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Weekly Current Affairs

🎯 To The Point

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12 to 18 Jan 2025

NATION TURMER BOA

WELCOME GENERATION BETA

Union Government Disburses RS. 1.73 Lakh Crore to States for Tax Devolution

Context: The Union Government has released **1.73 lakh crore** to state governments, aiming to boost **capital expenditure** and fund various **welfare initiatives**.

This allocation is a crucial step in **strengthening fiscal federalism** and empowering states to address their developmental and welfare needs.

Highlights of the Tax Devolution:

- A **higher-than-usual amount** has been released to accelerate **infrastructure projects** and **welfare schemes**.

- States like **Uttar Pradesh, Uttarakhand**, and **Bihar** have received the **largest shares** of the disbursed funds.

What is Tax Devolution?

Tax devolution refers to the **distribution of tax revenues** collected by the central government to the states. It ensures states have sufficient resources to manage their developmental and welfare programs.

Key Objectives:

- **Promote fiscal federalism** by empowering state governments financially.

- Strengthen the **financial autonomy** of states, allowing them to address local needs effectively.

How Does It Work?

- The **central government collects taxes** like **income tax, GST**, and other indirect taxes.

- A portion of this revenue is **shared with the states** based on the **Finance Commission's recommendations**.

Formula for Allocation:

- Factors considered include:

  o **Population size** and **demographic performance**.

  o **State efforts** to mobilize tax revenue.

  o **Geographical area**, **forest cover**, and **per capita income**.

- The allocation formula aims to reward better governance and encourage states to **improve their financial management**.

Constitutional Provisions Governing Centre-State Financial Relations:

- **Articles 202–206**: Define the **financial administration** of states, including their powers related to taxation, borrowing, and expenditure.

- **Articles 268–272**: Outline the **division of revenues** between the Union and states.

- **Article 280**: Mandates the establishment of a **Finance Commission** every five years to recommend the tax devolution formula.

- **Article 282**: Empowers the Union to provide **financial assistance** to states for public purposes.

Tax Devolution Trends:

Current Share of States:

- **14th Finance Commission** (2015-2020): Increased the states' share of central taxes from **32% to 42%**, introducing **revenue deficit grants** for states with resource gaps.

- **15th Finance Commission** (2020-2026): Revised the states' share to **41%**, maintaining fiscal balance while considering the creation of the Union Territories of Jammu & Kashmir and Ladakh.

- **Special Funding Rules**:

  o Northeastern and hill states follow the **90:10 rule** (90% Centre, 10% state funding).

  o For other states, the ratio is **60:40** (60% from the Centre, 40% from the states).

Concerns Raised by States:

Demand for Higher Allocations:

- States argue for **greater financial autonomy**, citing responsibilities such as **education**, **healthcare**, and **policing**.

Disparities Among States:

- Developed states like **Tamil Nadu** and **Karnataka** feel penalized for their **higher tax contributions** compared to what they receive from the Centre.

- Critics argue this undermines states with **better governance** to support those with **weaker fiscal management**.

Issues with the Divisible Pool:

- **Cesses and surcharges**, which constitute up to **28% of central tax revenues**, are not shared with the states, leading to significant revenue loss for state governments.

Independence of the Finance Commission:

- Critics question the **independence of the Finance Commission**, as its members are appointed by the central government, potentially leading to **political bias** in recommendations.

Way Forward:

1. **Strengthening Cooperative Federalism**:

   - Enhance the **GST framework** to ensure smoother tax collection and equitable distribution of resources.

   - Promote **fair taxation systems** that address the needs of all regions equitably.

2. **Fiscal Equalization**: Prioritize **balanced resource allocation**, ensuring **poorer states** receive adequate support without penalizing well-performing states.

3. **Modernizing Tax Administration**: Improve **tax compliance** and **administration efficiency** at the state level to optimize resource utilization.

4. **Capacity Building**: Invest in **financial management training** and infrastructure to help states effectively utilize devolved funds for development.

Did You Know?

- The **Finance Commission** not only decides on tax sharing but also recommends grants for **disaster relief** and **local governance improvements**.

- In the **2023-24 fiscal year**, cesses and surcharges accounted for over **5 lakh crore**, none of which were shared with the states.

The recent tax devolution highlights the government's commitment to empowering states and addressing fiscal challenges, a vital step toward fostering a more balanced and inclusive economic growth trajectory.

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GS Paper 2 – Governance, Constitution, Polity, Social Justice

Supreme Court Rejects Review Petitions on Same-Sex Marriage Judgment

Context: The Supreme Court of India recently dismissed review petitions challenging its **October 2023 ruling**, which denied the legalization of same-sex marriage. The court emphasized that the matter requires legislative action, as Parliament is better suited to deliberate and legislate on such **complex social issues**.

Understanding Same-Sex Marriage:

What is Same-Sex Marriage?

Same-sex marriage refers to the union between two individuals of the same gender. While it is legally recognized in many parts of the world, **India does not recognize same-sex marriages** or civil unions.

Current Legal Status in India:

- Same-sex couples can enjoy certain rights under the concept of **live-in relationships**, as upheld by the **Supreme Court in 2022** under **Article 21** (Right to Life).
- However, they are excluded from the **Special Marriage Act (SMA), 1954**, which allows for civil marriages across religions.
- The **Supreme Court's 2023 ruling** clarified that:
  - There is **no fundamental right to marry** under Indian law.
  - The **SMA does not apply** to same-sex couples.
  - Same-sex couples cannot form **civil unions** or **adopt children**.

Arguments in Favor of Legalizing Same-Sex Marriage:

1. **Promoting Equality:**
   - Denying marriage rights to same-sex couples violates the **constitutional principle of equality** and perpetuates discrimination.
   - Legal recognition affirms the **dignity and rights of LGBTQIA+ individuals**.
2. **Access to Legal and Social Benefits:**
   - Marriage provides numerous benefits, such as **inheritance rights**, **tax benefits**, and **social security**.
   - Recognizing same-sex marriages ensures that LGBTQIA+ couples can access these protections.
3. **Improved Mental Health**: Legal recognition fosters **social acceptance**, reducing stigma and improving the mental well-being of LGBTQIA+ individuals.
4. **Aligning with Global Trends:**
   - Over **30 countries**, including **the Netherlands**, **United States**, **Australia**, and **Canada**, have legalized same-sex marriage.
   - India, as a progressive democracy, can enhance its global standing by joining this movement toward **equality**.

Global Landscape of Same-Sex Marriage:

- **The Netherlands** was the first country to legalize same-sex marriage in 2001.
- Today, most nations in **North and South America** and **Europe** have recognized same-sex unions.
- Some countries initially acknowledged **civil unions** before transitioning to full marriage equality.

Arguments Against Same-Sex Marriage in India:

1. **Cultural and Religious Sensitivities:** Critics argue that same-sex marriage conflicts with **traditional Indian values** and religious beliefs, which predominantly view marriage as a union between a man and a woman.
2. **Legislative Domain:** The **Supreme Court** has stated that the issue falls within the **legislative purview**, making it Parliament's responsibility to enact laws reflecting the **will of the people**.
3. **Social Readiness**: Opponents suggest that Indian society is **not yet prepared** for such a change, fearing backlash from conservative groups.
4. **Alternatives to Marriage:** Some propose **civil unions** or **domestic partnerships** as a compromise, granting legal rights without redefining the traditional concept of marriage.

Review Petitions in the Supreme Court:

What is a Review Petition?

A review petition is a legal mechanism that allows parties to seek reconsideration of a Supreme Court judgment under **Article 137** of the Constitution.

