **What it is:** A national platform designed to enhance India's cleantech value chains and enable collaboration in the renewable energy sector.
- **Ministry:** Ministry of Commerce & Industry.
- **Aim:**

- Strengthen India's manufacturing capacity in **solar, wind, hydrogen, and battery storage technologies**.
- Position India as a **global sustainability and cleantech leader**.
- Support the achievement of **500 GW** Renewable-energy **targets by 2030**.

- **Features:**
  - **Fosters Innovation:** Encourages co-innovation and technology sharing among Indian firms.
  - **Financial Support Platform:** Connects businesses with funding opportunities for cleantech projects.
  - **Self-Sustainability Focus:** Aims for an independent cleantech sector, reducing reliance on subsidies and incentives.
  - **Scalability:** Drives large-scale manufacturing to enhance India's global competitiveness in renewable energy.
  - **Sustainability Leadership:** Supports India's commitment to its **Nationally Determined Contributions (**NDCs**)** under the **Paris Agreement**.

58. NATIONAL CRITICAL MINERAL MISSION (NCMM)

Context:

The Union Cabinet has approved the National Critical Mineral Mission (NCMM) with an expenditure of ₹16,300 crore and an additional ₹18,000 crore investment from PSUs.

- **What is the National Critical Mineral Mission (NCMM)?**
  - The National Critical Mineral Mission (NCMM) is a strategic initiative designed to ensure India's self-reliance in critical mineral resources.
  - These minerals are vital for renewable energy, electronics, and defense manufacturing, reducing import dependency and fostering industrial growth.
- **Key Details:**
  - **Ministry:** Ministry of Mines
  - **Announced In:** Union Budget 2024-25
  - **Budget:** ₹34,300 crore **(₹16,300 crore from the government** + ₹18,000 crore from PSUs & private sector)
  - **Objective:** Strengthen India's supply chain for critical minerals through domestic exploration, overseas asset acquisition, and technological innovation.
- **Aims of NCMM:**
  - **Accelerate Domestic Exploration & Mining:** Expand critical mineral exploration within India, including offshore reserves.
  - **Regulatory Reforms:** Fast-track mining approvals for seamless extraction and processing.
  - **Strategic Global Partnerships:** Facilitate acquisition of mineral assets abroad by PSUs and private players.
  - **Infrastructure Development:** Establish mineral processing parks and promote critical mineral recycling.
  - **Encourage R&D & Innovation:** Support research in advanced mineral processing technologies and set up Centers of Excellence.
- **Key features of NCMM:**
  - **Comprehensive Value Chain Development:** Covers exploration, mining, beneficiation, processing, and recycling of critical minerals.
  - **Financial Incentives:** Offers monetary support for exploration and sustainable mineral recovery.
  - **Stockpile Strategy:** Develops a national reserve of critical minerals for long-term security.
  - **Industry Collaboration:** Encourages PSUs and private firms to invest in global mining projects.
  - **Legislative Backing:** Strengthened by 2023 amendments to the Mines and Minerals (Development and Regulation) Act, 1957.
- **Some critical minerals covered under NCMM:**
  - The mission prioritizes minerals essential for renewable energy, semiconductor manufacturing, and defense applications, including:

Mineral Name	Industry Used In
Lithium & Cobalt	EV batteries, electronics
Graphite & Nickel	Battery storage, alloys
Rare Earth Elements (REEs)	High-tech manufacturing, defense applications
Titanium & Tungsten	Aerospace, industrial applications
Vanadium & Molybdenum	Steel production, energy storage solutions

59. ATOMIC ENERGY COMMISSION

Context:
The Indian government recently reconstituted the Atomic Energy Commission (AEC) to include key figures such as T.V. Somanathan, Manoj Govil, and Pankaj Kumar Mishra, along with other eminent personalities from diverse fields.

About Atomic Energy Commission (AEC):

- **What it is:** The **Atomic Energy Commission (AEC)** is the apex policy-making body in India for atomic energy, nuclear research, and related applications.
- **Established in:** Initially set up in **August 1948** under the Department of Scientific Research, it was formally established in its current form on **March 1, 1958**, within the Department of Atomic Energy (DAE).
- **Ministry:** Functions directly under the **Department of Atomic Energy**, which is under the **Prime Minister's direct charge**.
- **Headquarters:** Located in **Mumbai**, Maharashtra.
- **Aim:** To advance nuclear science, research, and energy initiatives in India for peaceful and strategic applications.
- **Members:**
  - **Chairperson**: Secretary of the Department of Atomic Energy.
  - **Ex-officio Members**:
    - National Security Adviser
    - Principal Secretary to PM
    - Foreign Secretary
    - Cabinet Secretary
    - Expenditure Secretary
    - Eminent scientists and former chairpersons
- **Functions:**
  - **Policy Formulation:** Shapes India's nuclear energy and research policies.
  - **R&D Oversight:** Promotes research in nuclear science, including applications in energy, medicine, and agriculture.
  - **International Collaboration:** Engages in global nuclear agreements and partnerships.
  - **Energy Production:** Supports initiatives for nuclear power generation and clean energy.
  - **Regulation and Safety:** Ensures adherence to safety standards in nuclear facilities.

News in Short

Anji Khad Bridge: The Indian Railways has completed the Anji Khad Bridge, India's first cable-stayed rail bridge, as part of the Udhampur-Srinagar-Baramulla Rail Link (USBRL) Project, addressing connectivity issues in Jammu and Kashmir.

Z-Morh Tunnel: The NH1 corridor, a strategic route between Kashmir and Ladakh, is open year-round and enhances connectivity to Kargil, Baltal, and Ladakh.

Agriculture

60. PROJECT VISTAAR

Context:
IIT Madras has partnered with the Ministry of Agriculture and Farmers' Welfare to launch Project VISTAAR (**Virtually Integrated System to Access Agricultural Resources**).

About Project VISTAAR:

- **What it is:** A digital platform designed to enhance agricultural extension services, making critical information and start-up innovations accessible to farmers.
- **Ministry involved:** Ministry of Agriculture and Farmers' Welfare in collaboration with IIT Madras.
- **Objectives:**
  1. **Digitalise the agricultural extension system** to improve efficiency and outreach.
  2. Provide farmers access to **start-up-driven innovations and technologies** in agriculture and allied sectors.
  3. Enhance adoption of **sustainable and climate-resilient** farming practices.
- **Key Features:**

- Integration of data on over **12,000** Agri-startups through IIT Madras' startup information platform and it incubate, YNOS Venture Engine.
- Advisory services covering crop production, marketing, value addition, and supply chain management.
- Easy access to government schemes related to agriculture and rural development.
- Delivery of accurate, timely, and contextual information to farmers to improve decision-making.

61. ORGANIC FISHERIES CLUSTER

Context:

Union Minister inaugurated India's first Organic Fisheries Cluster in Soreng District, Sikkim. This initiative, under the **Pradhan Mantri Matsya Sampada Yojana (PMMSY)**

About India's First Organic Fisheries Cluster:

- **What it is:** A fisheries cluster designed for sustainable and eco-friendly fish farming using organic practices.
- **Features:**
  - Focuses on **minimal environmental pollution** and sustainable production.
  - Incorporates **amur carp** and other key species for organic fish farming.
  - **Supported by NABARD** through funding for infrastructure, capacity building, and forming Farmer Producer Organizations (FFPOs).

About Pradhan Mantri Matsya Sampada Yojana (PMMSY)

- **Launched by:** Department of Fisheries, Ministry of Fisheries, Animal Husbandry & Dairying in **2020**.
- **Aim:** Accelerate growth in the fisheries sector, enhance productivity, and align with the **Blue Economy vision**.
- **Features:**
  - **Cluster-Based Approach:** Promotes economies of scale, competitiveness, and value-chain strengthening.
  - Covers production, processing, and marketing for fisheries like freshwater, brackish water, ornamental, and organic fisheries.
  - **Two components:**
    - Central Sector Scheme (CS)
    - Centrally Sponsored Scheme (CSS) with beneficiary-oriented and non-beneficiary-oriented subcomponents.
  - Focus on technologies like **Biofloc systems** and **Recirculatory Aquaculture Systems (RAS)**.

Science & Technology

62. GOOGLE WILLOW CHIP

Context:

Google recently unveiled its latest quantum processor, named 'Willow.'

About Willow Quantum AI:

- Willow is Google's latest quantum processor with 105 physical qubits designed to enhance quantum error correction and scalability.
- **Error Correction Protocols:** Employs **surface code** with data and measurement qubits to detect and mitigate errors without collapsing qubit states.
- **Superconducting Qubits:** Operates at near absolute zero temperatures (-273.15° C) for maximum stability.
- **Improved Coherence Time:** Achieves 100 microseconds of coherence time, allowing qubits to hold information longer during computations.
- **Leakage Error Management:** Includes additional measurement qubits to manage leakage errors effectively.

Significance of Willow:

- **Computational Breakthrough:** Successfully completed the Random Circuit Sampling (RCS) task in minutes a task that would take classical computers 10 septillion years.
- **Error Reduction Below Threshold:** Demonstrates a decline in error rates with an increase in qubits, a critical milestone for practical quantum computing.
- **Applications in Complex Problems:** Paves the way for solving challenges in **drug discovery, climate modelling, materials science**, and **optimization problems**.

- **Foundation for Scalability:** Addresses key hurdles, ensuring quantum computers can grow larger and remain reliable.
- **Societal Impact:** Potential to revolutionize industries and solve problems of global significance.

63. INDIA METEOROLOGICAL DEPARTMENT

Context:

The India Meteorological Department (IMD), established in 1875, has played a critical role in weather forecasting and climate services in India for nearly 150 years.

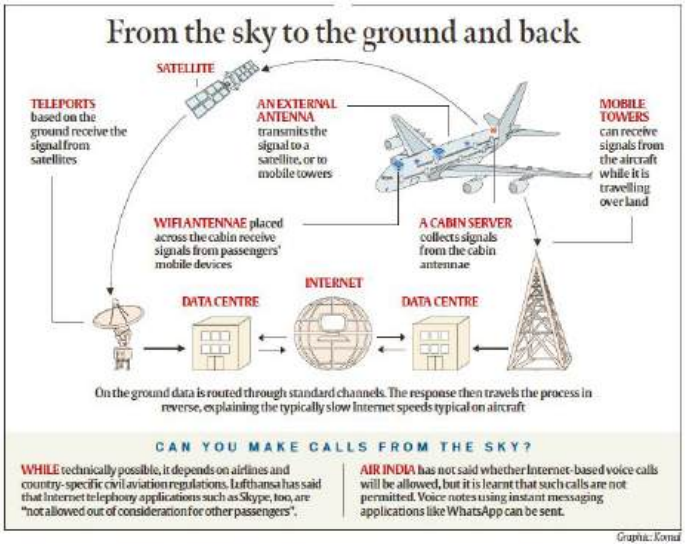
About India Meteorological Department (IMD):

- **What it is:** The IMD is India's national weather service agency responsible for meteorological observations, forecasting, and research.
- **Established in:** 1875, following critical weather events like the 1864 Calcutta cyclone and monsoon failures in 1866 and 1871.
- **Headquarters:** New Delhi, India.
- **Ministry:** Under the **Ministry of Earth Sciences**.
- **History: Origins:** Began with provincial observatories in the 18th century (e.g., Madras Observatory, 1793). **Centralization:** Unified meteorological services under a central authority in 1875.
- **Functions:**
  - **Weather Forecasting:** Short-term and long-term predictions for agriculture, aviation, and disaster management.
  - Cyclone **Warnings:** Specialized cyclone prediction for the Indian Ocean region.
  - **Data Collection:** Operates **regional and state-level meteorological centres** and over 700 observatories.
  - **Climate Research:** Studies climate change impacts, extreme weather, and monsoon dynamics.
  - **Sectoral Services:** Supports aviation, shipping, fisheries, and flood management with real-time data.

64. IN FLIGHT INTERNET

Context:

Air India, part of the Tata Group, has become the first Indian airline to offer in-flight Internet on domestic flights.



About In-Flight Internet:

- **What it is:** In-flight Wi-Fi provides passengers with Internet connectivity during flights, enabling access to online services like browsing, streaming, and messaging.
- **How it works:**
  - **Technology used:** Two primary systems – **Air-to-Ground (ATG)** and **Satellite-Based Connectivity**.
    - **ATG:** Uses antennae under the aircraft to connect with ground cellular towers. Suitable for regions with dense tower networks.
    - **Satellite-Based:** Uses antennae on top of the aircraft to communicate with satellites, ensuring wider coverage, especially over oceans and remote areas.
- **Signal Transmission:**
  - Devices connect to in-cabin Wi-Fi antennae.
  - Signals pass through an onboard server.
  - For satellite systems, signals move from the server to satellites, then to ground stations, and back via the same route.
  - For **ATG systems**, signals travel directly between the aircraft and ground cellular towers.
- **Features and Benefits:**

- **Enhanced Passenger Experience:** Browsing, streaming, and connecting with the world mid-air.
- **Convenience:** Integration with existing airline portals for seamless connectivity.
- **Flexibility:** Compatibility with multiple devices.

- **Limitations of In-Flight Wi-Fi:**
  - **Slower Speeds:** Typically, slower than ground-based Internet due to technological constraints.
  - **High Costs:** Expensive equipment installation and maintenance for airlines, with potential charges for passengers.
  - **Limited Coverage:** ATG technology struggles over large water bodies or remote areas.

65. INJECTABLE HYDROGEL

Context:

Researchers from IIT-Guwahati and Bose Institute, Kolkata, have developed an advanced injectable hydrogel for localized cancer treatment.

About the Hydrogel:

- **What it is:** A water-based polymer network designed to release anti-cancer drugs precisely at the tumour site, sparing healthy cells.
- **Developed by:** Researchers from IIT-Guwahati and Bose Institute, Kolkata.
- **Features:**
  - **Localised Drug Delivery:** Precisely targets cancer cells without affecting healthy cells.
  - **Responsive Design:** Reacts to elevated **glutathione (GSH) levels** abundant in tumour cells.
  - **Biocompatibility:** Mimics living tissues for seamless integration with the biological environment.
  - **Stability:** Remains insoluble in biological fluids, ensuring localization at the injection site.
- **Significance:**
  - Reduces harmful side effects associated with traditional chemotherapy.
  - Enhances precision in cancer therapy, particularly for breast cancer.
  - Represents a step forward in personalized and localized cancer treatments.

66. TRANQUILIZERS

Context:

The capture of the runaway tigress Zeenat in West Bengal highlights the delicate art of tranquilizing wild animals.

About Tranquilizers:

- **What is a Tranquilizer?**
  - A **chemical agent** used to immobilize animals by inducing sedation or unconsciousness **through remote injection mechanisms like** dart guns.
- **Tranquilizers in the Past:**
  - **Rudimentary Methods:**
    - **Manual Capture:** Early methods involved traps, pitfalls, and chasing animals with nets.
  - **Early Chemical Tranquilizers:**
    - **Curare:** Derived from tree bark, used by South American tribes for hunting. It paralyzed animals but didn't sedate them.
    - **Narcotic Bullets (1912):** Carried morphine for painless kills but lacked precision in immobilization.
  - **Mercy Bullets (1928):**
    - Hypodermic needles with basic sedative chemicals, first introduced by Captain Barnett Harris.
    - Often unreliable and lethal in incorrect doses.
- **Chemicals Used in Modern Tranquilizers:**
  - **Etorphine (M99):** Strong opioid used for large mammals like elephants.
  - **Xylazine:** A sedative often combined with **Ketamine** for extended immobility.
  - **Ketamine:** Dissociative anesthesia; effective but prone to misuse.
  - **Telazol:** Ready-to-use combination of **Tiletamine** and **Zolazepam**, gaining popularity.
- **How Tranquilizers Work:**
  - Delivered via **dart guns** powered by compressed CO_2 gas.
  - The dart injects the chemical subcutaneously or intramuscularly.
  - The tranquilizer acts on the central nervous system, inducing **sedation** or **anesthesia**
- **Other Tranquilizers Commonly Used:**

- **Neuromuscular Blockers (e.g., Curare):** Earlier methods; high mortality rates and less humane.
- **Alpha-Adrenergic Tranquilizers:** Safer, reversible sedatives like Xylazine.

67. MICRORNA

Context:
The discovery of microRNAs (miRNAs) in *Caenorhabditis elegans* has revolutionized our understanding of gene regulation, leading to significant advancements in biological research and earning the Nobel Prize in Physiology or Medicine in 2024.

About MicroRNAs (miRNAs):

- **Definition:** miRNAs are small, non-coding RNA molecules that regulate gene expression post-transcriptionally.
- **Functions:**
  - Bind to complementary mRNA sequences to suppress protein production.
  - Ensure precise gene expression during development and physiological processes.
- **Role in Gene Suppression:** miRNAs reduce protein synthesis by promoting mRNA degradation or hindering translation.
- **Applications:** Potential in diagnostics and therapeutics for cancer, genetic disorders, and more.

About Caenorhabditis elegans:

- **Definition:** A 1-mm transparent nematode used extensively in genetic and developmental research.
- **Role in Research:**
  - Simple organism with complex processes comparable to humans.
  - Transparent body facilitates cell lineage tracking.
- **Nobel Winners 2024:** Victor Ambros and Gary Ruvkun discovered miRNAs in *C. elegans*, highlighting their gene-regulatory role.
- **Significance of Research:**
  - Foundational to understanding gene suppression, ageing, cell death, and neuronal circuits.
  - Model organism for breakthroughs like programmed cell death and genome sequencing.

68. GENOME INDIA PROJECT

Context:
Prime Minister announced the successful completion of the Genome India Project, marking a significant advancement in India's biotechnology landscape.

About Genome India Project:

- **What it is:** A national initiative for decoding India's genetic diversity through large-scale genome sequencing.
- **Launched In:** January 2020.
- **Ministry:** Funded by the Department of Biotechnology, Ministry of Science and Technology.
- **Aim:**
  - Map the genetic landscape of Indian populations.
  - Enable targeted clinical interventions and precision medicine.
- **Features:**
  - **Genome Sequencing:** 10,074 genomes sequenced from 99 ethnic groups.
  - **Data Repository:** Genetic data securely stored at the Indian Biological Data Centre.
  - **Sample Collection:** Over 19,000 blood samples collected and stored in the GenomeIndia Biobank.
  - **Phase 1 Findings:** Rare genetic variations unique to Indian populations identified.
- **Significance:**
  - **Healthcare Revolution:** Facilitates precision medicine and targeted interventions.
  - **Research Resource:** Provides a genetic reference database for researchers.
  - **Global Recognition:** Positions India as a leader in genomics and biotech innovation.
  - **Bioeconomy Growth:** Supports India's bioeconomy, which grew from $10 billion (2014) to $150 billion.

69. COMMUNITY NOTES

Context: Meta recently announced the adoption of Community Notes, a crowdsourced content moderation system similar to Twitter's (now X) approach, as a replacement for its fact-checking program in the US.

About Community Notes:

- **What is it?**
  - Community Notes is a **crowdsourced fact-checking system** where users can add context or facts to specific posts.
- **Launched by:** Originally piloted as 'Birdwatch' by **Twitter in 2021**, rebranded as X, it is now being adopted by Meta across Facebook, Instagram, and Threads.
- **How it works:**
  - Contributors provide additional context below posts.
  - Notes appear only if **enough users agree on their helpfulness**, ensuring diverse perspectives.
  - Data is public, allowing anyone to analyse contributions for transparency.
- **Significance:**
  - **Scalable Content Moderation:** Reduces reliance on centralized fact-checkers.
  - **Community-driven Transparency:** Empowers users to counter misinformation collectively.
  - **Adaptable System:** Improves accuracy with increasing user participation and algorithmic refinements.

70. INDIGENOUS SURGICAL ROBOTIC SYSTEM

Context:

India achieved a groundbreaking milestone in healthcare technology with the successful completion of robotic cardiac surgeries via telesurgery using the **SSI Mantra** 3 Surgical Robotic System.

About SSI Mantra:

- **What it is:** An **indigenous surgical robotic system** designed for performing advanced robotic surgeries, including telesurgery.
- **Developed by:** SS Innovations.
- **Features:**
  - **Ultra-low latency (35-40 milliseconds):** Enables seamless real-time remote surgical procedures.
  - **High precision:** Facilitates complex surgeries such as **Totally Endoscopic Coronary Artery Bypass (TECAB)**.
  - **Telesurgery and Tele-proctoring Approved:** The first robotic system globally to receive regulatory approval for telesurgery by **Central Drugs Standard Control Organization (CDSCO)**.
- **How it works:**
  - Uses advanced robotic arms controlled remotely by surgeons over a secure network.
  - Ensures precision and efficiency through high-speed data transmission with minimal delay.
  - Supports collaboration in surgical education and mentoring through **tele-proctoring**.
- **Significance:**
  - **Bridges Healthcare Gaps:** Provides access to expert surgical care in remote and underserved areas.
  - **Enhances Patient Outcomes:** Enables accurate and minimally invasive procedures.
  - **Transformative for India:** Addresses disparities in healthcare access, especially for rural populations.
  - **Global Potential:** Demonstrates scalability for worldwide adoption in medical care and education.

71. PINK FIRE RETARDANT

Context:

As wildfires ravage Southern California, authorities are deploying pink fire retardant, an ammonium phosphate-based solution, to curb the spread of flames.

What is pink fire retardant?

- **Scientific Name:** Ammonium Polyphosphate-based slurry.
- **Common Brand:** Phos-Chek, widely used for wildfire suppression.

Features of pink fire retardant:

- **Composition:**
  - Contains **ammonium polyphosphate salts**, which coat vegetation to prevent combustion.
  - Includes dyes (typically pink) for visibility against natural landscapes.
- **Functionality:**
  - Does not evaporate easily like water and stays on vegetation longer.
  - Blocks oxygen from feeding fires, slowing their spread.

- **Application:**
  - Sprayed via planes or helicopters ahead of active fires to create protective **fire lines**.

How is it better than other fire retardants?

- **Durability:** Long-lasting coating compared to water-based suppressants.
- **Visibility:** The pink dye enhances accuracy in application, aiding firefighters in creating effective barriers.
- **Effectiveness:** Acts proactively by reducing fuel for fires, unlike water, which is reactive and evaporates quickly.

Concerns about pink fire retardant:

- **Environmental Impact:** Contains **toxic metals** like chromium and cadmium, harmful to aquatic life and ecosystems when it enters water streams.
- **Health Risks:** Long-term exposure to metals may cause **cancer**, kidney, and liver diseases.
- **Effectiveness:** Its performance is highly dependent on environmental conditions like **terrain**, **weather**, and **fuel type**.
- **Cost and Usage:** Expensive and requires vast amounts of resources.

72. SMALL LANGUAGE MODELS

Context:

The shift towards Small Language Models (SLMs) marks a significant turn in AI development, moving away from the massive-scale Large Language Models (LLMs) that dominated the AI landscape.

About Small Language Models:

- **What it is:**
  - **Small Language Models (SLMs)** are compact AI systems designed for specific, domain-focused tasks, requiring fewer parameters and computational resources than LLMs.
- **How it works:**
  - SLMs are trained on **smaller datasets**, focusing on specific applications, making them efficient for tasks like **language translation**, **basic text summarization**, or **domain-specific problem-solving**.
  - Deployed efficiently on **edge devices** such as smartphones and IoT systems.
- **Features:**
  - **Compact Size:** Reduced number of parameters compared to LLMs.
  - **Cost-Effective:** Requires less computational power and training data.
  - **On-Device Deployment:** Suitable for local execution without heavy cloud dependency.
  - **Quick Training:** Faster to train and fine-tune for specific use cases.
  - **Energy Efficient:** Lower resource consumption makes it ideal for low-infrastructure settings.
- **Significance:**
  - **Accessibility:** Brings AI solutions to regions with limited resources, such as rural India.
  - **Edge Applications:** Powers real-time tasks like **language translation** or **speech recognition** directly on devices.
  - **Industry-Specific:** Tailored solutions for sectors like healthcare, agriculture, and education.
  - **Cultural Preservation:** Enables AI to cater to local languages and dialects.
- **Differences between large language models and small language models:**

Feature	Large Language Models (LLMs)	Small Language Models (SLMs)
Size	Trained on billions or trillions of parameters.	Trained on millions to a few billion parameters.
Purpose	Designed for **generalized tasks** (e.g., AGI).	Focused on **specific, niche applications**.
Cost	High computational and resource cost.	Low cost and resource-efficient.
Training Data	Requires massive, diverse datasets.	Works with smaller, targeted datasets.
Deployment	Primarily cloud-based, requiring heavy infrastructure.	Suitable for **on-device or edge computing**.
Use Cases	Complex tasks like coding, logic, and advanced reasoning.	Simple tasks like translations, summaries, and FAQs.
Scalability	Requires significant infrastructure for scaling.	Scalable for localized and small-scale deployments.

73. US AI EXPORT RULE

Context:

In the final days of the Biden administration, a new regulatory framework titled **"Framework for Artificial Intelligence Diffusion"** has been introduced to regulate the export of advanced artificial intelligence (AI) technologies like GPUs.

About US AI Export Rule:

What is it?

- A regulatory framework introduced by the US government to control the export of **AI hardware, particularly GPUs**, based on national security concerns.
- Aims to ensure advanced AI capabilities remain under the purview of the US and its closest allies.

US AI Export Regulations Overview

• Introduced by the US government to control AI hardware exports, particularly GPUs, due to national security concerns.
• Aims to maintain control over advanced AI capabilities.

India's Placement in Tiers:

• Tier 1: Includes 18 closest US allies with minimal export restrictions.
• Tier 2: Includes majority of countries, including India, with a cap on computing power imports.
• Tier 3: Countries like Russia, China, and North Korea face near-total prohibition on US AI imports.

Special Provisions for India and China:

• Authorized firms can use exported technology for civilian and military purposes.
• Exported technology is restricted to civilian applications only.

Implications for India:

- **IndiaAI Mission:**
  - Potential delays in achieving computing power targets.
  - Restrictions could hamper large-scale **AI data center development** while sparing smaller firms.
- **Strategic Alliances:**
  - Highlights India's growing importance in US foreign policy, but underscores its non-inclusion in Tier 1.
  - Requires bilateral negotiations for relaxed restrictions.
- **Domestic AI Ecosystem:**
  - Limited access to cutting-edge GPUs may slow AI research and innovation.
  - Pushes India towards self-reliance in AI hardware manufacturing.
- **Global Competitiveness:**
  - Could impede India's ability to compete with nations in **Tier 1**, especially in AI-driven industries.

74. ADVANCED DRIVER ASSISTANCE SYSTEMS (ADAS)

Context:

Recently, the Indian automobile market has witnessed the widespread integration of ADAS features in four-wheeler vehicles, significantly enhancing car safety.

About Advanced Driver Assistance Systems (ADAS):

- **What is ADAS?**
  - **ADAS** stands for **Advanced Driver Assistance Systems**, a combination of technologies designed to improve driver safety, enhance convenience, and minimize the risk of accidents.
  - It integrates sensors, cameras, and processors to analyse real-time data and provide alerts or automated assistance to the driver.
- **How Does ADAS Work?**
  - **Sensors and Cameras**: Commonly used sensors include **RADAR**, **LiDAR**, and **SONAR**, paired with 360-degree cameras that monitor the vehicle's surroundings.
  - **Data Processing**: Real-time data is processed by onboard computers to assess the environment, make decisions, and alert the driver or take automated actions.
  - **Response Mechanism**: Based on processed data, ADAS can initiate actions such as braking, steering corrections, or collision warnings faster than human reaction times.
- **Key Features of ADAS:**

- **Collision Intervention Systems:** Prevents incoming collisions by detecting obstacles.
- **Automatic Emergency Braking (AEB):** Applies brakes if the driver does not react to warnings.
- **Blindspot Alert and Avoidance:** Warns of vehicles in blind spots and adjusts accordingly.
- **Lane Departure Alert and Lane Keep Assist:** Alerts and steers the vehicle back into its lane if it deviates.
- **Traffic Sign Recognition:** Identifies road signs and informs the driver.
- **Driver Drowsiness Detection:** Monitors driver fatigue and provides alerts.
- **Adaptive Cruise Control:** Maintains a safe distance from the vehicle ahead by adjusting speed.
- **Parking Assist:** Automates or assists during parking using cameras and sensors.

- **Advantages of ADAS:**
  - **Enhanced Safety:** Reduces collision risks with forward collision alerts and automatic braking.
  - **Convenience:** Reduces driver fatigue with adaptive cruise control and automated parking.
  - **Fuel Efficiency:** Improves mileage through optimized acceleration and braking.
  - **Traffic Sign Compliance:** Alerts drivers to follow road regulations.
  - **Driver Assistance:** Improves navigation and decision-making in complex traffic scenarios.
- **Limitations of ADAS in India:**
  - **Infrastructure Challenges:** Poor road markings and uneven infrastructure hinder system accuracy.
  - **Unpredictable Hazards:** Stray animals and unregulated traffic complicate detection and response.
  - **Weather and Lighting:** ADAS performance may degrade under low light or adverse weather conditions.
  - **System Accountability:** Lack of clarity on whether the driver or ADAS is responsible during failures.

75. ANTIVENOM

Context: India, known as the 'snakebite capital of the world,' records over 58,000 deaths annually from venomous snake-bites, despite being the largest producer and consumer of antivenoms.