Key Details:

- **Grounds for Filing**:
  - An **error apparent** in the judgment.
  - **New and significant information** has come to light.
  - Any other **sufficient reason**.
- **Time Limit**: Must be filed within **30 days** of the judgment.
- **Procedure**:
  - Heard by the same bench that delivered the original judgment.
  - If judges from the original bench have retired, the **Chief Justice** appoints replacements.
- **Outcome**: The court may accept or reject the petition. If accepted, the judgment may be modified or reversed.

Implications of the Dismissal:

1. **Status Quo Maintained:** Same-sex couples in India will continue to lack legal recognition for their relationships, including marriage and adoption rights.
2. **Legislative Responsibility:** The ruling highlights the **need for Parliament** to legislate on same-sex marriage, emphasizing the judiciary's limitations in addressing societal issues.
3. **Advocacy for Rights:** The dismissal reinforces the necessity for continued **LGBTQIA+ advocacy** to push for legislative reforms.
4. **Policy Dependency:** Until legislative action is taken, the **LGBTQIA+ community remains dependent** on government policies for their rights and recognition.

Did You Know?

- In 2018, the Supreme Court of India decriminalized homosexuality by striking down **Section 377**, a colonial-era law. A survey by Pew Research in 2023 revealed that **48% of urban Indians support same-sex marriage**, indicating growing acceptance. The rejection of review petitions is a reminder that the fight for equal rights continues. While the judiciary has taken significant steps toward recognizing LGBTQIA+ rights, the onus now lies on society and Parliament to ensure **equality and dignity for all**.

Right to Food and Challenges in India's Public Distribution System (PDS)

Context: Despite India's commitment to ensuring the **Right to Food**, inefficiencies in the **Public Distribution System (PDS)** pose significant hurdles in achieving equitable access to essential food grains.

Food Insecurity in India:

- **Global Hunger Index (GHI) 2024**: India ranks **105th out of 127 countries**, categorized as having **serious hunger levels**.

- **State of Food Security and Nutrition in the World 2023 Report**: Approximately **224 million Indians** faced **moderate to severe food insecurity** during 2021-2022.

- **Malnutrition and Poverty**: A large proportion of India's population continues to struggle with undernourishment and lack of access to affordable food, making food security a critical concern.

Recognition of the Right to Food:

- Globally, the **Universal Declaration of Human Rights** and the **International Covenant on Economic, Social and Cultural Rights (ICESCR)** recognize the **right to food** as fundamental.

- In India, the **Supreme Court ruling in People's Union of Civil Liberties vs. Union of India** established the **Right to Food** as part of the **fundamental right to life** under **Article 21** of the Constitution.

What is the Public Distribution System (PDS)?

The **PDS** is a food security mechanism aimed at providing subsidized food grains and essential commodities to vulnerable sections of society.

Key Features of PDS:

1. **Dual Responsibility**:
   o The **central government**, through the **Food Corporation of India (FCI)**, manages procurement, storage, transportation, and allocation of food grains.
   o **State governments** oversee local distribution, beneficiary identification, and issuance of **ration cards**.

2. **Fair Price Shops (FPS)**: These serve as distribution points for subsidized food grains under the PDS.

Challenges in the Public Distribution System:

1. **Food Grain Leakages:** A significant portion of food grains is **diverted** to the black market or lost during transportation.

2. **Exclusion Errors: Aadhaar-based biometric verification** often results in eligible individuals being excluded due to technical errors or mismatches.

3. **Corruption:** Malpractices at **Fair Price Shops** include under-weighing goods, selling poor-quality food grains, and charging higher prices than mandated.

4. **Storage and Transport Issues: Inadequate warehousing** and transportation infrastructure lead to significant spoilage and wastage of food grains.

5. **Targeting Errors**: Identifying beneficiaries remains a challenge, leading to inclusion of ineligible households and exclusion of deserving ones.

Reforms and Modernization Efforts:

1. **National Food Security Act (NFSA), 2013:**

   - Provides **legal entitlement** to subsidized food grains for **two-thirds of India's populatian**.

   - Covers **75% of rural** and **50% of urban populations**.

2. **Targeted Public Distribution System (TPDS):**

   - The **2015 Control Order** clarified roles of the Centre and States, and established a grievance redressal mechanism.

3. **Technological Advancements:**

   - **Digital Ration Cards**: Introduced to eliminate fake and duplicate ration cards.

   - **Aadhaar Integration**: Biometric authentication ensures targeted distribution and reduces ghost beneficiaries.

   - **End-to-End Computerization**: Improves transparency, tracks food grain movement, and minimizes leakages.

4. **Direct Benefit Transfer (DBT):** Piloted in certain regions, **DBT** involves transferring subsidies directly into beneficiaries' bank accounts instead of providing food grains.

5. **Quality Monitoring:** Enhanced mechanisms for **food safety and quality control** ensure better nutritional value for beneficiaries.

The Way Ahead:

1. **Strengthen Infrastructure**

   - **Expand storage and transport facilities** to support increasing operational needs.

   - Improve warehousing with modern storage techniques to reduce spoilage.

2. **Leverage Technology:** Use **artificial intelligence (AI)** and **blockchain** for real-time tracking, ensuring better accountability and minimizing inefficiencies.

3. **Social Audits:**

   - Conduct **community-led audits** to monitor the PDS and ensure transparency.

   - Empower local stakeholders to hold authorities accountable.

4. **Address Exclusion Errors:** Simplify biometric verification and introduce alternatives for Aadhaar-based authentication to prevent unjust exclusions.

5. **Comprehensive Policy Integration**: Link the PDS with other welfare schemes like **Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA)** to ensure holistic support.

Did You Know?

   - India's **midday meal scheme**, one of the world's largest school meal programs, complements the PDS by addressing child malnutrition.

   - **Chhattisgarh's state-run PDS model** is often cited as a success story for its community-driven approach and transparency mechanisms.

Conclusion: While the **Public Distribution System** is a critical pillar of India's food security framework, addressing its inefficiencies is vital to ensuring that the **Right to Food** becomes a reality for all. By combining technological advancements, robust infrastructure, and community involvement, India can overcome these challenges and provide **universal food security**.

Revised Appointment Process for Chief Election Commissioner (CEC)

Context: For the first time, the process of appointing the **Chief Election Commissioner (CEC)** will no longer be restricted to seniority-based promotions. The **Chief Election Commissioner and Other Election Commissioners (Appointment, Conditions of Service, and Term of Office) Act, 2023** introduces a revamped selection process, widening the scope for choosing the CEC and Election Commissioners (ECs).

Background: Why Was the New Law Introduced?

- **Constitutional Mandate**: Article 324 of the **Indian Constitution** empowers the President to appoint the **CEC and ECs**, subject to any **Parliamentary law**.

- **Past Practice**: In the absence of such a law, appointments were made based on the recommendations of the **Prime Minister**, often adhering to a seniority-based approach.

- **Supreme Court Intervention**:

  o In 2023, the **Supreme Court** (in the **Anoop Baranwal v. Union of India** case) sought to enhance the independence of the Election Commission by altering the appointment process.

  o A **temporary selection committee** comprising the **Prime Minister**, the **Chief Justice of India (CJI)**, and the **Leader of the Opposition (LoP)** was formed to advise the President.

  o The court urged Parliament to enact a specific law governing these appointments.

- **New Legislation**: In response, the Act was introduced, replacing the SC's temporary mechanism.

The New Appointment Process:

1. **Structure of the Election Commission:** The Election Commission consists of the **CEC** and **two Election Commissioners**. The current ECs are **Gyanesh Kumar** and **Sukhbir Singh Sandhu**.
2. **Eligibility Criteria:** Section 5 restricts eligibility to individuals who are **current or former Secretary-level officers** in the central or state government.
3. **Departure from Tradition:** Previously, the **senior-most Election Commissioner** succeeded the outgoing CEC. The new Act allows candidates to be selected from **outside the Election Commission**, expanding the talent pool.
4. **Search Committee:**

   - **Formation**: A **Search Committee**, chaired by the **Minister of Law and Justice** and comprising two senior officials, prepares a list of five candidates.

   - **Recommendations**: The panel is submitted to a **Selection Committee** for final consideration.

5. Selection Committee:

   - **Composition**: The Selection Committee includes the **Prime Minister**, a **Cabinet Minister**, and the **Leader of the Opposition (LoP)** in the Lok Sabha.

   - **Decision-Making**: This committee can choose from the panel or nominate an **external candidate**.

Implications of Key Provisions:

1. **Enhanced Flexibility for the Government:** The Act grants the **Executive more discretion** in choosing the CEC, raising concerns about maintaining the Election Commission's independence amidst increasing scrutiny.

2. **Potential for Political Debates:** With the **LoP** included in the Selection Committee, decisions may spark debates and disagreements, especially regarding the credibility and impartiality of the chosen candidate.

3. **Impact on Election Commission Credibility:** Criticism from opposition parties on matters such as **electoral rolls** and **electronic voting machines (EVMs)** could intensify, potentially impacting the public's trust in the institution.

Concerns Regarding the New Act:

1. **Exclusion of the Chief Justice of India (CJI):**

   - **SC Ruling Ignored**: The Supreme Court, in its 2023 judgment, emphasized including the **CJI** in the selection process to bolster the Election Commission's independence.

   - **Credibility Concerns**: Omitting the CJI has raised fears of potential **Executive overreach** and erosion of institutional credibility.

2. **Risk of Partisanship:** Former CEC **O.P. Rawat** has warned that the new system could be influenced by **political changes**, reducing the Election Commission's perceived neutrality.

3. **Pending Legal Challenges: Petitions in SC**: The exclusion of the CJI has been challenged, and the Supreme Court is set to review the matter in **February 2025**.

Conclusion:

The **Chief Election Commissioner and Other Election Commissioners (Appointment, Conditions of Service, and Term of Office) Act, 2023** marks a significant shift in India's election management framework. While the new process seeks to enhance **transparency** and widen the talent pool, concerns about **Executive overreach**, **institutional independence**, and **partisanship** cannot be overlooked.

The **Supreme Court's upcoming review** will be critical in determining whether this legislation aligns with constitutional principles and safeguards the impartiality of the **Election Commission**, a cornerstone of India's democracy.

Did You Know?

- India's Election Commission, established in **1950**, is one of the world's most extensive electoral management bodies.

- The **first Chief Election Commissioner**, **Sukumar Sen**, conducted India's first general elections in **1951-52**, involving over **173 million voters**.

California Wildfires 2025: Santa Ana Winds and Drought Amplify Destruction

Context: Devastating wildfires in **Los Angeles, California**, have claimed **10 lives**, forced over **130,000 evacuations**, and destroyed numerous homes, including those of celebrities like **Paris Hilton** and **Billy Crystal**.

Key updates:

- Areas like **Hollywood Hills** are severely affected by fires such as **Palisades, Eaton, Sunset, Hurst,** and **Lidia fires**.

- The **Oscars nominations announcement** has been postponed due to the crisis.

- While wildfires are common in California, the **intensity** and **winter timing** of these fires are unprecedented.

California Wildfires 2025: Timeline and Unusual Features:

1. Timeline of Events:

- The first fire ignited on **January 7** in the **Pacific Palisades** neighborhood of Los Angeles.

- This firestorm is being described as the **worst in recent memory**, striking during **January**, the traditionally coldest month of winter.

2. Unusual Timing and Drought Conditions:

- Wildfires typically occur between **June and October**, making this **January wildfire** highly unusual.

- Southern California is grappling with **intense drought conditions**:
  - As of December 31, 2024, only **40.9%** of the state was drought-free, compared to **96.65%** the year prior.

What Caused the California Wildfires?

The precise cause is under investigation, but **power cables** impacted by strong winds are suspected.

Three Main Factors Behind the Blaze:

1. **Wet Weather Followed by Extreme Dryness**
   - **Dense vegetation** growth in **2022–2023** due to unusually wet winters.
   - The **2024–2025 winter** has been exceptionally dry, turning this vegetation into **highly flammable kindling**.
   - **NASA Report**: Southern California has experienced negligible rainfall since October, making this the **driest start to a water year** in **Los Angeles since 1944**.

2. **Santa Ana Winds**
   - These winds are **stronger than usual**, spreading fires rapidly.
   - They:
     - Originate from **high-pressure systems** over the Great Basin.
     - Become **hotter, drier, and faster** as they descend over mountains.
     - Act as a natural **bellows**, fueling flames and igniting dry vegetation.

3. **Impact of Climate Change:**

- o **Global warming** has worsened extreme weather, including wildfires.
- o Key changes:
  - ▪ **Rising global temperatures** and **early snowmelt** have extended and intensified dry seasons.
  - ▪ Vegetation is under **increased moisture stress**, creating more fuel for fires.

Understanding Santa Ana Winds:

What Are Santa Ana Winds?

Santa Ana Winds are **hot, dry, and strong winds** blowing from the inland deserts of **Southern California** toward the coast. They are notorious for rapidly spreading wildfires.

Causes of Santa Ana Winds:

1. **High-Pressure Systems in the Great Basin:**
   - o These winds are driven by **high-pressure systems** over the **Great Basin** (spanning Nevada, Utah, and California).
   - o The air circulates clockwise, pushing winds toward **low-pressure coastal areas**.
2. **Descending Air:**
   - o As the winds descend from **high elevations** (like the **Sierra Nevada and Santa Ana Mountains**), they:
3. **Speed Amplification in Narrow Passages:**
   - o As winds pass through **mountain canyons** and **narrow gaps**, their speed increases significantly.
   - o Gusts can exceed **100 mph (160 km/h)** in certain areas.

Characteristics of Santa Ana Winds:

- **Hot and Dry**: The winds heat up as they descend, drying out vegetation.
- **High Velocity**: Strong gusts can lead to **property damage** and **power outages**.
- **Fire Spreading**: These winds act as a **natural accelerant**, turning small fires into raging infernos.

Impact and Future Outlook:

- The **California wildfires of 2025** highlight the interplay between **natural factors** (like Santa Ana winds) and **human-driven climate change**.
- Efforts to mitigate such disasters require:
  - o **Better infrastructure** to prevent power-line sparks.
  - o **Improved drought management** and **forest policies**.
  - o Increased public awareness about the dangers of **Santa Ana Winds** during drought seasons.

Did You Know?

- **Santa Ana Winds** are sometimes called "**Devil Winds**" due to their fiery impact.
- The **2003 Cedar Fire**, one of California's largest wildfires, was also fueled by **Santa Ana Winds**, burning over **280,000 acres** and destroying **2,800 structures**.

NATO Members Hesitant to Back Trump's Defence Spending Proposal

Context: U.S. President-elect Donald Trump has proposed that **NATO members** increase their **defence spending** to **5% of GDP**, a significant leap from the current target of **2%**.

- This proposal is viewed as **economically challenging** and **politically untenable** for most member states.

- However, at the upcoming **NATO summit in June**, there are expectations of a new, higher target, potentially around **3% of GDP**.

Defence Spending by NATO Members:

Current Spending Trends:

- **Poland** leads in defence spending, allocating a staggering **12% of its GDP** due to its proximity to Ukraine.

- **Estonia** follows with **3.43%**, and the **United States** contributes **3.38%** of its GDP to defence.