About Antivenoms:

- **What are Antivenoms?**
  - Antivenoms are life-saving medicines used to neutralize snake venom toxins. Produced by injecting venom into animals (usually horses), their immune systems generate specific antibodies, which are then extracted, purified, and formulated as antivenoms.
- **The Big Four Snakes:** India's primary venomous snakes contributing to most snakebite deaths are: **Indian Cobra (Naja naja), Common Krait (Bungarus caeruleus), Russell's Viper (Daboia russelii)** and **Saw-scaled Viper (Echis carinatus)**
- **How is Antivenom Produced?**
  - **Venom Extraction:** Snakes are milked to collect venom in controlled conditions.
  - **Immunization:** Horses are injected with small, increasing doses of venom over weeks to stimulate antibody production.
  - **Antibody Extraction:** Antibodies generated in the **horses' blood** are extracted, purified, and processed into antivenoms.
  - **Formulation:** The purified antibodies are prepared for clinical use, ensuring safety and effectiveness.
- **Features of Antivenoms:**
  - **Specific Binding:** Antivenoms neutralize toxins by binding to them like a key in a lock.
  - **Life-Saving:** They counteract venom effects like paralysis, blood clotting, and tissue destruction.
  - **Polyvalent Nature:** Current antivenoms target multiple snake species but have limited efficacy against less common species.
  - **Critical Role in Healthcare:** Antivenoms are essential for treating snakebite victims in rural and urban areas.
- **Limitations of Antivenoms:**
  - **Geographic Inefficacy:** Polyvalent antivenoms are ineffective against several region-specific snake species.
  - **Cold Storage Dependency:** Antivenoms require uninterrupted refrigeration, often unavailable in remote areas.
  - **Economic Barriers:** High manufacturing costs make them inaccessible for economically disadvantaged populations.

76. RHODAMINE B

Context: With global bans, including by the Food and Drug Administration (FDA) and various Indian states, Rhodamine B and its harmful effects are under intense scrutiny.

About Rhodamine B:

• Rhodamine B is a water-soluble synthetic dye used as a colouring agent in textiles, leather, paper, and paints.
• Its fluorescence makes it suitable for industrial marking and scientific research.
• Its dyeing efficiency is high, producing vibrant red and pink shades in commercial applications.
• It is non-biodegradable, contributing to pollution risks.
• It is classified as toxic and banned for use in consumables worldwide.
• Its harmful impacts include carcinogenic properties, toxic effects, oxidative stress, environmental hazards, and higher risk for children and immunocompromised individuals.

77. NUCLEAR FUSION

Context:

China's Experimental Advanced Superconducting Tokamak (EAST) reactor set a new milestone by sustaining a plasma state for over 1,000 seconds (17 minutes).

About Nuclear Fusion:

- **What is Nuclear Fusion?**
  - Nuclear fusion is a process where **two light atomic nuclei combine to form a heavier nucleus**, releasing **immense energy**—the same process that powers the **Sun and other stars**.
- **How it works?**
  - **High Temperature & Plasma Formation:** Fusion requires temperatures **above 100 million degrees Celsius**, creating a **plasma state** where atoms split into charged particles.
  - **Magnetic Confinement:** Plasma is confined using **strong magnetic fields** to prevent contact with reactor walls.
  - **Fusion Reaction:** Hydrogen isotopes **(Deuterium & Tritium)** fuse, producing helium and energy in the form of heat.
  - **Energy Capture & Conversion:** Future reactors aim to use this heat to generate steam, driving turbines to produce electricity.

Major Nuclear Fusion Experiments Worldwide:

- **China's EAST Reactor (Experimental Advanced Superconducting Tokamak):**
  - **Achievement:** Sustained plasma for **1,000+ seconds**, surpassing its 2023 record of 400+ seconds.
  - **Significance:** A critical step toward building a full-scale **fusion power plant**.
  - **Location:** Institute of Plasma Physics, **Anhui Province, China**.
- **ITER (International Thermonuclear Experimental Reactor, France):**
  - **What is ITER?**
    - The **world's largest fusion experiment**, involving **35 nations**, including **India, the US, China, and the EU**.
  - **Location:** Southern **France**.
  - **Key Features:**
    - **500 MW fusion power output** planned by **2039**.
    - Uses **Deuterium-Tritium fuel** to replicate Sun-like conditions.
    - Paves the way for **commercial fusion power plants**.

Difference between Nuclear Fusion and Nuclear Fission:

Aspect	Nuclear Fusion	Nuclear Fission
Process	Combines atomic nuclei	Splits heavy atomic nuclei
Fuel Used	Hydrogen isotopes (Deuterium & Tritium)	Uranium-235 or Plutonium-239
Energy Output	Extremely high (1g of fuel = 8 tonnes of coal)	High but lower than fusion
Nuclear Waste	Minimal, no long-term radioactive waste	Produces hazardous radioactive waste
Safety	No risk of meltdown, self-regulating process	Risk of reactor meltdowns (e.g., Chernobyl, Fukushima)

Space

78. MISSION SHAKTHISAT

Context:
ISRO has brought together about 12,000 talented girls from 108 countries for an all-girls flight to the lunar orbit, Mission ShakthiSAT.

- **What it is:** An **all-girls lunar mission** involving the design, build, and launch of a satellite to the lunar orbit, showcasing global talent in space exploration.
- **Expected Launch:** Scheduled for **September 2026**, to be launched by ISRO's **Polar Satellite Launch Vehicle (PSLV)**.
- **Objective:**
  - Promote **gender inclusivity** in STEM by empowering young women.
  - Inspire global collaboration in space science and technology.
  - Conduct **scientific experiments** in lunar orbit using student-developed payloads.

79. FIRST PRIVATE SATELLITE CONSTELLATION

Context:
India's space industry marked a historic milestone with the launch of its first private satellite constellation by Google-backed Pixxel, a Bengaluru-based space-tech startup.

- Private satellite constellation of six hyperspectral imaging satellites launched by Pixxel, backed by Google.
- Developed by Pixxel with SpaceX collaboration.
- Launched at Vandenberg Space Force Base, California, USA.
- Aims to improve insights in agriculture, mining, environmental monitoring, defense, and resource management.
- Features Hyperspectral Imaging Technology for superior precision and insights.
- Plans to launch 18 additional satellites by 2029.
- Secured 65 clients, including British Petroleum and India's Ministry of Agriculture.

80. LOBIA SEEDS GERMINATION IN SPACE

Context: Recently, ISRO achieved a significant milestone by successfully germinating lobia (black-eyed pea) seeds in microgravity aboard its Compact Research Module for Orbital Plant Studies (CROPS).

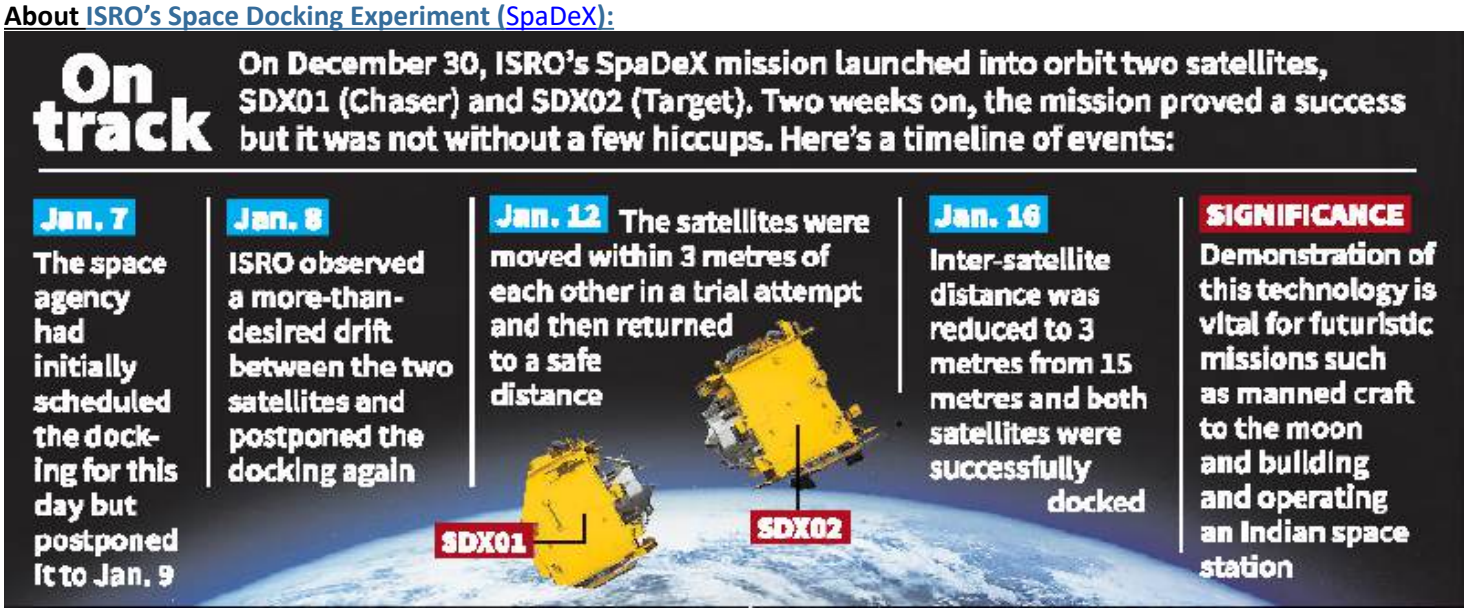
About Lobia Seeds Germination in Space:

- **What it is:**
  - ISRO's experiment involved germinating **lobia seeds** aboard the **CROPS module** to study plant growth under microgravity conditions.
  - The seeds sprouted successfully on the **fourth day**, with visible leaves by the fifth day, marking a milestone in India's space research.
- **Mission name:** Compact Research Module for Orbital Plant Studies (CROPS).
- **Seed/Plant Used:** Lobia (black-eyed pea), a nutrient-dense plant ideal for space farming experiments.
- **Aim:**
  - To develop sustainable food sources for long-term space missions.
  - To test plant growth in conditions mimicking extraterrestrial environments, including microgravity and controlled atmospheric conditions.
- **Significance of Success:**
  - **Support for Space Missions**:
    - Enables astronauts to grow food, reducing dependency on pre-packaged supplies.
    - Contributes to oxygen generation and CO_2 recycling aboard spacecraft.
  - **Technological Advancements:**
    - Demonstrates India's capability to manage complex life-support systems in space.
    - Provides insights into designing space habitats with integrated agriculture.
  - **Psychological Benefits:** Tending to plants offers stress relief and improves mental health for astronauts.
  - **Global Contribution:** Paves the way for India's collaboration in global space farming initiatives, such as those on the **International Space Station (ISS)**.

81. SPACE DOCKING EXPERIMENT (SPADEX)

Context:
India achieved a significant milestone in space technology with the successful execution of ISRO's Space Docking Experiment (SpaDeX) on January 16, 2025.

About ISRO's Space Docking Experiment (SpaDeX):



What it is: SpaDeX is a mission to demonstrate satellite docking technology, a critical capability for advanced space missions like space station operations, interplanetary missions, and satellite servicing.

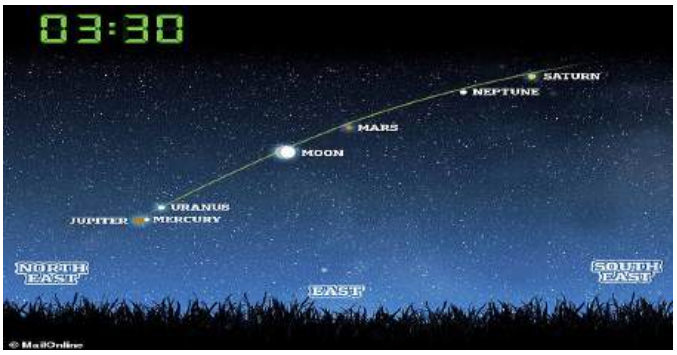
- **Mission under:** The experiment was part of ISRO's broader strategy to develop **Next-Generation Space Technologies** and was launched under the **PSLV C60 mission**.
- **Aim:**
  - Demonstrate docking and undocking of two satellites in orbit.
  - Enable transfer of power and control between docked satellites.
  - Support future human spaceflight missions, moon landings, and space station assembly.
- **Features:**
  - Satellites involved: **SDX01 (Chaser)** and **SDX02 (Target)**, each weighing 220 kg.
  - Rigidization post-docking for stability.
  - Transfer of electric power between docked satellites to ensure operational readiness.
  - **Expected mission life:** Two years.
- **How it is done:**
  - Satellites maneuvered from 15m to a 3m hold point for precision docking.
  - Automated docking using sensors, alignment systems, and thrusters.
  - Post-docking operations include power checks and payload activation.
- **Nations that achieved the feat:**
  - **United States**: First achieved in the Gemini program in 1966.
  - **Russia**: Demonstrated docking during the Soyuz missions.
  - **China**: Successfully docked modules for the Tiangong space station.
  - **India**: 4th nation to achieved this milestone in 2025 with SpaDeX.

82. PLANET PARADE

Context:
In January 2025, Venus, Saturn, Jupiter, and Mars have aligned spectacularly in the night sky, creating a rare celestial phenomenon known as a "planet parade."

About Planet Parade:

- **What is a Planet Parade?**
  - A **planet parade** occurs when several planets in the solar system are visible simultaneously in the night sky.



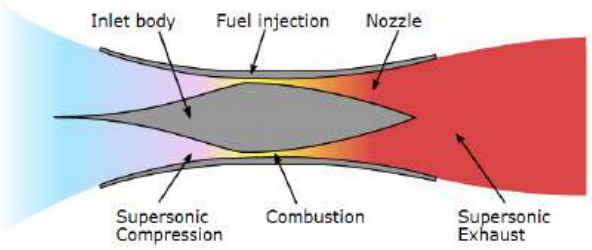
- It is not an official astronomical term but describes the alignment of planets along the **plane of the solar system**.
- These alignments can occur in either the **morning or evening sky**.

- **How does a planet parade occur?**
  - Planets orbit the Sun on approximately the same plane, known as the **ecliptic plane**, making them appear aligned in the sky.
  - Due to their varying orbital speeds and distances, this alignment is temporary and visible only for specific periods.
  - The current alignment features **Venus, Saturn, Jupiter, Mars, Uranus, and Neptune**, forming a curved arc across the sky.
- **Significance of a Planet Parade:**
  - **Astronomical Education:** Encourages public interest in astronomy and celestial mechanics.
  - **Cultural Relevance:** Historically interpreted as celestial omens or inspiration for folklore.
  - **Visibility of Planets:** Provides a unique opportunity to view multiple planets, including distant ones like Uranus and Neptune.
  - **Scientific Exploration:** Alignments offer researchers better opportunities to study planetary light emissions and trajectories.
  - **Public Engagement:** Sparks curiosity, with astronomers using it as an outreach tool to promote space science.

83. SUPERSONIC COMBUSTION RAMJET (SCRAMJET) ENGINE

Context:

India has achieved a significant milestone in hypersonic technology with the Defence Research & Development Laboratory (DRDL) successfully conducting a 120-second ground test of the Supersonic Combustion Ramjet (Scramjet) engine.