- The total defence expenditure of **NATO nations** in 2024 was estimated at **$1.474 trillion**, with the **U.S. contributing $968 billion**, making it the largest contributor by a wide margin.

Impact of the Russia-Ukraine Conflict:

- Following **Russia's invasion of Ukraine**, European nations have gradually increased their defence budgets.

- Despite these efforts, most countries still fall short of meeting the **current 2% target**, let alone more ambitious goals.

Understanding NATO:

Foundation and Purpose:

- Established in **1949** through the **Washington Treaty**, the **North Atlantic Treaty Organization (NATO)** is a **security alliance** of **32 nations** from North America and Europe.

- **Sweden** became NATO's newest member in **March 2024**, increasing the alliance's strength and reach.

- The original **12 founding members** included the **United States, Canada,** and **ten European nations**: **Belgium, Denmark, France, Iceland, Italy, Luxembourg, the Netherlands, Norway, Portugal,** and **the United Kingdom**.

Core Principles:

- NATO operates under the principle of **collective defence**, enshrined in **Article 5** of the North Atlantic Treaty.

  o This principle means an **attack on one member is considered an attack on all**, obligating collective action.

- The alliance aims to safeguard its members' **freedom and security** through **political** and **military** means.

Headquarters:

- NATO is headquartered in **Brussels, Belgium**, serving as the hub for its strategic and diplomatic operations.

Challenges with the 5% Proposal:

1. **Economic Strain**:

   o Many member nations face **budget constraints**, making the jump to 5% **unrealistic**.

   o Only a handful of countries, like **Poland**, have been able to allocate substantially higher percentages due to **geopolitical pressures**.

2. **Political Pushback**:

   o The proposal risks widening **divisions within NATO**, with some nations unwilling or unable to meet these new expectations.

3. **Existing Disparities**:

   o The **United States** already contributes a disproportionately large share of NATO's defence budget, leading to ongoing debates about **equitable burden-sharing**.

Additional Insights:

- **NATO's Evolution**: From a Cold War-era alliance to a modern security organization, NATO now addresses challenges like **cybersecurity, terrorism**, and **climate-related threats**.

- **Future Direction**: While increased defence spending is essential to counter growing threats, the path forward requires a balance between **economic realities** and **collective security commitments**.

Looking Ahead:

The **NATO summit in June** will be a critical juncture for deciding the alliance's future defence spending targets.

- While **Trump's 5% proposal** is unlikely to gain unanimous support, a revised goal of around **3% of GDP** could emerge as a **more feasible compromise**.

- The challenge lies in ensuring all member states contribute fairly while maintaining **unity** in addressing global security threats.

Regional Conference on Drug Trafficking and National Security

Context: Union Home Minister **Amit Shah** chaired the **Regional Conference on 'Drug Trafficking and National Security'**, emphasizing the need for states, UTs, and agencies to adopt a **ruthless approach** against **illegal drug laboratories**.

- **Organized by the Narcotics Control Bureau (NCB)**, the conference aimed to tackle the escalating issue of drug trafficking and its implications for **national security**.

Key Highlights from the Conference:

Record-Breaking Drug Seizures in 2024:

- India achieved its **highest-ever drug seizures**, confiscating **narcotics worth 16,914 crore** in 2024.
- This represents a **seven-fold increase** in seizures over the past decade, attributed to the government's decisive anti-drug measures.

Emerging Challenges: Dark Web and Technology:

- The **dark web**, **cryptocurrency**, and **drones** were identified as significant **technological challenges** in combating drug trafficking.
- **What is the Dark Web?**
    - It is a small, encrypted part of the internet that is **inaccessible** through traditional search engines like Google.
    - It requires special tools like **Tor (The Onion Router)** or **I2P (Invisible Internet Project)**.
- The Home Minister urged **collaboration between technocrats, states, and the Central government** to develop effective **technical solutions**.

Success Against Narco-Terrorism:

- The government has **dismantled numerous narco-terror networks** in states such as **Jammu & Kashmir, Punjab, Gujarat, and Uttar Pradesh**.
- These efforts have significantly weakened **terrorism linked to drug trafficking**.

Drug Disposal Fortnight:

- **Drug Disposal Fortnight (January 11–25)** was inaugurated to destroy **1 lakh kg of narcotics worth 8,600 crore**.
- This initiative is part of a **broader strategy** to achieve a **drug-free India by 2047**.

Three-Pronged Strategy for a Drug-Free India:

1. **Strengthening Institutional Frameworks**.
2. **Enhancing Coordination** among narcotics agencies.
3. **Public Awareness Campaigns** to educate citizens about the dangers of drug abuse.

A Decade of Progress: Seizures and Destruction:

- Between **2004–2014**, only **3.63 kg** of drugs were seized.
- From **2014–2024**, this figure surged to **24 lakh kg**, marking a **seven-fold increase**.
- The value of destroyed drugs rose from **8,150 crore** to **54,851 crore**, reflecting an **eight-fold increase**.

NCB's Initiatives and Expansion:

- **Inauguration of the NCB Bhopal Zonal Unit** to bolster regional operations.
- **Extension of MANAS-2 Helpline (1933)** across all **36 states and UTs**, enhancing accessibility for reporting drug-related activities.

Regulatory Framework in India: Fighting the Drug Menace:

Constitutional Provisions:

- **Article 47** of the Indian Constitution mandates the State to **prohibit the consumption of intoxicating drugs**, except for medicinal purposes.

India's Role in Global Conventions:

India is a signatory to:

1. The **Single Convention on Narcotic Drugs (1961)**.
2. The **Convention on Psychotropic Substances (1971)**.
3. The **United Nations Convention against Illicit Traffic in Narcotic Drugs and Psychotropic Substances (1988)**.

Key Legislation in India:

1. **Drugs and Cosmetics Act, 1940**.
2. **Narcotic Drugs and Psychotropic Substances Act, 1985**.
3. **Prevention of Illicit Traffic in Narcotic Drugs and Psychotropic Substances Act, 1988**.

Institutional Efforts:

- **Narcotics Control Bureau (NCB)** was established in 1986 as a **nodal agency** to combat drug trafficking.
- The **Ministry of Health and Family Welfare (MoHFW)** and **Ministry of Social Justice and Empowerment (MSJE)** handle **drug demand reduction** and **rehabilitation programs**.

Technological Interventions:

- **NCORD Portal**: A platform for effective information exchange among agencies.
- **MANAS Helpline (1933)**: A toll-free number to report drug-related activities.
- **NIDAAN Portal**: Tracks narco-offenders nationwide.

Additional Measures for a Drug-Free India:

- Creation of **Anti-Narcotics Task Forces (ANTF)** in every state and UT.
- Deployment of **canine squads** for drug detection.
- Establishment of **Special NDPS Courts** and **Fast-Track Courts** for expedited trials.
- **Strengthening forensic capabilities** to investigate drug-related cases.

The Vision for 2047: A Drug-Free India:

- The **Nasha Mukt Bharat Abhiyan** is a cornerstone in realizing **PM Modi's vision** of a **developed and drug-free India** by 2047.
- **Collective responsibility**, public awareness, and institutional strength are pivotal in safeguarding the **youth** and securing the nation's future.

Groundwater Contamination in India: Nitrate and Chemical Pollutants

Context: A recent assessment by the **Central Ground Water Board (CGWB)** has revealed alarming levels of **nitrate contamination** in several Indian states. This issue poses a significant **health and environmental risk**, affecting over half of India's districts.

Central Ground Water Board (CGWB): A Key Player

About the CGWB:

The **Central Ground Water Board (CGWB)** operates under the **Ministry of Jal Shakti** and is tasked with the **monitoring, management, and regulation of groundwater resources** across India.

- **Headquarters**: Bhujal Bhawan, Faridabad, Haryana
- **Leadership**: Headed by a Chairman with a team of five members.

Monitoring Groundwater Levels:

- **Observation Network**: 26,000 wells are used to manually measure groundwater levels.
- **Digital Integration**: Since 2023, **16,000–17,000 piezometers** equipped with digital water-level recorders provide **real-time data** to a central monitoring system.

Nitrate Contamination in Groundwater: A Rising Concern

Increase in Nitrate-Contaminated Districts:

- In **2017**, **359 districts** reported excessive nitrate levels in groundwater.
- By **2023**, this figure rose to **440 districts**, impacting **56% of India's districts**.

Groundwater Testing Trends:

- **2017**: Of **13,028 samples**, **21.6%** exceeded safe nitrate levels (above **45 mg/l**).
- **2023**: Out of **15,239 samples**, **19.8%** showed contamination.
- While the **percentage** of affected samples remained relatively stable, the number of **contaminated districts increased significantly**.

Health Implications:

Excessive nitrate causes **methemoglobinemia** or "blue baby syndrome," which reduces the oxygen-carrying capacity of red blood cells, particularly affecting **infants and vulnerable populations**.

Environmental Impact:

- High nitrate levels lead to **algal blooms** in water bodies, causing **oxygen depletion** and damaging aquatic ecosystems.

Sources of Nitrate Contamination:

- **Agricultural Practices**: Fertilizers like **ammonium nitrate, urea, and diammonium hydrogen phosphate** contribute to nitrate leaching.
- **Forms of Nitrogen in Groundwater**:
    - **Nitrate (NO_3^-)**
    - **Ammonium (NH_4^+)**
    - **Ammonia (NH_3)**
    - **Nitrite (NO_2^-)**
    - **Nitrogen gas (N_2)**
    - **Nitrous oxide (N_2O)**
    - **Organic nitrogen**

Regional Analysis of Nitrate Contamination:

States with the Highest Proportion of Contamination

1. **Rajasthan**: 49% of samples tested exceeded nitrate limits.

2. **Karnataka**: 48% of samples were contaminated.

3. **Tamil Nadu**: 37% of samples had unsafe nitrate levels.

Persistent Issues in Some States:

- **Rajasthan**, **Madhya Pradesh**, and **Gujarat** have faced **long-standing nitrate contamination** since 2017.

Emerging Concerns:

- **Central and Southern States** are reporting **increasing nitrate contamination**.

- Key states:
  - **Maharashtra**: 35.74%
  - **Telangana**: 27.48%
  - **Andhra Pradesh**: 23.5%
  - **Madhya Pradesh**: 22.58%

Other Major Chemical Contaminants in Groundwater

Arsenic, Fluoride, Iron, and Uranium

In addition to nitrate, these contaminants are critical threats to **groundwater quality**.

Fluoride Contamination:

- **9.04%** of groundwater samples exceed permissible fluoride levels.

- **High-Risk States**: Rajasthan, Haryana, Karnataka, Andhra Pradesh, and Telangana.

Uranium Contamination:

- Uranium levels in some samples exceed **100 ppb (parts per billion)**, far above the safe limit of **30 ppb**.

- **High-Risk States**: Rajasthan, Punjab, Gujarat, Haryana, Tamil Nadu, Andhra Pradesh, and Karnataka.

Root Cause:

- Over-exploited groundwater zones where **withdrawal exceeds natural replenishment** are more prone to contamination.

The State of Groundwater in 2024:

Extraction Trends:

- India's groundwater extraction rate is **60.4%**, consistent since 2009.

Safe Zones:

- Approximately **73% of blocks** are classified as 'safe,' indicating adequate replenishment to balance water withdrawal.

The Way Forward:

1. **Promote Sustainable Agriculture**: Encourage the use of organic fertilizers and precision farming techniques to reduce nitrate leaching.

2. **Strengthen Monitoring Systems**: Expand digital water-level recorders and observation networks for real-time data.

3. **Enhance Public Awareness**: Educate communities about the health and environmental risks of groundwater contamination.

4. **Policy Interventions**: Enforce strict regulations on fertilizer usage and groundwater withdrawal in vulnerable zones.

Conclusion:

India's groundwater faces **critical challenges** from nitrate and other chemical contaminants. Addressing this issue requires **collective efforts** from government agencies, local authorities, and the public to ensure a **sustainable and safe water future**.

Interpol's Silver Notice: A New Tool Against Criminal Asset Laundering

Context: The **International Criminal Police Organisation (Interpol)** has recently introduced its first-ever **'Silver Notice'**, a groundbreaking initiative aimed at **tracking and retrieving criminally acquired assets** across borders.

What is the Silver Notice?

A New Addition to Interpol's Colour-Coded Alerts

The **Silver Notice** expands Interpol's suite of **colour-coded alerts**, focusing specifically on **assets obtained through criminal activities**.

Purpose:

- Designed to help countries **trace and recover assets linked to crimes** such as fraud, corruption, drug trafficking, and environmental violations.
- Facilitates international cooperation to identify and **track laundered assets** across borders.

Origins and Scope:

- Launched as part of a **pilot project** involving **52 countries**, including India.
- The initiative was initiated following a request from **Italy** to locate the assets of a senior mafia member.
- The project will run until **November 2025**, with **500 Silver Notices** available for use by participating nations.

How Does the Silver Notice Work?

1. **Requesting Information**: Countries can issue Silver Notices to gather information on various **criminally linked assets**, including properties, vehicles, businesses, and financial accounts.
2. **Identifying and Locating Assets**: Enables the identification and location of these assets, paving the way for **legal actions** such as **seizure or confiscation**, in compliance with national laws.
3. **Global Coordination**: Acts as a bridge between countries to facilitate **asset tracing** on an international scale, ensuring that no criminal asset goes unnoticed.

India's Participation and Potential Gains:

India as a Key Participant: India is among the **52 nations** participating in this initiative.

Significance for India:

- India faces challenges with **fugitive economic offenders** and **unaccounted black money** stashed abroad.
- The **Silver Notice** offers a powerful tool to **trace and recover these offshore assets**, boosting the country's fight against economic crimes.

Why is the Silver Notice Important?

- **Targeted Approach**: Focuses on the **financial aspect of crimes**, ensuring that illicit profits are identified and retrieved.
- **Global Reach**: Facilitates **cross-border collaboration** in asset recovery, reducing safe havens for criminals.
- **Complement to Legal Actions**: Enhances the ability of nations to take **legal and punitive measures** against offenders.

Conclusion: Interpol's **Silver Notice** is a **game-changer in combating international financial crimes**. By streamlining the process of tracing and recovering criminal assets, it strengthens global efforts to curb economic offenses and enhances cooperation among nations. For India, this initiative is a significant step forward in its quest to address the challenges posed by **fugitive offenders and laundered wealth**.

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India Joins UN Panel on Big Data for Official Statistics

Context: India has become a member of the **UN Committee of Experts on Big Data and Data Science for Official Statistics (UN-CEBD)**.

- This milestone, announced by the **Ministry of Statistics and Programme Implementation (MoSPI)**, marks India's active role in shaping global standards for leveraging **Big Data and data science** in official statistics.

About UN-CEBD:

Establishment and Purpose:

- Formed in **2014** under the **UN Statistical Commission**, the **UN-CEBD** explores the potential of **Big Data and data science** in enhancing official statistics.

- It provides **strategic vision, coordination**, and direction for implementing global programs on **Big Data** for statistical purposes.

Focus Areas:

- Promoting the use of **Big Data** to monitor progress toward achieving the **Sustainable Development Goals (SDGs)**.