The principle of operation of a scramjet engine

About Supersonic Combustion Ramjet (Scramjet):

- **What is Scramjet Technology?**
  - A Scramjet is an **air-breathing engine** designed to sustain combustion at supersonic speeds, operating efficiently at **hypersonic speeds (Mach 5+).**
- **Developed by:** Indigenous efforts by **DRDL (DRDO)** in collaboration with industry partners.
- **How it works:**
  - Utilises the vehicle's **forward motion** to compress atmospheric oxygen for combustion, eliminating the need to carry an oxidiser.
  - Fuel mixes with compressed air in the combustion chamber, igniting to produce thrust at high speeds.
  - Innovative **flame stabilization techniques** ensure ignition in extreme conditions.
- **Key Features:**
  - **Air-Breathing Engine:** Uses atmospheric oxygen, reducing propellant weight.
  - **Advanced Thermal Barrier Coating (TBC):** High-temperature resistance, enhancing engine performance.
  - **Endothermic Scramjet Fuel:** Developed indigenously, it improves cooling and ignition efficiency.
  - **No Moving Parts:** Reduces mechanical complexities, increasing reliability.
- **Significance of Scramjet Technology:**
  - **Hypersonic Missiles:** Enables development of advanced missiles that can bypass air defence systems and deliver rapid, high-impact strikes.
  - **Reusable Launch Vehicles:** Reduces the cost of satellite launches by using **air-breathing propulsion systems.**
  - **Strategic Edge:** Positions India among a select group of nations (USA, Russia, China) with hypersonic capabilities.
  - **Reduced Launch Costs:** Potential for cheaper, reusable satellite launch systems by minimising fuel weight.
  - **Technological Breakthrough:** Advances in **Computational Fluid Dynamics (CFD)** and material science, contributing to aerospace innovations.

84. ISRO'S LAUNCH VEHICLE

Context:

ISRO successfully launched the GSLV-F15 rocket, placing the NVS-02 satellite into GTO. This milestone marks ISRO's 100th launch, boosting India's space prowess.

- The NVS-02 is part of **NavIC (Navigation with Indian Constellation)**, India's **regional navigation satellite system**, enhancing positioning accuracy.

About ISRO's Launch Vehicles:

- **What are launch vehicles?**
  - Launch vehicles are **rocket-powered transport systems** designed to carry **satellites, spacecraft, or payloads** into **Earth's orbit or beyond**.
  - They provide the **necessary thrust** to overcome gravity and place payloads in **Low Earth Orbit (LEO), Geostationary Orbit (GEO), or Interplanetary trajectories**.
- **How do launch vehicles work?**
  - **Rocket Propulsion:** Uses **Newton's Third Law** to generate thrust via solid or liquid propellants.
  - **Multiple Stages:** Ascent is divided into **stages**, where each stage separates after burning its fuel.
  - **Guidance & Navigation:** Uses **precise computing systems** to maintain trajectory.
  - **Payload Fairing:** Protects the satellite and separates when the rocket reaches space.
  - **Orbit Insertion:** Once in space, the final stage releases the satellite into the desired orbit.
- **List of ISRO's operational launch vehicles:**

Launch Vehicle	Operational Since	Key Features
Satellite Launch Vehicle (SLV)	1980	India's **first experimental rocket**, four-stage **solid-propellant**, launched **Rohini satellite**.
Augmented Satellite Launch Vehicle (ASLV)	1987	Five-stage **solid-fuelled** vehicle, improved SLV's capacity, **retired in the 1990s**.
Polar Satellite Launch Vehicle (PSLV)	1994	Four-stage vehicle, **India's workhorse rocket**, launched **Mars Orbiter Mission (Mangalyaan)**, carries **1,750 kg payload to LEO**.
Geosynchronous Satellite Launch Vehicle (GSLV)	2001	Three-stage rocket, **Indigenous Cryogenic Upper Stage**, used for **INSAT & GSAT satellites**.
GSLV Mk III (LVM3)	2014	Heavy-lift vehicle, carried **Chandrayaan-2, Chandrayaan-3**, can carry **4,000 kg payload to GTO**.
Small Satellite Launch Vehicle (SSLV)	2022	Low-cost, **three-stage solid-fuelled rocket**, ideal for launching **nano & micro satellites**.

About NVS-02 Satellite:

- **What is NVS-02?**
  - NVS-02 is a navigation satellite launched as part of NavIC (Navigation with Indian Constellation).
  - It is the **second satellite in the NVS series**, replacing aging IRNSS satellites.
- **Orbital Placement:**
  - Placed in a **Geosynchronous Transfer Orbit (GTO)** by GSLV-F15.
  - Final orbit at **36,000 km altitude** for regional positioning services.
- **Aim & Purpose**
  - To enhance navigation accuracy over India and surrounding regions (1,500 km beyond the Indian mainland).
  - Supports military and civilian applications, including disaster management, fleet tracking, and precision agriculture.

News in Short

LID-568: a low-mass supermassive black hole discovered 1.5 billion years after the Big Bang, is found in a galaxy with minimal star formation.

Mission SCOT: The world's first commercial satellites for Space Situational Awareness (SSA), designed to enhance tracking and monitoring of Resident Space Objects (RSOs). Developed by Digantara, an Indian space startup supported by Aditya Birla Ventures and SIDBI.

Axiom Mission 4 (Ax-4): Axiom Mission 4 (Ax-4) is **a private spaceflight** to **the International Space Station (ISS),** operated by Axiom Space, a US-based space infrastructure company. ISRO astronaut and Indian Air Force (IAF) officer Shubhanshu Shukla is set to become the first Indian astronaut to visit the International Space Station (ISS) aboard a SpaceX Dragon spacecraft.

Health & Diseases

85. HUMAN METAPNEUMOVIRUS (HMPV)

Context:

Amid concerns surrounding the outbreak of Human Metapneumovirus (HMPV) in China, Dr. Atul Goel, Director-General of Health Services, has assured the public that there is no need for alarm and urged people to follow basic precautions to stay safe.

- Human Metapneumovirus (HMPV) is a respiratory virus first identified in 2001.
- Causes upper and lower respiratory tract infections, resembling the common cold or flu.
- Risk groups include children under 5, older adults, immunocompromised individuals, and those with chronic respiratory conditions.
- Symptoms range from common cough, runny nose, fever, sore throat to severe wheezing, shortness of breath, leading to bronchitis or pneumonia.
- Spread modes include coughing/sneezing, close contact, and contaminated surfaces.
- Treatment includes no specific antiviral or vaccine, symptom management, and hospitalization for severe cases.
- Diagnosis involves NAATs and antigen-based immunoassays.

86. OBESITY

Context:

The Lancet Commission has proposed a new definition and diagnostic framework for obesity, moving beyond the outdated reliance on Body Mass Index (BMI).

About Obesity:

About Old Definition and Method:

- **Old Definition:**
  - Obesity was defined as having a **BMI greater than 30** (or greater than 25 for Indians).
  - Overweight was defined as **BMI between 25 and 29.9** globally (or 23-24.9 for Indians).
- **Old Method:**
  - BMI was calculated as **weight (kg)** divided by **height squared (m^2)**.
  - Categorization relied solely on this ratio.
- **Issues with Old Method:**
  - **Inaccurate Diagnosis:** Did not account for body fat distribution or muscle mass.
  - **Over- and Under-Diagnosis:** High BMI in muscular individuals often misclassified as obesity; lean individuals with excess fat went undiagnosed.
  - **Ignored Regional Variations:** Indians, for example, have higher body fat percentages at lower BMI levels, increasing their risk of conditions like diabetes.

New Proposed Definition:

- **Broader Understanding:**
  - Obesity is redefined as a **chronic illness** that alters organ function and can lead to serious health complications, even in the absence of other conditions.

- **Focus on Risk Assessment:**
  - Introduces the concept of **"pre-clinical obesity"** where excess body fat exists without current organ dysfunction, allowing for preventive interventions.

About New Proposed Method:

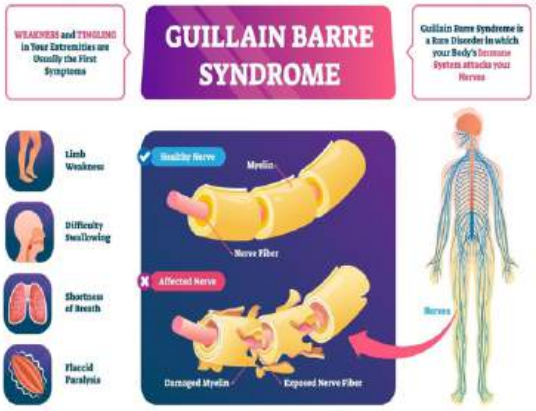
- **Multiple Parameters for Body Size:**
  - BMI is now just one of several parameters, including:
    1. Waist circumference.
    2. Waist-to-hip ratio.
    3. Waist-to-height ratio.
  - Advanced tools like **Dexa scans** can also measure body fat directly.
- **Holistic Diagnosis:**
  - Physicians evaluate physical symptoms (e.g., breathlessness, sleep apnea, joint pain), comorbidities, and limitations in daily life.
- **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 body fat parameters and associated health limitations (e.g., diabetes, hypertension).

87. GUILLAIN-BARRE SYNDROME (GBS)

Context:

The health department in Pune has reported a surge in cases of Guillain-Barré Syndrome (GBS), a rare autoimmune nerve disorder.

About Guillain-Barré Syndrome (GBS):



- **What is Guillain-Barré Syndrome?**
  - GBS is a rare **autoimmune disorder** where the immune system mistakenly attacks the peripheral nerves, leading to numbness, muscle weakness, and, in severe cases, paralysis. It is not contagious and typically affects adults, although people of all ages can develop the condition.
- **Symptoms of GBS:**
  - **Initial Symptoms:** Weakness or tingling sensations starting in the legs, often spreading to the arms and face.
  - **Progressive Symptoms:** Difficulty in walking, limb paralysis, and muscle coordination issues.
  - **Severe Cases:** Paralysis of respiratory muscles, requiring ventilator support.
- **Causes of GBS:**
  - **Infections:** Often preceded by bacterial or viral infections like:
    - **Campylobacter jejuni** (foodborne illness).
    - **Epstein-Barr Virus (EBV)**.
    - **Cytomegalovirus (CMV)**.
    - Bacteria causing pneumonia or urinary tract infections.
  - **Triggers:**
    - Recent vaccinations.
    - Surgical procedures.
    - Rarely, trauma or stress.
- **Impact of GBS:**
  - **Neurological Damage:** Weakens the peripheral nervous system, disrupting signals between the brain and muscles.
  - **Temporary Paralysis:** Can affect daily life, requiring intensive medical care.
  - **Recovery Period:** Most patients recover within weeks to months, but severe cases may result in prolonged rehabilitation.
- **Treatment for GBS:**
  - **Intravenous Immunoglobulin (IVIG):**
    - Contains healthy antibodies from donated blood.

- Calms the immune system's attack on nerves.
- **Plasmapheresis (Plasma Exchange):**
  - Removes harmful antibodies from the bloodstream.
- **Supportive Care:**
  - Ventilator support for respiratory paralysis.
  - Physical therapy for rehabilitation.

88. ATTENTION DEFICIT HYPERACTIVITY DISORDER (ADHD)

Context:
A UK-based study published in the *British Journal of Psychiatry* highlights a stark disparity in life expectancy among adults with Attention Deficit Hyperactivity Disorder (ADHD).

About Attention Deficit Hyperactivity Disorder (ADHD):

- **What is ADHD?**
  - A **neurodevelopmental disorder** affecting focus, impulsivity, and hyperactivity.
  - Commonly diagnosed in childhood but often persists into adulthood.
  - Impacts 3-4% of adults worldwide.
- **Causes:**
  - **Genetics:** Family history significantly increases the risk.
  - **Brain Structure:** Alterations in the brain regions responsible for attention and behaviour regulation.
  - **Prenatal Factors:** Exposure to tobacco, alcohol, or drugs during pregnancy.
  - **Environmental Factors:** Lead exposure and low birth weight.
- **Symptoms:**
  - **Inattention:** Difficulty focusing, forgetfulness, frequent mistakes, or being easily distracted.
  - **Hyperactivity:** Restlessness, excessive movement, or inability to stay still in quiet situations.
  - **Impulsivity:** Interrupting conversations, acting without thinking, and engaging in risky behaviours.
- **Treatment:**
  - **Medication:** Stimulants (e.g., methylphenidate, amphetamines) and non-stimulants (e.g., atomoxetine).
  - **Behavioural Therapy:** Focuses on developing coping mechanisms and organizational skills.
  - **Lifestyle Changes:**
    - Balanced diet and regular exercise.
    - Adequate sleep to improve focus and mood.
  - **Counselling:** Helps manage impulsivity, risky behaviours, and emotional difficulties.

89. WHO GUIDELINES ON TABLE SALT

Context:
The World Health Organization (WHO) has released new guidelines recommending the replacement of regular table salt with lower-sodium salt substitutes containing potassium to reduce cardiovascular risks and improve public health.

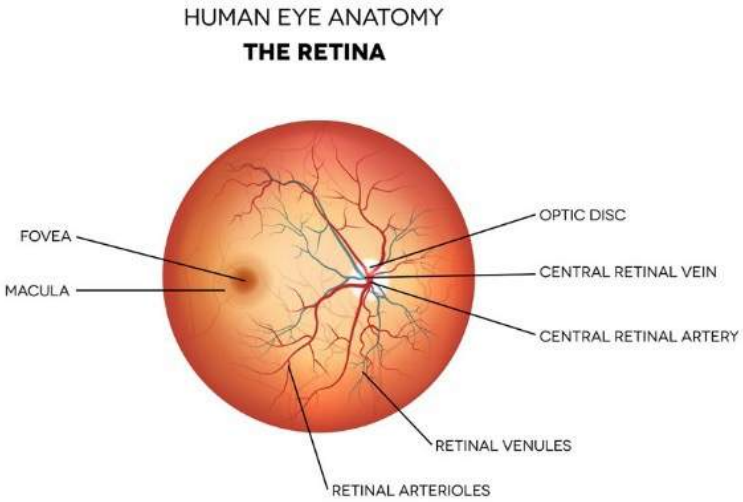
WHO Guidelines on Table Salt

- Recommends replacing regular table salt with lower-sodium salt substitutes containing potassium chloride (KCl).
- Targets adults, excluding pregnant women, children, and those with kidney impairments.
- Focuses on household table salt, not packaged or restaurant foods.
- High sodium intake linked to increased blood pressure, a risk factor for Cardio Vascular Diseases, strokes, and chronic kidney disease.
- Lower-sodium salt substitutes maintain taste and reduce health risks.
- Potassium counteracts sodium's adverse effects, aiding in blood pressure regulation.
- Evidence-based guideline targets policymakers, health professionals, and stakeholders.
- Emphasizes reducing sodium intake to less than 2 grams per day.

90. RETINAL DISEASES

Context: Retinal diseases, particularly **Inherited Retinal Diseases (IRDs)**, are gaining attention due to advancements in RNA-based therapeutics that offer hope for treating genetic causes of blindness.

- **What are Retinal Diseases?**
  - Retinal diseases are disorders that affect the **retina**, the light-sensitive tissue at the back of the eye.