- Addressing challenges and opportunities posed by **Big Data technologies** in statistics.

UN Statistical Commission:

Overview:

- Established in **1946** by the **UN Economic and Social Council (ECOSOC)**, the **UN Statistical Commission (UNSC)** is the **highest decision-making body** for international statistical activities.

- It develops **statistical standards** and methodologies while overseeing their implementation at the **national and international levels**.

Composition:

- Comprises **24 member countries**, elected by the **United Nations Economic and Social Council** to ensure **equitable geographical representation**.

What is Big Data?

Definition:

Big Data refers to massive and complex datasets that traditional tools cannot efficiently process or analyze.

Key Characteristics (3Vs):

1. **Volume**: Enormous quantities of data generated from sources like **social media, sensors, and transactions**.

2. **Velocity**: High-speed generation and processing of data in real time.

3. **Variety**: Diverse data formats, including **structured, unstructured, and semi-structured data**.

Additional Dimensions:

- **Veracity**: Reliability and quality of data.

- **Value**: Insights and actionable intelligence derived from data.

Significance of India's Membership:

- India's participation in the **UN-CEBD** reinforces its commitment to using **data science** for improving **official statistics**.

- It provides an opportunity for India to:
    - Collaborate on **global data initiatives**.
    - Contribute to the development of **statistical frameworks**.
    - Address key challenges in monitoring **Sustainable Development Goals (SDGs)**.

Conclusion:

India's inclusion in the **UN-CEBD** represents a significant step toward **modernizing statistical practices** and harnessing the potential of **Big Data and data science**. By playing a proactive role in this global initiative, India will help set standards that align with the evolving demands of data-driven decision-making and sustainable development.

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Gen Beta is Here: Understanding Generations and Their Unique Characteristics

Context: A generational shift is upon us. Starting from **January 1, 2025**, children born until **December 31, 2039**, will belong to a new era: **Generation Beta**. This cohort follows the **Alpha Generation**, marking a continuation of evolving societal norms and technological advancements.

What is Generation Beta (2025–2039)?

- **Successors to Generation Alpha**: Generation Beta will follow **Gen Alpha**, also known as the **iPad Generation**, born between **2010 and 2024**.

- **Parental Lineage**: They will primarily be the children of **younger Millennials** and **older Gen Zers**.

- **Naming Origin**: The name "Beta" derives from the **Greek alphabet**, continuing the trend started with **Gen Alpha**, a term introduced by demographer **Mark McCrindle**.

What Defines a Generation?

- A **generation** refers to a group of individuals born in the same time frame, sharing similar experiences and influences.

- The concept gained prominence through **Karl Mannheim's 1928 paper**, *The Problem of Generations*.

- **Cohort**: A subgroup within a generation that experiences specific historical or cultural events, influencing shared values and beliefs.

How Are Generations Named?

Generational names often reflect key societal or historical changes:

1. **Baby Boomers**: Named after the post-**World War II** baby boom.

2. **Millennials**: Referring to those reaching adulthood around the turn of the millennium.

3. **Greek Alphabet**: Recently adopted for naming, starting with **Generation Alpha** (2010–2024).

Notable Generations and Their Traits:

1. Baby Boomers (1946–1964):

- **Historical Context**: Born during a time of post-war optimism and significant population growth.

- **Indian Perspective**: Experienced the **Emergency**, wars, and socialist policies.

- **Traits**: Idealistic, competitive, with a strong sense of independence and mistrust of authority.

2. Generation X (1964–1979):

- **Identity**: Known for skepticism, with "X" symbolizing a break from traditional norms.

- **Influences in India**: Economic reforms, the rise of telecommunications, and early IT growth.

- **Nickname**: Called the "**Sandwich Generation**" for balancing care for aging parents (Boomers) and children (Gen Z).

3. Millennials or Gen Y (1980–1995):

- **Technology Revolution**: Witnessed the dawn of the internet and technological breakthroughs.

- **Key Events**: Shaped by events like **9/11** and the rise of school violence, fostering a "live in the moment" attitude.

- **Traits**: **Tech-savvy**, socially conscious, and prioritizing **work-life balance**.

4. Generation Z (1996–2010):

- **Digital Natives**: Grew up entirely in the age of **social media** and smartphones.
- **Challenges**: Lived through the **2007 financial crisis**, fostering resilience.
- **Advocacies**: Mental health, environmental sustainability, and social justice.

5. Generation Alpha (2010–2024):

- **Social Media Natives**: This generation has only known a world dominated by digital platforms.
- **Impact of COVID-19**: The pandemic shaped their formative years.
- **Focus Areas**: Strong emphasis on **inclusion**, **sustainability**, and **mental health awareness**.

What Can We Expect from Generation Beta?

- **Inheriting Global Challenges**: Climate change, urbanization, and socio-economic inequality will define their environment.
- **AI-Driven World**: They will grow up in a world where **artificial intelligence** and **automation** are seamlessly integrated into everyday life.
- **Traits and Values**: Likely to emphasize **adaptability**, **hyper-connectivity**, and **sustainability**.

Conclusion:

As **Generation Beta** emerges, they will represent the next wave of cultural and technological evolution. Defined by their **hyper-connected lives**, they will shape the future while tackling inherited challenges. Each generation leaves its mark, and **Gen Beta** promises to be no exception.

New National Museum in Delhi: A Glimpse into India's Timeless Legacy

Context: As part of the **Central Vista redevelopment plan**, the iconic **North and South Blocks** in New Delhi are being transformed into the country's most prestigious museum, **'Yug Yugeen Bharat'**—symbolizing **Eternal India**. This ambitious project is a step toward preserving and showcasing India's rich heritage while modernizing urban spaces.

About 'Yug Yugeen Bharat'

- **Symbolism**: The name translates to "Eternal India," capturing the essence of India's continuous civilizational journey.

- **Collaboration with France**: India has partnered with France, signing a **Memorandum of Understanding (MoU)** to develop the museum, drawing inspiration from globally renowned cultural projects like the **Louvre Museum**.

- **Architectural Significance**: The transformation of the North and South Blocks represents a perfect blend of **modern innovation** and **architectural preservation**.

Key Features of the Museum:

1. Chronological and Thematic Displays:

- **North Block**: Artefacts will be arranged **chronologically** across **250 galleries**, narrating the story of India's historical evolution.

- **South Block**: This space will feature **thematic displays**, covering subjects such as **literature**, **architecture**, **art**, and **culture**.

2. Immersive and Educational Spaces:

- **Augmented Reality (AR) Galleries**: Visitors can experience artefacts in an **interactive, digital format**, blending history with modern technology.

- **Learning Zones**: The museum will house **educational centres** and **children's corners**, fostering curiosity and learning among young minds.

3. Largest Collection:

With **25,000–30,000 artefacts**, the museum aims to become the **largest cultural repository in the world**, surpassing many global counterparts in scale and diversity.

Adaptive Reuse: A Sustainable Transformation:

- **Retrofitting for Cultural Heritage**: The North and South Blocks are being **repurposed** into world-class museum spaces, retaining their **colonial architectural charm** while adapting them to modern requirements.

- **Global Inspiration**: The approach draws parallels with France's **'Grand Projects'** initiative, which converted historic government buildings like the **Louvre Museum** and the **Grand Palais** into cultural landmarks.

Office Relocation and Space Utilization:

- **Current Offices in North Block**: Houses the Ministries of **Finance** and **Home Affairs**.

- **Current Offices in South Block**: Includes the **Prime Minister's Office**, Ministry of **Defence**, and Ministry of **External Affairs**.

- These offices are being relocated to the **Common Central Secretariat (CCS)** on **Janpath**, making way for the museum's construction.