  - These diseases can lead to **progressive vision loss** and, in severe cases, **blindness**. They can be caused by genetic mutations, aging, or other underlying health conditions.
- **Role of the Retina in Vision:**
  - The retina is responsible for **converting light into neural signals**, which are sent to the brain via the optic nerve.
  - It contains specialized cells called **photoreceptors** (rods and cones) that detect light and colour, enabling us to see.
  - Damage to the retina disrupts this process, leading to vision impairment or blindness.
- **Types of Retinal Diseases:**
  - **Inherited Retinal Diseases (IRDs):** Caused by genetic mutations in over **300 genes**.
    Examples: Retinitis Pigmentosa, Leber Congenital Amaurosis, Stargardt Disease.
  - **Age-Related Macular Degeneration (AMD):** Affects the central part of the retina (macula), leading to loss of central vision.
  - **Diabetic Retinopathy:** Caused by damage to blood vessels in the retina due to diabetes.
  - **Retinal Detachment:** Occurs when the retina pulls away from its normal position.
  - **Retinoblastoma:** A rare cancer of the retina, primarily affecting children.

RNA-based therapeutics can cure retinal diseases:

- **What is RNA Therapy?**
  - RNA-based therapies involve using **ribonucleic acid (RNA)** to correct genetic defects or modulate gene expression. Unlike DNA-based therapies, RNA therapies are **temporary** and do not alter the patient's genome, reducing the risk of long-term side effects.
- **Types of RNA Therapies for Retinal Diseases:**
  - **Antisense Oligonucleotides (ASOs):**
    - Small RNA molecules that bind to specific RNA sequences to correct genetic errors.
    - Used to treat conditions like **spinal muscular atrophy** and being explored for **Stargardt Disease** and **Retinitis Pigmentosa**.
  - **RNA Editing with ADAR Enzymes:**
    - Corrects specific mutations at the RNA level without altering DNA.
    - Promising for treating IRDs caused by **single-point mutations**.
  - **Suppressor tRNAs:**
    - Bypass **stop-codon mutations** that prematurely halt protein synthesis, restoring full-length protein production in retinal cells.
  - **Small Molecule RNA Therapies (e.g., PTC124/Ataluren):**
    - Used to treat **cystic fibrosis** and **Duchenne muscular dystrophy**, now being tested for rare eye diseases like **aniridia**.
- **Advantages of RNA Therapies:**
  - **Precision:** Targets specific genetic mutations.
  - **Safety:** Temporary changes reduce the risk of unintended effects.
  - **Versatility:** Can address a wide range of genetic defects.

91. SALMONELLA OUTBREAKS

Context:

A study from the University of Surrey highlights the link between weather conditions and increased Salmonella outbreaks, emphasizing the role of climate change in the spread of infectious diseases.

- **What is Salmonella?**
  - **Salmonella** is a type of **bacteria** that causes **foodborne illnesses**, commonly referred to as **salmonellosis**.
  - **Species:** The two main species are **Salmonella enterica** and **Salmonella bongori.**
  - **Sources:** Contaminated food, especially raw or undercooked poultry, eggs, meat, and dairy products.
- **Causes of Infection:**
  - **Consumption of Contaminated Food:** Eating raw or undercooked animal products.
  - **Poor Hygiene:** Inadequate handwashing after handling raw food or animals.
  - **Cross-Contamination:** Using the same utensils or surfaces for raw and cooked foods.
  - **Environmental Factors:** Warm and humid weather conditions, as highlighted in the University of Surrey study, can increase Salmonella spread.
- **Symptoms:**
  - **Common Symptoms:** Diarrhea, fever, stomach cramps, nausea, vomiting, and headache.
  - **Severe Cases:** Can lead to **dehydration**, **bacteremia** (bacteria in the bloodstream), and **reactive arthritis**.
- **Treatment:**
  - **Hydration:** Drinking plenty of fluids to prevent dehydration.
  - **Antibiotics:** Used in severe cases or for high-risk individuals (e.g., infants, elderly, or immunocompromised patients).

News in Short

Chronic Pulmonary Aspergillosis (CPA): A severe lung infection caused by *Aspergillus fumigatus*, a fungus that predominantly strikes individuals with immunodeficiency or pre-existing lung conditions, particularly those with a history of TB. Vector: The infection is caused by inhalation of fungal spores (*Aspergillus fumigatus*), which thrive in decayed organic matter and humid environments.

Environment & Ecology

92. INCINERATION

Context:

Spill-free trucks carrying 337 tonnes of chemical waste from the Bhopal gas tragedy are set to reach Pithampur, where the waste will be incinerated within three to nine months.

About Incineration:

- **What it is:** Incineration is the controlled combustion of waste in high-temperature furnaces to reduce volume, neutralize hazardous materials, and recover energy.
- **Procedure:**
  - **Combustion:** Waste is burned at temperatures exceeding 850°C for complete destruction of toxins.
  - **Energy Recovery:** Heat from combustion generates steam, which powers turbines for electricity production.
  - **Exhaust Gas Cleaning:** Advanced systems like scrubbers and bag house filters remove harmful pollutants from emissions.
  - **Ash Residue Handling:** Bottom ash is recycled or landfilled, while fly ash is treated with chemicals before disposal.

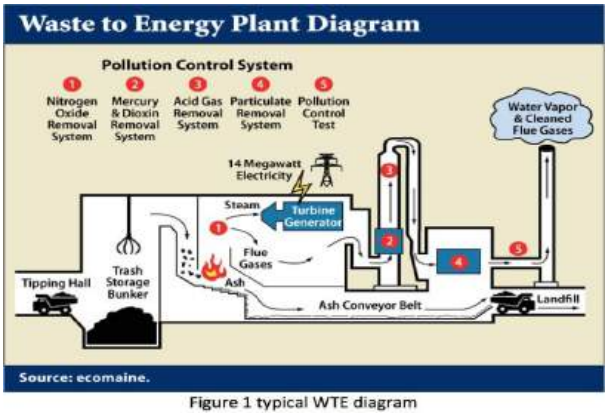


Figure 1 typical WTE diagram

- **Advantages:**
  - **Energy Generation:** Produces electricity and heat from waste combustion.
  - **Space-Saving:** Reduces landfill dependency in densely populated areas.
  - **Pollution Control:** Modern systems ensure minimal environmental impact by capturing emissions.
  - **Resource Recovery:** Produces materials like paving bricks and activated carbon.

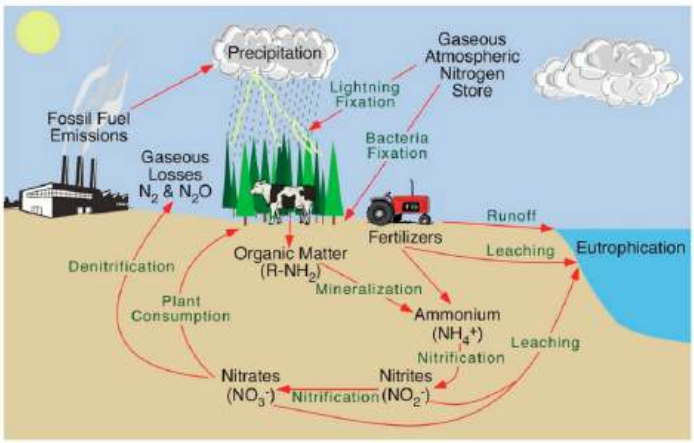
- **Safe Disposal:** Effectively neutralizes hazardous materials.

- **Limitations:**
  - **Harmful Emissions:** Releases dioxins, furans, and other toxins if not properly maintained.
  - **Health Risks:** Linked to respiratory issues and carcinogenic effects near poorly managed plants.
  - **Air and Water Pollution:** Residual ash and flue gases can contaminate the environment.
  - **High Costs:** Advanced incinerators require significant investment and maintenance.
  - **Inefficiency with Moisture:** Wet waste in India reduces calorific efficiency.

93. NITRATE CONTAMINATION

Context:

Excess nitrate contamination in groundwater poses a serious health hazard, particularly in India, where over 440 districts report unsafe nitrate levels as of 2023.



About Nitrate:

- **What it is:** A naturally occurring nitrogen compound essential for biological processes, but harmful in excess.
- **Sources:**
  - **Natural Sources:** Soil organic matter decomposition.
  - **Anthropogenic Sources:** Overuse of synthetic nitrogen fertilizers, improper sewage disposal, and livestock waste.
- **Causes of Nitrate Contamination:**
  - **Agriculture:** Leaching of fertilizers into groundwater.
  - **Poor Waste Management:** Improper disposal of human and animal waste.
  - **Industrial Effluents:** Discharge of untreated nitrogen-rich wastewater.
- **Impacts of Nitrate Contamination:**
  - **Health Hazards:**
    1. Causes **methemoglobinemia** (blue baby syndrome) in infants.
    2. Linked to cancer, reproductive issues, and endocrine disorders.
  - **Environmental Toxicity:**
    1. Disrupts aquatic ecosystems through **eutrophication**.
    2. Contributes to soil degradation and water toxicity.
- **State-Wise Contamination:** Rajasthan (49%), Karnataka (48%), Tamil Nadu (37%).

94. UMRED-PAUNI-KARHANDLA WILDLIFE SANCTUARY

Context:

The Bombay High Court took suo moto cognizance of an incident involving tourists cornering a tigress and her cubs in Umred-Pauni-Karhandla Wildlife Sanctuary, exposing lapses in wildlife protection and monitoring protocols.

About Umred Karhandla Wildlife Sanctuary:

- **Location:** Situated in **Pauni Tahsil, Bhandara district**, and **Umred, Kuhi, and Bhivapur Taluka**, Nagpur district, Maharashtra.
- **National Park:** Connected to Tadoba Andhari Tiger Reserve via the forest along the **Wainganga River**, forming a crucial tiger conservation corridor.
- **River:** Bounded by the **Wainganga River** and the **Gose Khurd Dam** to the northeast.
- **Flora:** Dense deciduous forests with teak, bamboo, and other hardwoods dominating the landscape.
- **Fauna:**
  - **Mammals:** Tigers, leopards, sloth bears, wild dogs, Indian gaur, sambar deer, and spotted deer.
  - **Birds:** Rich avian population with various endemic and migratory species.
  - **Reptiles:** Cobras, pythons, and other reptiles add to the biodiversity.

95. FLAMINGO FESTIVAL 2025

Context:
The Flamingo Festival 2025 is set to return to Andhra Pradesh after a four-year hiatus, celebrating the arrival of migratory birds, particularly flamingos, to Pulicat Lake and Nelapattu Bird Sanctuary.

About Flamingo Festival:

- **What it is:** An annual event celebrating the arrival of migratory birds, focusing on flamingos, to Pulicat Lake and Nelapattu Bird Sanctuary.
- **Locations:** Spread across five key sites Nelapattu Bird Sanctuary, Atakanithippa, BV Palem (Pulicat Lake), Government Junior College in Sullurpet, and Sri City.
- **Features:**
  - Bird-watching tours, eco-friendly biodiversity sessions, and boating activities.
  - Cultural programs, competitions, and stalls promoting local art and heritage.
  - Collaboration with organizations like the Bombay Natural History Society.

About Pulicat Lake:

- **Significance:** India's second-largest brackish water lake after Chilika Lake (Odisha).
- **Location:** On the Andhra Pradesh-Tamil Nadu border, with 96% in Andhra Pradesh.
- **Biodiversity:** A critical feeding and breeding ground for migratory birds, including flamingos, and home to diverse flora and fauna.
- **Economic Importance:** Supports fisheries, acting as a livelihood source for local communities.

About Nelapattu Bird Sanctuary:

- **Importance:** Southeast Asia's largest breeding site for **spot-billed pelicans** (Pelecanus philippensis).
- **Location:** 20 km north of Pulicat Lake, Andhra Pradesh-Tamil Nadu border.
- **Biodiversity:**
  - Home to 189 bird species, including migratory birds like painted storks and glossy ibises.
  - Features **Barringtonia swamp forests** and **southern dry evergreen scrub**.
- **Ecological Role:** Supports local agriculture through natural fertilizers like guano and enhances biodiversity conservation.

96. DDT-CONTAMINATED SOILS

Context:
Researchers at Sweden's Chalmers University of Technology have introduced a groundbreaking method to address DDT-contaminated soils by integrating **biochar**.

About Di-chloro-di-phenyl-tri-chloro-ethane (DDT):

- **What it is:** DDT is a synthetic insecticide introduced in 1939, widely used to combat agricultural pests and control diseases like malaria.
- **Features:**
  - Effective against a broad range of pests.
  - Persistent in the environment, taking decades to degrade.
  - Fat-soluble, leading to bioaccumulation in the food chain.
- **Functions:**
  - Used extensively in agriculture and forestry.
  - Played a significant role in reducing disease vectors like mosquitoes.
  - Later found to degrade soil quality and harm ecosystems due to prolonged use.

About Binding DDT-Infused Soil with Biochar:

- **What it is:** A method to mix biochar—a charcoal-like substance—into DDT-contaminated soil to bind the toxin, reducing its uptake by soil organisms.
- **Process:**
  - Contaminated soil is mixed with biochar.
  - Crops like pumpkins, legumes, and willows are planted to evaluate soil health.
  - Biochar binds DDT, preventing its entry into plants and soil organisms.
- **Significance:**

- Restores fertility to DDT-contaminated lands, making them cultivable.
- Reduces ecological risks by limiting DDT exposure to organisms.
- Economically and environmentally viable compared to conventional methods like soil removal.

- **Additional Benefits:**
  - Enhances soil health and long-term carbon storage.
  - Supports climate change mitigation efforts.
  - Enables growth of bioenergy crops, addressing renewable energy needs.

97. WETLAND CITY ACCREDITATION (WCA)

Context:

Indore and Udaipur have become the first Indian cities to achieve the prestigious Wetland City Accreditation (WCA) under the Ramsar Convention on Wetlands.

About Wetland Accredited Cities:

- **What is Wetland City Accreditation (WCA)?**
  - Wetland City Accreditation (WCA) is a voluntary initiative under the Ramsar Convention that recognizes cities for wetland conservation efforts.
  - **Established in COP12 (2015):** WCA was introduced during the 12th Conference of the Parties (COP12) to the Ramsar Convention held in Uruguay in 2015.
  - **Validity and Renewal**: Accreditation is **valid for 6 years** and can be renewed if cities continue to meet the prescribed international criteria.
- **Aim:**
  - To **promote conservation and wise use** of wetlands in urban and peri-urban areas.
  - To ensure **socio-economic benefits** for local populations while safeguarding ecological balance.
  - To encourage cities near Ramsar-designated wetlands to maintain positive relationships with these ecosystems.
- **Criteria for Accreditation:**
  Cities must satisfy six international criteria, including:
  1. Adopting measures for **wetland conservation** and wise use.
  2. Promoting **ecosystem services** provided by wetlands.
  3. Maintaining sustainable **socio-economic practices** linked to wetlands.
  4. Engaging local communities in conservation.
  5. Addressing concerns related to **wetland degradation**.
  6. Protecting both **natural and human-made wetlands**.
- **Features:**
  - Provides **international recognition** and positive publicity for cities.
  - Encourages **wetland conservation policies** in urban planning.
  - Helps implement India's **Amrit Dharohar initiative** by the Ministry of Environment, Forest and Climate Change (MoEF&CC).
  - Promotes **sustainable urban development** while ensuring ecological preservation.
- **Recent Addition from India:**
  - **Indore, Madhya Pradesh:**
    - Recognized for **Sirpur Lake**, a Ramsar site developed as a bird sanctuary and water bird congregation zone.
  - **Udaipur, Rajasthan:**
    - Known for its interconnected wetlands, including **Pichola, Fateh Sagar, Rang Sagar, Swaroop Sagar, and Doodh Talai**, which support biodiversity and eco-tourism.