Additional Insights:

Historical Significance of the North and South Blocks:

- Designed by British architects **Herbert Baker** and **Edwin Lutyens** in the **1920s**, these structures have been at the heart of India's governance.

- The transformation into a museum marks the beginning of a new chapter in the buildings' legacy, ensuring their relevance for future generations.

Why This Museum Matters:

- **Global Benchmark**: Once completed, it will set a **new benchmark** in the world of museums, showcasing India's vast heritage on an unprecedented scale.

- **Cultural Diplomacy**: Collaborating with France strengthens India's cultural ties with one of the world's leading nations in **museum development**.

- **Public Engagement**: By integrating **technology and education**, the museum aims to become a hub for learning and global tourism.

Fact Corner:

- **Largest Museum in the World**: The Louvre Museum in Paris currently holds this title, with **380,000 artefacts**.

- **India's Current Largest Museum**: The **Indian Museum in Kolkata**, founded in **1814**, houses **over 100,000 objects**.

- **Significance of Central Vista**: This redevelopment project includes **new government offices**, the **Parliament building**, and the museum, reflecting India's **aspirational growth** while respecting its historical roots.

Conclusion:

The **'Yug Yugeen Bharat' Museum** is not just a cultural initiative—it's a testament to India's vision of balancing **modernity and tradition**. By preserving the architectural legacy of the **North and South Blocks** while showcasing the country's rich heritage, this project promises to redefine **India's cultural identity** on the global stage.

Should Voter IDs Be Linked with Aadhaar?

Context: The proposal to link **Voter IDs** with **Aadhaar cards** has sparked intense debate in India, with arguments highlighting both its potential benefits and risks. While the move aims to improve electoral integrity, it raises concerns about privacy, security, and legal implications.

Background:

- In **2015**, the **Election Commission of India (ECI)** introduced the **National Electoral Rolls Purification and Authentication Program (NERPAP)** to address duplicate and fraudulent voter entries.

- This program aimed to link **Voter IDs** (EPIC) with **Aadhaar** for better authentication.

- However, the **Supreme Court** intervened, restricting Aadhaar's mandatory use to welfare schemes and **PAN** linking, halting NERPAP.

- In **2021**, the **Representation of the People Act, 1950**, was amended to permit the **voluntary linking** of Voter IDs with Aadhaar to enhance the accuracy of electoral rolls.

Why Link Voter IDs with Aadhaar?

1. **Eliminating Duplicate and Fraudulent Entries:**

- Linking Voter IDs with Aadhaar, which relies on **biometric authentication**, can reduce duplicate or fake voter entries across constituencies.

- The **Election Laws (Amendment) Act, 2021**, empowers electoral officers to request Aadhaar for identity verification.

2. **Enhancing Electoral Roll Accuracy:** Regular Aadhaar-based verification ensures that electoral rolls remain accurate and updated.

3. **Administrative Efficiency:** With over **99% of Indian adults possessing Aadhaar**, linking the two can streamline voter verification, reducing time and costs.

4. **Supporting Voter Mobility:** Aadhaar linkage can simplify the process for voters relocating to new regions or states by updating their voter registration details easily.

5. **Future Innovations:** Aadhaar integration could pave the way for **remote voting** options, enabling migrant workers and others living away from their constituencies to exercise their franchise.

Concerns About Linking Voter IDs with Aadhaar:

1. **Privacy and Data Security Risks:**

- Linking these databases could lead to **misuse of personal information**, particularly in the absence of a **robust data protection law**.

- It increases the risk of data breaches, voter profiling, and potential surveillance.

2. **Errors in Data and Authentication:**

- Issues in the Aadhaar database could result in the wrongful inclusion or exclusion of voters, compromising electoral fairness.

- Past instances, like in **Andhra Pradesh** and **Telangana (2015)**, saw **30 lakh voters disenfranchised** due to such errors.

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3. **Disenfranchisement Risks:** Failures in biometric authentication (up to **12% error rate**) could unfairly deprive individuals of their voting rights, violating their **Right to Vote**.

4. **Legal and Constitutional Challenges:** The **Supreme Court's 2018 Aadhaar judgment** restricted its mandatory usage to welfare schemes, questioning the legality of its use for voter verification.

5. **Citizenship Verification Issues:** Aadhaar serves as proof of **residence**, not **citizenship**. Relying on it for voter verification may not prevent non-citizens from being enrolled in electoral rolls.

6. **Centralization Risks:** Critics warn of potential misuse of centralized voter data for political gains or voter manipulation.

Current Status in India:

- Linking **Voter IDs** with Aadhaar is **voluntary**, as clarified by the ECI.

- Voters who cannot provide Aadhaar can use **alternative identification documents** to register or update their details.

- No voter will be denied registration or removed from the electoral roll due to the absence of an Aadhaar number.

Global Comparisons:

- Countries like the **United States** and **United Kingdom** use unique identifiers for voter authentication but avoid extensive, biometric-based systems like Aadhaar.

- Most nations prioritize **inclusivity** and **minimizing disenfranchisement**, focusing on voter accessibility.

Way Forward:

1. **Robust Legal Safeguards:** Enact a **comprehensive data protection law** to ensure personal data privacy and prevent misuse.

2. **Voluntary Participation:** Keep the process **optional** to avoid disenfranchisement and protect voter rights.

3. **Public Awareness Campaigns:** Educate citizens about the benefits and address concerns regarding privacy and data security.

4. **Independent Oversight:** Establish **independent audit mechanisms** to oversee the system, ensuring accountability and transparency.

5. **Technological Enhancements:** Address errors in Aadhaar data and improve biometric authentication systems to avoid wrongful exclusions.

Conclusion:

Linking **Voter IDs** with **Aadhaar** has the potential to enhance electoral roll accuracy, reduce fraud, and improve administrative efficiency. However, significant challenges related to **privacy**, **data security**, and **voter disenfranchisement** cannot be ignored.

A **balanced approach**—prioritizing **voluntary participation**, **robust legal safeguards**, and **public trust-building**—is crucial to ensure that this initiative strengthens **India's democratic processes** without undermining the fundamental rights of its citizens.

Rising Delinquencies Strain India's Microfinance Sector

Context: While the overall banking sector in India celebrates a 12-year low in **non-performing assets (NPAs)**, the **microfinance sector** is grappling with a sharp rise in delinquencies, signaling growing challenges for this vital industry.

What is Microfinance?

Microfinance refers to providing **small loans** and **financial services** to low-income groups that are excluded from traditional banking systems. It plays a critical role in fostering **financial inclusion**, especially for **entrepreneurs** and income-generation activities.

Types of Microfinance Institutions (MFIs):

1. **NBFC-MFIs:** Non-Banking Financial Companies focused on microfinance.

2. **NGOs:** Operate as non-profit organizations offering microfinance.

3. **Cooperatives:** Member-owned institutions providing credit services.

4. **Commercial Banks and Small Finance Banks (SFBs):** Provide microfinance under **priority sector lending** norms.

Current Scenario in Microfinance:

Rising Delinquencies:

- There has been a sharp rise in **Portfolio at Risk (PAR)**, indicating overdue loans (31–180 days).

- **Geographic hotspots:** States like **Bihar, Tamil Nadu, Uttar Pradesh, and Odisha** contribute to **62%** of new delinquencies.

- **SFBs** are particularly vulnerable, witnessing the highest impact.

Market Share and Growth:

- **NBFCs and banks** dominate the sector, holding **71.3%** of the total microloan portfolio.

- Despite year-on-year growth of **7.6%** in the loan book and **8.9%** in customer base, there was a quarterly decline of **4.3%** in the loan book and **1.1%** in the active customer base.