98. YAMUNA RIVER AMMONIA CONTAMINATION

Context:

The Yamuna River in Delhi is facing high ammonia levels, leading to a political row between the Delhi government and the Haryana government.

- **What is the Issue?**
  - The **Yamuna River**, has been experiencing **alarmingly high ammonia levels**, particularly during the **winter months**.

- The **Delhi Jal Board (DJB)** has reported that ammonia levels often exceed the permissible limit of **1 part per million (ppm)**.

- **Sources of Ammonia:**
  - **Industrial Discharge:** Factories in **Panipat** and **Sonipat** districts of Haryana release untreated effluents containing ammonia into the Yamuna.
  - **Agricultural Runoff:** Ammonia-based fertilizers used in farming contribute to the contamination.
  - **Sewage:** Untreated sewage from urban areas also adds to the ammonia levels in the river.
  - **Natural Sources:** Decomposition of organic matter, such as algae, releases ammonia naturally.
- **Impacts of Ammonia Contamination:**
  - **Health Risks:** High ammonia levels can cause **internal organ damage** due to its corrosive properties.
  - **Water Supply Disruptions:** Water treatment plants cannot process water with ammonia levels above **1 ppm**, leading to **water shortages** in Delhi.
  - **Environmental Damage:** Ammonia reduces **dissolved oxygen** levels in the river, harming aquatic life and degrading the river ecosystem.

About Yamuna River:

- **Origin:** The Yamuna originates from the **Yamunotri Glacier** in the **Himalayas**, at an elevation of **4,421 meters**.
  - Yamuna, once, a tributary of the River Ghaggar (most likely the Saraswati River referred to in the Veda) changed its course eastwards due to tectonic events.
- **States it flows through:** The river basin extends through the states of Uttarkhand, Himachal Pradesh, Haryana, Delhi, Uttar Pradesh and Rajasthan
  - **Length:** 1,376 kilometres **(It is the longest river in India which does not directly flow to the sea)**
  - **Total catchment area:** 36,220 kilometres.
- **Tributaries:**
  - It has four main tributaries in the Himalayan region: **Rishi Ganga, Hanuman Ganga, Tons and Giri.**
  - In the plains, the main tributaries are **Hindon, Chambal, Sind, Betwa and Ken.**
  - **Tons**, being the major tributary contributes to **about 60 percent flow** of the Yamuna.
- **Confluence with Ganga:** The Yamuna joins the **Ganges River** at **Prayagraj**.
- **Cities:** Noida, Mathura, Agra, Firozabad, Etawah, Kalpi, Hamirpur and
- Prayagraj (Allahabad).
  - Yamuna enters the National Capital Territory of Delhi at **Palla Village** and **exits at Jaitpur** totalling **52 kilometres.**
  -

News in Short

Plasticizers Degradation - Researchers at IIT Roorkee have developed a groundbreaking method to degrade plasticizers, specifically diethyl hexyl phthalate (DEHP), using bacterial enzymes. A method using bacterial enzymes to break down high molecular weight plasticizers like DEHP, commonly found in plastics and personal care products.

Species in News

99. GADDI DOG

Context:

The Gaddi dog, a loyal and resilient shepherd dog from the Himalayas, has been officially recognized as an indigenous breed by the National Bureau of Animal Genetic Resources (NBAGR).

About Gaddi Dog:

- **Found in:** Pir Panjal range, Jammu & Kashmir, and Himachal Pradesh.
- **Indigenous tag granted by:** National Bureau of Animal Genetic Resources (NBAGR) under the Indian Council of Agricultural Research (ICAR).
- **Features:**
  - Sturdy build with a height of around 28 inches and a weight of about 40 kg.
  - Thick, weather-resistant coat suitable for extreme cold.
  - Known for its exceptional guarding skills against predators like wolves and leopards.
  - Loyal, protective, and highly intelligent.

Other Registered Indigenous Dogs:

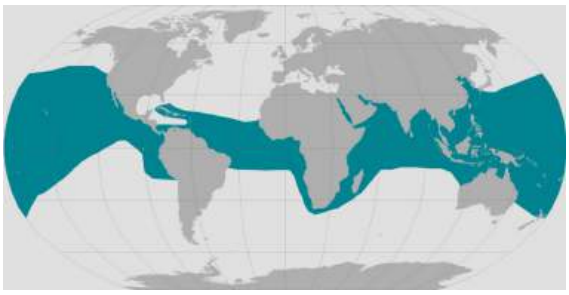
- **Rajapalayam:**
  - **Region:** Tamil Nadu.
  - **Features:** Medium-sized; white coat with pink skin, nostrils, and eyelids. Known for its guarding capabilities.
- **Chippiparai:**
  - **Region:** Tamil Nadu.
  - **Features:** Medium-sized with coat colours ranging from fawn to dark brown, brownish-black, and black. Agile and alert.
- **Mudhol Hound:**
  - **Region:** Karnataka.
  - **Features:** Slim and fast with excellent guarding abilities. Recognized for its speed and loyalty.

100. OLIVE RIDLEY TURTLES

Context:

Over the past two weeks, numerous dead olive ridley turtles have washed ashore in Tamil Nadu, particularly in Chennai.

About Olive Ridley Turtles:



- **What it is:** Olive ridley turtles (*Lepidochelys olivacea*) are one of the smallest and most abundant sea turtles, known for their synchronized mass nesting, called arribadas.
- **Habitat:** Found in tropical regions of the **Pacific, Indian, and Atlantic Oceans**, olive ridleys are both pelagic and coastal, frequenting nesting beaches in countries like India, Mexico, and Costa Rica.
- **Features:**
  - Named for their **olive-green, heart-shaped shell**.
  - Omnivorous, feeding on crabs, jellyfish, and algae.
  - Capable of diving up to **500 feet** to forage on the ocean floor.
- **Mating Season:** Their nesting season varies by region. In India, it spans **November to March**, with mass nesting observed at beaches like Odisha's **Gahirmatha and Rushikulya**.
- **Protection Status:**
  - **Schedule 1** of Wildlife Protection Act, 1972
  - **Appendix I** of CITES
- **Recent Causes of Death:**
  - **Bycatch in Fishing Nets:** Olive ridley turtles get trapped in commercial trawler nets, suffocate due to lack of air, and die during their breeding season.
  - **Entanglement and Collisions**: Discarded fishing gear and marine debris, along with vessel collisions near nesting grounds, cause severe injuries and fatalities.
  - **Environmental and Overfishing Impact**: Overfishing near turtle congregation areas attracts more trawlers, increasing accidental deaths and habitat disturbances.

101. KASHMIR CHINAR TREES

Context: The iconic Chinar trees of Kashmir, known for their majestic appearance and cultural significance, are being digitally preserved through **geo-tagging and QR codes.**

- This innovative project, spearheaded by the **J&K Forest Research Institute (FRI),** aims to ensure the monitoring, conservation, and management of Chinar trees.

About Kashmir Chinars:

- **Scientific Name:** *Platanus orientalis* (Oriental plane).
- **Habitat and Distribution:**
  - Native to regions from **Italy to the Himalayas**, including Turkey, the Caucasus, and Iran.
  - Found extensively across **Kashmir Valley**, especially in **Ganderbal** and **Budgam** districts.

- **Climatic Factors:**
  - Thrives in **temperate climates** with well-drained soils.
  - Requires abundant sunlight and consistent moisture levels for optimal growth.
- **Features:**
  - Grows up to **30 meters** in height with a girth of **10–15 meters** at the base.
  - Known for its **longevity** - some trees in Kashmir are over **600 years old**.
  - Leaves change colors with seasons, transitioning from **deep green** in summer to **red, amber, and yellow** in autumn.
- **Reason Behind Decline:**
  - **Urbanization:** Loss of habitat due to construction and infrastructure development.
  - **Climate Change:** Altered rainfall patterns and temperature extremes.
  - **Illegal Felling:** Exploitation for timber despite its protected status.
  - **Pests and Diseases:** Increased vulnerability due to environmental stress.

102. BLACK PANTHER

Context:
Indian Forest Service (IFS) officer recently shared a video of a rare black panther strolling is lush greenery of north Bengal.

About Black Panther:

- **What is a Black Panther?**
  - The **black panther**, a colloquial term for melanistic (dark-colored) large felines in the genus *Panthera*, is known for its striking black fur and mysterious allure.
  - **Scientific Names:**
    - **Black Leopard:** *Panthera pardus*.
    - **Black Jaguar:** *Panthera onca*.
- **Habitat:**
  - Found across **three continents**: Asia, Africa, and the Americas.
  - Commonly inhabit **dense tropical rainforests**, grasslands, and mountainous regions.
  - **Global Range:** Southwest China, Southern India, Nepal, Malaysia, Indonesia, Burma.
  - **Indian Range:** Found in Kabini Forest (Karnataka), Nagarhole National Park, Periyar Wildlife Sanctuary, Silent Valley, and Sundarbans.
- **Characteristics:**
  - **Physical Features:** Glossy black or dark brown fur with faint spotted patterns visible in sunlight.
    - **Eyes**: Striking emerald green, giving a fierce and elegant look even in darkness.
  - **Behavioural Traits:**
    - Solitary and **territorial hunters**.
    - Known for exceptional **intelligence, sharp eyesight**, and strong sense of smell.
    - Males are **polygamous** in nature.
- **Why Black Color?**
  - **Melanism** results from specific genetic alleles:
    - **Recessive alleles** in leopards.
    - **Dominant alleles** in jaguars.
  - The high concentration of melanin creates their dark fur, aiding camouflage in dense forests.
- **Conservation Status:**
  - **IUCN Red List:** Vulnerable.
  - **CITES:** Appendix I (strictly regulated trade).
  - **Indian Wildlife (Protection) Act, 1972:** Schedule I (maximum protection).
  - **Threats:** Habitat loss, poaching, and declining prey populations.

Internal Security

103. PIG-BUTCHERING SCAM

Context: The Union Home Ministry has flagged the rising threat of pig-butchering scams in India, a sophisticated form of cybercrime where fraudsters deceive victims into investing in fake online trading platforms.

About Pig-Butchering Scam:

- **What it is:**
  - A cybercrime involving **organized scammers using fake online trading** platforms to defraud investors.
  - The term "pig-butchering" originates from the analogy of "fattening up" victims before stealing their money.
- **Features of the Scam:**
  - Use of fake online trading platforms.
  - Fraudulent blockchain transactions, making recovery nearly impossible.
  - High reliance on victims' desire for quick returns.
  - Often linked to large-scale money laundering and cyber slavery.

Defence

104. FIGHTER JET GENERATIONS

Context:
Unverified images of what is being termed as a Chinese sixth-generation fighter aircraft have gone viral on social media.

About Generation in Fighter Jet:

The concept of "generations" in fighter jets classifies them **based on technological advancements and the era of development.** Each generation reflects significant innovations in speed, stealth, avionics, and weaponry, shaping the future of aerial warfare.

Generations of Fighter Jets:

Generation	Era	Key Features	Examples
1st Gen	1943-1955	Subsonic speeds, basic avionics, unguided weapons, straight or swept wings.	Messerschmitt Me 262, MiG-15, Hawker Hunter.
2nd Gen	1955-1970	Supersonic speeds, afterburners, radar systems, and semi-active guided missiles.	MiG-21, F-104 Starfighter, Sukhoi Su-9.
3rd Gen	1960-1970	Multi-role capabilities, beyond-visual-range combat, integrated airframes, advanced radars.	MiG-23, F-4 Phantom, Harrier.
4th Gen	1970-2000s	Multi-role fighters, fly-by-wire control systems, heads-up displays, initial stealth features.	F-16, Su-30, Dassault Rafale, Eurofighter Typhoon.
5th Gen	2000 onwards	Stealth design, advanced avionics, network-centric warfare, data fusion, supersonic sustained speeds.	F-22 Raptor, F-35 Lightning, Su-57, Chengdu J-20.
6th Gen	In Development	Hypersonic capabilities, AI integration, optionally manned systems, directed-energy weapons.	Tempest (UK-Italy-Japan), NGAD (USA), Baidi (China).

Nations with 5th Generation Fighters:

- **United States:** F-22 Raptor, F-35 Lightning II.
- **Russia:** Sukhoi Su-57.
- **China:** Chengdu J-20.
- **India (Developing):** AMCA (Advanced Medium Combat Aircraft)

105. YEAR OF REFORMS

Context:
The Ministry of Defence (MoD) has declared 2025 as the 'Year of Reforms' to transform India's Armed Forces into a technologically advanced, combat-ready force.

About Year of Reforms:

- **What it is:** A year-long initiative by the MoD to implement transformative reforms in India's defence sector.

- **Aim:** Modernizing Armed Forces for **multi-domain operations**, enhanced **jointness**, and improved **defence preparedness**.
- **Declared by:** Ministry of Defence.

106. SONOBUOYS

Context:
India and the U.S. have announced a strategic partnership to co-produce sonobuoys, niche undersea instruments essential for tracking submarines and bolstering undersea domain awareness (UDA).

About Sonobuoys:

- **What they are:**
  - **Sonobuoys** are expendable sonar buoys used for anti-submarine warfare and underwater acoustic research.
  - Typically, **small (13 cm in diameter and 91 cm long),** they combine above-surface transmitters and underwater hydrophone sensors.
- **Working Principles:**
  - **Deployment:** Dropped from aircraft or ships, they activate upon water impact.
  - **Surface Float:** Inflatable floats with radio transmitters remain on the water's surface for communication.
  - **Sensors:** Hydrophones descend to a selected depth, capturing underwater acoustic signals.
  - **Communication:** Transmit acoustic data via **Very High Frequency (VHF) and Ultra High Frequency (UHF) radios** to operators on aircraft or ships.

107. DHRUV HELICOPTER

Context:
Following the crash of an Indian Coast Guard Dhruv Advanced Light Helicopter (ALH) Mark-III, Hindustan Aeronautics Ltd. (HAL) has advised civilian operators to ground the helicopter until the cause is identified.

About Dhruv Helicopter:

- **What it is:** The Advanced Light Helicopter (ALH) Dhruv is an **indigenously developed** multi-role utility helicopter in the 5.5-ton class, designed for military and civilian applications.
- **Designed and produced by:** Developed by **Hindustan Aeronautics Limited (HAL)**.
- **Variants:**
  - **Dhruv Mk-I and Mk-II:** Utility variants for basic operations.
  - **Dhruv Mk-III:** Advanced version with improved avionics and systems.
  - **Dhruv Mk-IV (Rudra):** Armed variant for attack and close air support operations.
- **Features:**
  - **Multi-Mission Capabilities:** Suitable for rescue, attack, and high-altitude operations.
  - **Twin-Engine Design:** Ensures continued flight across the envelope.
  - **Advanced Weapon Systems (Mk-IV):** Equipped with 20 mm turret gun, 70 mm rockets, and air-to-air missiles.
  - **Enhanced Maneuverability:** Features a rigid rotor design for agile performance.
  - **Electronic Warfare Suite:** Includes radar/missile detectors, **infrared jammers**, chaff, and flare dispensers.
  - **Export Success:** Operated by **Bolivia, Myanmar, Israel, Maldives, and Nepal**.

108. THREE COMMISSIONED SHIPS

Context:
India celebrated a historic milestone as three frontline naval platforms INS Nilgiri, INS Surat, and INS Vaghsheer — were commissioned into the Indian Navy.

About Commissioned Ships:

Ship Name	Built By	Project Name	Features	Significance
INS Nilgiri	Mazagon Dock Shipbuilders Limited (MDL), Mumbai, and Garden Reach Shipbuilders and Engineers (GRSE), Kolkata	Project 17A (Nilgiri-class stealth frigates)	- Multi-mission stealth frigate for "blue water" operations - Equipped with supersonic surface-to-surface missiles, Medium Range Surface-to-Air Missiles (MRSAMs), and advanced close-in weapon systems	First of seven frigates under Project 17A, ensuring versatile capability in anti-air, anti-surface, and anti-submarine warfare
INS Surat	Mazagon Dock Shipbuilders Limited (MDL), Mumbai	Project 15B (Visakhapatnam-class stealth guided missile destroyers)	- India's first AI-enabled warship - Equipped with surface-to-air missiles, anti-ship missiles, and torpedoes - Powered by a Combined Gas and Gas (COGAG) propulsion system, achieving speeds exceeding 30 knots - Designed for "network-centric" warfare	Fourth and final destroyer of Project 15B, enhancing India's offensive and defensive naval capabilities
INS Vaghsheer	Mazagon Dock Shipbuilders Limited (MDL), Mumbai	Project 75 (Kalvari-class submarines)	- Diesel-electric attack submarine based on the French Scorpene-class design - Equipped with wire-guided torpedoes, anti-ship missiles, and advanced sonar systems - Features modular construction with future upgrade potential for Air Independent Propulsion (AIP) technology	Sixth and final submarine under Project 75, reinforcing India's underwater combat and intelligence-gathering capabilities

Commissioning together:

- **Historic First**: For the first time, a **destroyer (INS Surat)**, a **frigate (INS Nilgiri)**, and a **submarine (INS Vaghsheer)** were commissioned on the same day.
- **"Made in India" Milestone**: All three platforms were indigenously built, showcasing India's shipbuilding prowess and commitment to Atmanirbhar Bharat (self-reliant India).
- **Strategic Impact**: The additions bolster India's maritime defense, increase deterrence capabilities, and support its strategic influence in the **Indian Ocean Region (IOR)**.

109. SANJAY BATTLEFIELD SURVEILLANCE SYSTEM

Context:

Defence Minister flagged off 'Sanjay', a battlefield surveillance system (BSS) which will be inducted into the Indian Army by October this year.

About Sanjay - The Battlefield Surveillance System:

- **What is Sanjay?**

  Sanjay is an **automated battlefield surveillance system** designed to integrate real-time inputs from ground and aerial sensors to create a **Common Surveillance Picture (CSP)**. This technology allows commanders to make

informed decisions swiftly in conventional and sub-conventional warfare scenarios.

- **Developed by:** Indian Army and Bharat Electronics Limited (BEL)
  - Developed under the **Buy (Indian)** category to promote indigenous defense capabilities.
  - **Total development cost:** ₹2,402 crore.
- **Aim:**
  - **Enhance battlefield transparency:** Provide a real-time surveillance picture for accurate analysis and quicker decision-making.
  - **Strengthen intelligence and reconnaissance capabilities:** Improve situational awareness across vast terrains and borders.
  - **Support Aatmanirbharta (self-reliance):** Showcase India's growing expertise in defense technology.
- **How it works:**
  - **Integration of Data**: Collects data from multiple battlefield sensors (ground and aerial).
  - **Processing and Verification:** Processes data to eliminate duplication and confirm accuracy.
  - **Real-time Analysis:** Generates a centralized Common Surveillance Picture (CSP) accessible through secured Army Data and Satellite Communication Networks.
  - **Decision Support:** Assists Command & Army Headquarters in decision-making through a centralized web application.
- **Features**
  - **Real-Time Data Integration:** Inputs from multiple sources are seamlessly processed into one platform.
  - **Advanced Analytics:** Equipped with cutting-edge analytics to ensure accurate threat detection and situational assessments.
  - **Enhanced Surveillance:** Monitors borders, detects intrusions, and provides unparalleled intelligence capabilities.
  - **Network-Centric Operations:** Functions within a secure and integrated data and satellite network environment.
  - **Indigenous Technology:** Fully developed in India, contributing to defense self-reliance under the 'Year of Technology Absorption' initiative.
  - **Deployment Timeline:** Induction into all operational brigades, divisions, and corps in three phases (March-October 2025).
  - **Operational Versatility**: Designed for both **conventional and sub-conventional operations.**

110. MILITARY EXERCISES IN NEWS:

Name	***Participants***	***Purpose***
Exercise Surya Kiran	**India and Nepal**	• To enhance **interoperability in counter-terrorism operations** and **jungle warfare** in mountainous regions. • **Features:** Includes **jungle warfare training**, simulation of counter-terrorism **operations**, and capacity-building exercises for joint disaster responses. • **Humanitarian Assistance:** Focuses on disaster management and humanitarian relief during emergencies.
Exercise La Perouse	**India, France, the U.S., Canada, Australia, Indonesia, Malaysia, Singapore, and the U.K.**	• Strengthens maritime security and enhances interoperability. • •Hosted by France, led by Charles de Gaulle's Carrier Strike Group. • • Conducted in Malacca, Sunda, and Lombok straits, key chokepoints between Indian and Pacific Oceans. • **Aims:** Addressing issues like illegal trafficking, environmental hazards, and maritime crises. • • Enhancing cooperation through maritime surveillance, air operations, and maritime interdiction training. • • Implementing advanced systems like IORIS for crisis management. • • Promoting a stable Indo-Pacific aligned with India's SAGAR vision.

SPORTS CORNER

1. MAJOR DHYAN CHAND KHEL RATNA 2024

Context:
The Major Dhyan Chand Khel Ratna Award, India's highest sporting accolade, was conferred on remarkable achievers who brought laurels to the nation at Rashtrapati Bhavan.

About Major Dhyan Chand Khel Ratna Award:

- **Started in:** 1991-1992 (as Rajiv Gandhi Khel Ratna Award).
- **Renamed in:** 2021, to honor legendary hockey player Major Dhyan Chand.
- **Aim:** To recognize outstanding performances in sports at the international level, motivate athletes, and inspire future generations.
- **Ministry:** Ministry of Youth Affairs and Sports, Government of India.
- **Eligibility Criteria:**
    - Exceptional international performance over four years.
    - Clean anti-doping record.
    - Achievements in major competitions like the Olympics, Commonwealth Games, and World Championships.
- **Nomination and Selection Process:**
- **Nominating Authorities:**
    - National Sports Federations, Sports Authority of India (SAI), State Governments, and Indian Olympic Association.
    - The Government can nominate up to two sportspersons if no nominations are received.
- **Selection Committee:**
    - Includes government officials, Olympians, journalists, and experts.
    - Points-based system considering medals in major events (Olympics, Commonwealth, Asian Games, etc.).
    - Recommendations finalized by the Union Minister of Youth Affairs and Sports.
- **2024 Winners of Major Dhyan Chand Khel Ratna Award:**

Recipient	Sport
Manu Bhaker	Shooting
D Gukesh	Chess
Harmanpreet Singh	Hockey
Praveen Kumar	Paralympic High Jump

2. AKHO KHO WORLD CUP 2025

Context:
India emerged as the inaugural champions in both the men's and women's events at the Kho Kho World Cup 2025.

About Kho Kho World Cup 2025:

- **Hosted in:** The tournament took place at the **Indira Gandhi Indoor Stadium**, New Delhi, India.
    - This is the **first Kho Kho** World cup.
- **Organised by:** Kho Kho Federation of India (KKFI) in collaboration with the International Kho Kho Federation (IKKF).
- **Mascots:**
    - **Tejas (Men's Team):** A blue gazelle symbolizing brilliance and energy.
    - **Tara (Women's Team):** An orange gazelle representing guidance and aspiration.
- **Tournament Process:**
    - **Group Stage:** Teams were divided into four groups, playing a round-robin format.
    - **Knockout Stage:** Top two teams from each group advanced to quarter-finals, semi-finals, and finals.

- Matches were played under the **seven-a-side fast format**, as seen in Ultimate Kho Kho.

- **Winners and Runners-Up:**

Category	Winner	Runner-Up	Score
Men's	India	Nepal	54-36
Women's	India	Nepal	78-40

About International Kho Kho Federation (IKKF):

- **Established In**: **2018** to promote Kho Kho on a global level.
- **Headquarters**: New Delhi, India.
- **Aim**: To transform Kho Kho from a traditional Indian game into a recognized international sport and foster global participation.
- **Functions**:
  - Organizes international tournaments like the Kho Kho World Cup.
  - Standardizes game rules and regulations.
  - Coordinates with national associations to expand Kho Kho's reach.
  - Promotes the sport's cultural and competitive value through global platforms.

MAPPING

INTERNATIONAL

1. HOTAN PREFECTURE

India Protests Over New County Establishments in Hotan Prefecture

• Hotan Prefecture, part of the **disputed Aksai Chin region**, is disputed by India and China.
• **Located in the Tarim Basin**, it borders Tibet, Ladakh, and Gilgit-Baltistan.
• Hotan was designated as a prefecture in 1971.
• Features include **the Taklamakan Desert** in the northern part **and Kunlun Mountains** on the southern border.
• Settlements thrive on oases for agriculture and trade.
• Predominantly Muslim Uyghurs inhabit the prefecture.

2. BURKINA FASO

Burkina Faso, a landlocked nation in West Africa, holds historical significance as a former French colony and has faced challenges of political instability, poverty, and rising insecurity in recent years.

Landlocked nation in West Africa, former French colony.
• Borders Mali, Niger, Benin, Togo, Ghana, Ivory Coast.
• Capital: Ouagadougou.
• Major rivers: Mouhoun, Nakambe, Nazinon.
• Deserts: Northern region arid, part of Sahel.
• Official languages: French, indigenous languages like Moore.
• Largest ethnic group: Mossi.

3. CUBA

India has extended humanitarian assistance to Cuba in the wake of Hurricane Rafael, providing essential medicines like antibiotics, painkillers, ORS, and muscle relaxants.

Confluents the Caribbean Sea, Gulf of Mexico, and Atlantic Ocean.

• **Neighbours**: Hispaniola, Yucatán Peninsula, Florida, Bahamas, Jamaica, Cayman Islands.

• **Capital:** Havana.

• **Major rivers**: Cauto and Toa.

• **Minerals:** Nickel, cobalt, iron ore, copper, petroleum.

• **Climate:** Tropical, seasonally humid with maritime influences.

4. GULF OF MEXICO

Context: Recently, US President-elect Donald Trump proposed renaming the Gulf of Mexico to the Gulf of America, sparking debates over the geopolitical and historical significance of such a name change.

Marginal sea of Atlantic Ocean, bordered by US, Mexico, and Cuba.

• **Neighbouring nations**: North and Northwest, South and Southwest, and Southeast.

• **Major contributors**: Mississippi River, Brazos, Rio Grande, Mobile.

• **Geographical features**: Oval-shaped basin, 1.6 million km².

• Major offshore petroleum production hub, contributing to 14% of US crude oil production.

5. KUMANI BANK MUD VOLCANO & CASPIAN SEA

Context:

The Kumani Bank mud volcano, located off Azerbaijan's eastern coast, erupted in 2023, creating a short-lived island, popularly termed a "Ghost Island." By the end of 2024, this ephemeral island had largely eroded back into the sea.

Located 25 km off Azerbaijan's eastern coast in the Caspian Sea.

- **A temporary landmass created by volcanic activity, primarily mud volcanoes.**
- Forming in 2023, measuring 400 meters across, nearly disappeared by late 2024.
- Provides geological insights, aids in planetary exploration studies, and provides Mars analogs.
- Contributes to methane and gas emissions due to its connection to the South Caspian Basin's hydrocarbon system.
- Highlights Azerbaijan's unique geological landscape with 300+ mud volcanoes.

Caspian Sea: World's largest inland body of water, spanning 386,400 sq. km.

- Borders Russia, Azerbaijan, Kazakhstan, Turkmenistan, and Iran.
- Major rivers: Volga, Ural, Terek.

6. MOUNT IBU

Mount Ibu, one of Indonesia's most active stratovolcanoes, has erupted more than 1,000 times in January 2025.

Location: Mount Ibu is situated on the **northwest coast of Halmahera Island**, in North Maluku province, Indonesia.

7. LAKE NAIVASHA

Water hyacinth threatens the livelihoods of fishers on Kenyan lake, Lake Naivasha.

Lake Naivasha is a freshwater lake located in **Nakuru County, Kenya,** near the town of Naivasha, and lies in the Great Rift Valley, northwest of Nairobi. The primary inflow comes from the **Malewa and Gilgil Rivers,** which bring fresh water into the lake.

8. CABO VERDE

The World Bank predicts that Cabo Verde, a West African archipelago, will require $842 million in investment between 2024-2030 to tackle its climate and development issues.

Cabo Verde Overview

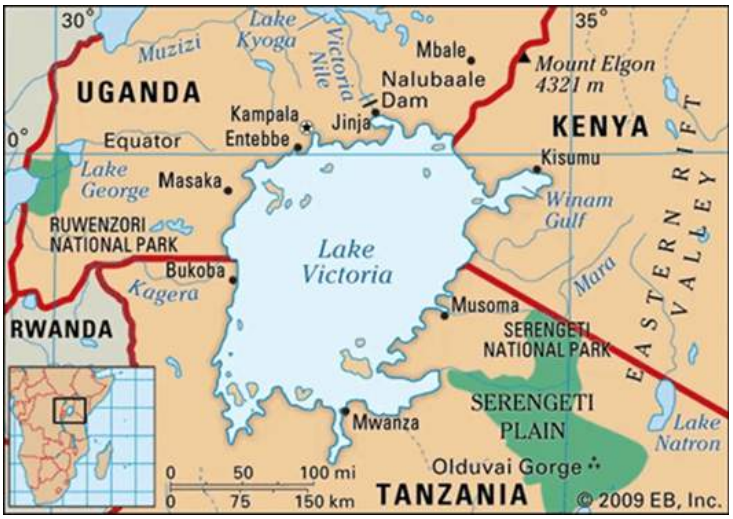
- Island nation located in the Atlantic Ocean, 570 km west of Senegal.
- Nearest neighbour is Senegal on the African mainland.
- Capital: Praia, on Santiago Island.
- Comprises 10 volcanic islands, divided into Barlavento and Sotavento groups.
- Climate: Moderate, arid, with no major rivers.
- Majority population: Mixed African and European, referred to as mestiço or Crioulo.

9. LAKE VICTORIA

A recent study has revealed alarming insights into Lake Victoria's algal blooms, caused by cyanobacteria, which pose significant threats to ecosystems, human health, and water quality

Lake Victoria Overview

- Second-largest freshwater lake in East Africa, shared among Tanzania, Uganda, and Kenya.
- Feeds the White Nile River and smaller rivers like the Kagera River.
- Supports the world's largest freshwater fishery, producing over 1 million tons annually.
- Known for ecological diversity, including unique species like Nile Perch and Tilapia.



Cyanobacteria Threats:

- Disrupts ecosystems by forming harmful algal blooms.
- Exposes communities to toxins unavoidable by boiling.
- Economically impacts fishing livelihoods and increases water treatment costs.

10. DARFUR REGION

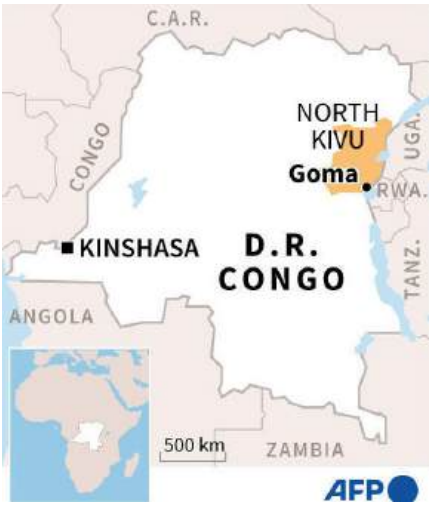
The International Criminal Court (ICC) Prosecutor, has called for urgent UN Security Council intervention to address the worsening humanitarian crisis in Sudan's Darfur region.

Crisis Overview:

- Ethnic violence and war crimes since 2003.
- Key actors: Sudanese government forces, Janjaweed militias, rebel groups, ICC fugitives.
- Involved nations: Sudan (Epicentre), Chad, Libya, Central African Republic, South Sudan (neighbours)
- Geographic features: Jebel Marra Mountains, Wadi Howar river, Baggara Belt (grazing land)

11. DEMOCRATIC REPUBLIC OF CONGO

The M23 rebel group's recent offensive in the Democratic Republic of Congo has seized key areas in Goma, eastern DRC, drawing global attention.



Goma's Significance:

- Economic Hub: Key trade and transit point in eastern DRC.
- Strategic Location: Close proximity to Rwanda and Uganda.
- Humanitarian Crisis: Hosts nearly 500,000 displaced people.
- Natural Features: Located in Albertine Rift, near Mount Nyiragongo volcano.

Democratic Republic of Congo (DRC) Overview

- Located in Central Africa, the DRC is the **second-largest country in Africa** by land area.
- **Shares borders with nine countries**: Republic of the Congo, Central African Republic, South Sudan, Uganda, Rwanda, Burundi, Tanzania, Zambia, and Angola.
- Capital: Kinshasa, the country's largest city and economic and administrative center.
- Geographical Features: **The Congo River,** Albertine Rift Mountains, and several large lakes.
- Historical Context**: Gained independence from Belgium** in 1960, faced instability, including the First Congo War (1996-1997) and the Second Congo War (1998-2003).
  - **Rich in minerals like cobalt, copper, and coltan, making it a target for exploitation and conflict.**

12. TRINIDAD AND TOBAGO

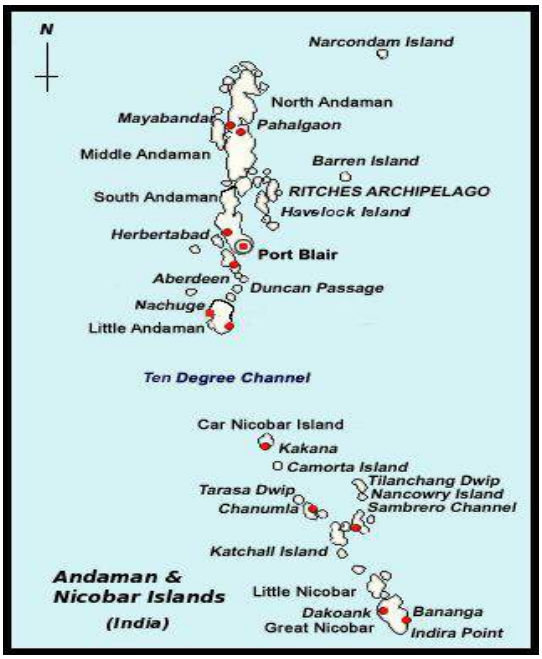
Trinidad and Tobago declared a state of emergency, following a surge in violence, including gang-related shootings.
Capital: Port of Spain
Location: Southernmost island nation in the Caribbean, Atlantic Ocean.

INDIAN

1. SOUTHERN NICOBAR

The proposed establishment of three wildlife sanctuaries in southern Nicobar has sparked concerns over the deprivation of indigenous tribes from their ancestral lands.

- **Meroë Island:** Revered as Piruii, holds spiritual significance.
- **Menchal Island:** Known as Pingaeyak, spiritually protected and managed sustainably.
- **Little Nicobar Island:** Biodiversity-rich region home to globally endangered species.
- **Shomppen Tribe:** Vulnerable PVTG facing displacement due to proposed sanctuaries and mega-projects.
- **Southern Nicobarese Tribe**: Indigenous custodians relying on sustainable resource use guided by spiritual beliefs.
- **Proposed Wildlife Sanctuaries**: Coral, Megapode, Leatherback Turtle Sanctuary.



2. BLUE FLAG CERTIFICATION

Kappad and Chal beaches in Kerala have earned the prestigious Blue Flag certification, signifying adherence to stringent environmental, safety, and cleanliness standards.

Originated in France in 1985, expanded globally in 2001.

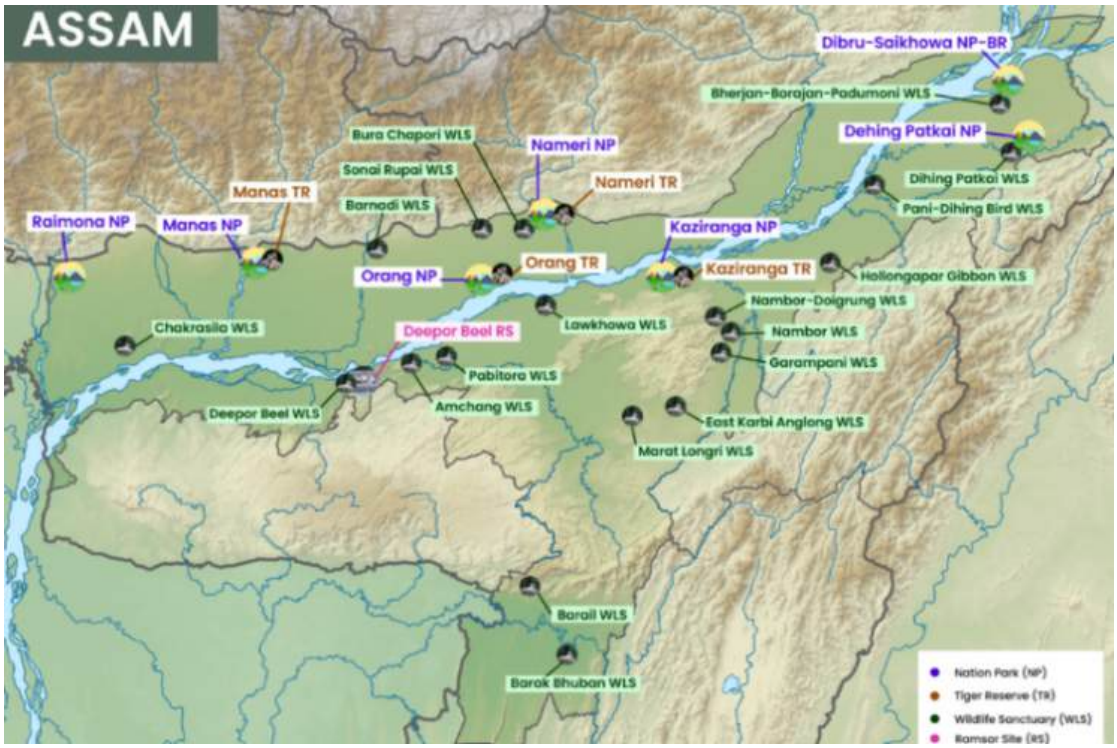
- **Awarded by Denmark-based Foundation for Environmental Education (FEE).**
- **Promotes sustainable practices** in marine and freshwater ecosystems.
- **Key criteria** include high water quality, environmental management, visitor security, and education.
- Global recognition enhances appeal of certified locations.
- Attracts eco-conscious travellers, encourages sustainable tourism, and promotes local development.

3. HOOLLONGAPAR GIBBON WILDLIFE SANCTUARY

The Centre's National Board for Wildlife (NBWL) has approved exploratory drilling for oil and gas in the eco-sensitive zone (ESZ) of Assam's Hoollongapar Gibbon Wildlife Sanctuary.

Located in a secluded forest.

- **Habitat:** Altitude ranges between 100–120 m.
- **Terrain:** Gently slopes downward.
- Bordered by Bhogdoi River, dominated by semi-hydrophytic plants.
- **Home to India's only gibbons, Hoolock Gibbons.**
- Home to Northeast India's only nocturnal primate, **Bengal Slow Loris.**
- Other species include Indian elephants, tigers, leopards, jungle cats, wild boars, civets, stump-tailed macaques, northern pig-tailed macaques, and squirrels.
- Uniquely named after Hoolock Gibbons.

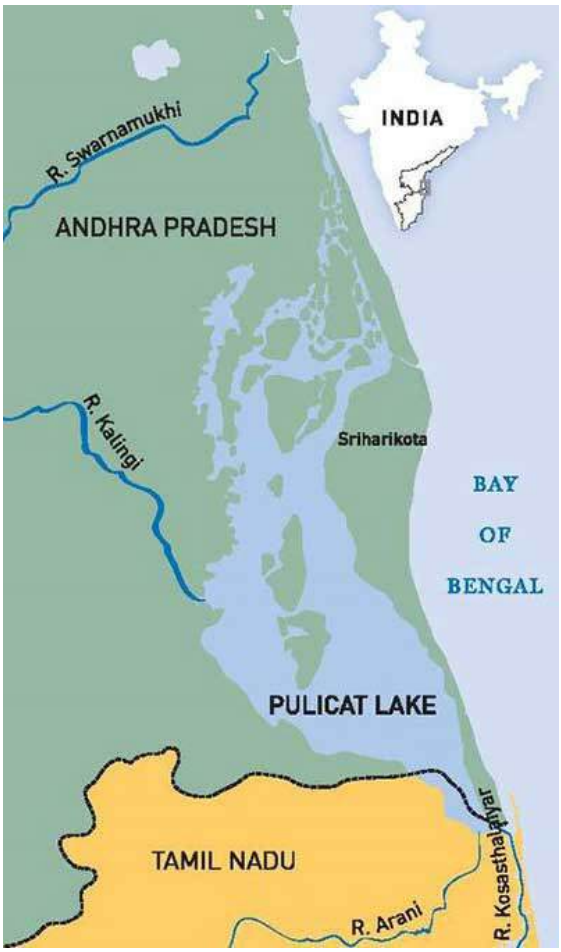


4. SATISH DHAWAN SPACE CENTER -

The Union Cabinet recently approved the establishment of a third launch pad at the Satish Dhawan Space Centre (SDSC) in Sriharikota, Andhra Pradesh.

Operated on October 9, 1971, with the launch of 'Rohini-125'.

- Initially known as Sriharikota Range (SHAR).
- Located in Tirupati district, Andhra Pradesh, India.
- Separates Pulicat Lake from Bay of Bengal for safe rocket launches.



Reasons for Location Selection

- **East Coast Advantage:** Launching rockets eastwards takes advantage of Earth's rotation, adding velocity to the rocket and increasing payload capacity.
- **Proximity to the Equator:** Geostationary satellites require an equatorial plane. Being near the equator makes Sriharikota ideal for such launches.
- **Largely Uninhabited Area:** The site was sparsely populated, minimizing risks to human settlements during launches.
- **Coastal Location:** Proximity to the sea ensures rocket debris impacts occur over water, reducing constraints.

5. ASAN WETLAND

The Asan Wetland in Uttarakhand recently hosted the Asian Waterbird Census, yielding data on 5,225 birds across 117 species.

Situated in **Dehradun district, Uttarakhand**, at the confluence of the **Asan River** and the **Eastern Yamuna Canal**.

- Created due to damming of Asan River in 1967.
- Declared Uttarakhand's first Ramsar site in 2020.
- Biodiversity Hub: Home to 330 bird species.

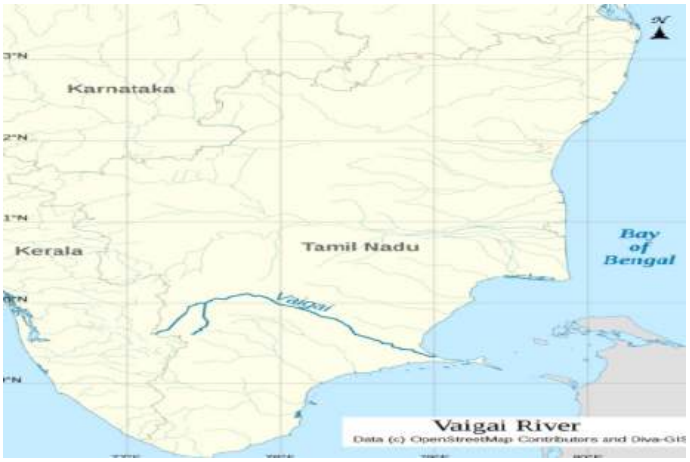
(including critically endangered white-rumped vulture, red-headed vulture, and Baer's pochard)

Migratory Birds: Provides shelter to globally endangered species like **Brahminy duck**, **red-crested pochard**, **gadwall**, and **mallard**, migrating from Central Asia.

About Asian Waterbird Census (AWC): Coordinated by Wetlands International, Coordinates with global International Waterbird Census.

6. VAIGAI RIVER

The Madurai Bench of the Madras High Court has directed local bodies in Tamil Nadu's to prepare an actionable timeline to rejuvenate the Vaigai River.



Vaigai River Origin and Features

- Originated from Varusanadu Hills on Periyar Plateau in Western Ghats.
- Ends in Palk Strait near Pamban Bridge in Ramanathapuram district.
- Major tributaries include Suruliyaru, Mullaiyaru, Varaaga Nadhi, Manjalaru, Kottagudi, Kridhumaal, and Upparu.
- Primarily flows through Tamil Nadu.
- Features Vaigai Dam for irrigation and water storage.
- Notable waterfall, Vaattaparai Falls.
- Cultural and historical significance: Revealed in Sangam literature, known as Kritamaala, and associated with Pandya kingdom.