Key Factors Driving Delinquencies:

1. **Borrower Overleveraging:** Excessive borrowing from both **MFI and non-MFI sources** has left borrowers struggling to manage debt.

2. **Instances of Fraud: Fraudulent practices** and **misrepresentation** have increased operational risks for MFIs.

3. **Economic Distress: External shocks** and **income instability** have reduced borrowers' repayment capacities.

4. **Operational Challenges: High staff attrition** and inadequate borrower assessment mechanisms have further strained operations.

Impact of Rising Delinquencies:

1. **Financial Strain on MFIs:** Increased **credit costs** have affected the profitability and financial stability of microfinance institutions.

2. **Reduced Lending Capacity:** Growing **NPAs** restrict MFIs' ability to extend fresh credit, slowing down **financial inclusion** efforts.

3. **Borrower Distress:** Overburdened borrowers face **economic hardships** and risk exclusion from formal financial systems.

4. **Declining Confidence in the Sector:** Rising defaults erode **investor trust** and lender confidence, destabilizing the microfinance ecosystem.

The Way Forward:

1. **Strengthen Credit Assessment:** Implement **robust borrower profiling** and risk assessment mechanisms to prevent overleveraging.

2. **Promote Financial Literacy:** Educate borrowers about **responsible credit management** and the risks of over-borrowing.

3. **Enhance Regulatory Oversight:** Enforce **stricter supervision** to curb fraud and ensure operational accountability.

4. **Address Operational Challenges:** Improve staff retention by offering **training** and **performance-based incentives** to reduce attrition.

5. **Offer Debt Relief Measures:** Introduce **structured repayment plans** to help overleveraged borrowers regain financial stability.

Conclusion:

The rising delinquencies in India's **microfinance sector** highlight the need for a balanced and proactive approach. Strengthening credit discipline, promoting **financial education**, and ensuring **regulatory vigilance** are essential for sustaining the sector's growth.

By addressing structural weaknesses and encouraging **responsible lending practices**, the microfinance sector can continue to play a pivotal role in advancing **financial inclusion** and empowering underserved communities.

ISRO's Groundbreaking Attempt at Satellite Docking in Space

Context: The **Indian Space Research Organisation (ISRO)** is taking a monumental step by demonstrating its first-ever **space docking mission**, named **SpaDeX (Space Docking Experiment)**. This mission aims to bring two small satellites together and dock them in space, marking a significant milestone for India's space technology capabilities.

About the SpaDeX Mission:

The **SpaDeX mission** is a **cost-effective technology demonstration** focusing on mastering **in-space docking** techniques.

Key Features of SpaDeX:

1. **Dual Satellite Launch**: The mission involves two small spacecraft, **SDX01 (Chaser)** and **SDX02 (Target)**, launched aboard a **PSLV rocket**.

2. **Mission Objectives**:
   - Develop and demonstrate technologies for **rendezvous, docking, and undocking** in low-Earth orbit.
   - Showcase the use of **advanced sensors** such as **Laser Range Finder**, **Rendezvous Sensor**, and **Proximity and Docking Sensor** for precise measurements.
   - Utilize a state-of-the-art **satellite navigation-based processor** to determine the **relative position and velocity** of the satellites.

Understanding Docking:

Docking is the process of bringing two spacecraft together in orbit and joining them securely. It is a critical technology for:

- Building and maintaining **space stations**.
- Transporting crew and supplies for long-term missions.
- Enabling future missions to the **Moon** and beyond.

Historical Milestones in Docking:

- **1966**: USA's **Gemini VIII** achieved the first docking with an Agena target vehicle, piloted by Neil Armstrong.

- **1967**: The **Soviet Union's Kosmos 186 and 188** demonstrated the first automated docking.

- **2011**: China's **Shenzhou 8** docked with the **Tiangong 1 space laboratory**, followed by its first **crewed docking** in 2012.

Why Is This Mission Important for India?

1. **Advancing Space Capabilities**:
   - India plans to establish a **space station** by **2035** and conduct **lunar missions** by **2040**, requiring expertise in docking technologies.
   - The **SpaDeX mission** lays the groundwork for India's ambitious projects, including the **Bharatiya Antariksh Station (BAS)**.

2. **Chandrayaan-4 Mission**:

o Docking will play a vital role in **transporting lunar samples**, involving multiple modules launched and assembled in orbit.

3. **Global Recognition**:

   o Success in this mission will position India as the **fourth nation**, after the **US**, **Russia**, and **China**, to achieve **in-space docking technology**.

Challenges in Space Docking:

- **Precision Maneuvers**: Docking requires highly accurate adjustments in speed, alignment, and timing. Even minor deviations can result in failure.

- **Sensor Calibration**: Sensors need to be precisely tuned to ensure seamless rendezvous and docking.

- **Algorithm Refinement**: ISRO has postponed attempts twice to perfect the docking algorithms and sensor operations.

Future Vision:

The successful development of docking technology unlocks immense potential for India's space ambitions:

- **Resupplying Space Stations**: Enables the delivery of essential supplies to future manned stations.

- **Refueling Spacecraft**: Extends the operational lifespan of satellites and vehicles through in-orbit refueling.

- **Autonomous Missions**: Paves the way for fully **autonomous docking**, allowing spacecraft to operate without relying on satellite navigation data.

Conclusion:

The **SpaDeX mission** represents a giant leap forward in India's journey towards becoming a global space power. With docking technology, ISRO is not only enhancing its technological prowess but also ensuring its readiness for future missions that involve **complex space assembly** and **deep space exploration**.

GS Paper 3 – Disaster Management

Pink Fire Retardant in California Wildfires: Effectiveness and Concerns

Context: Southern California is battling wildfires, prompting the use of **planes and helicopters** to combat the flames. Notably, **nine planes are spraying pink fire retardant**, while 20 helicopters are dropping water.

Though fire retardant has been used for decades, **recent studies question its effectiveness and environmental impact**, adding urgency to the ongoing debate.

What Is Pink Fire Retardant?

Understanding Fire Retardant:

Fire retardant is a **chemical mixture** designed to **slow or stop wildfires**. The most widely used brand in the U.S. is **Phos-Chek**, a product engineered for strategic wildfire management.

Key Ingredients of Phos-Chek:

- **Water**
- **Fertilizer**: Mainly **ammonium phosphate**
- **Rust-based red dye**
- **Thickening agents** to control viscosity

The **active ingredient**, ammonium phosphate, cools fuels, depletes oxygen, and creates a protective barrier, making it highly effective in slowing fires. Unlike water, it remains effective for longer durations.

How Does It Work?

- Reacts with **plant cellulose**, producing non-flammable carbon material.
- Reduces fire spread by consuming heat and **coating fuels**.
- Strategically applied to create **fire barriers** that can last for **days or weeks**, even after water evaporates.

Why Is It Pink?

The pink dye enhances **visibility** against the landscape, allowing firefighters to **accurately create fire lines**. Experts selected pink for its **visibility and aesthetic appeal**.

Concerns About Fire Retardant Use

Environmental Impact:

- Aerial spraying of fire retardant has been criticized for being **ineffective and costly**.
- It releases **pollutants**, including **toxic metals** like chromium and cadmium, into rivers and streams, harming **aquatic life** and potentially causing **serious health risks** such as **cancer, kidney, and liver diseases**.

Effectiveness in Question:

- The success of aerial fire retardants depends on variables such as **terrain, weather, and fuel type**, making it difficult to measure their true effectiveness.
- Forest Service scientists highlight that retardants are **only effective under specific conditions**, which are becoming rarer due to **climate change**.

Increased Use Amid Rising Wildfires:

- As global temperatures rise, **wildfires are intensifying**, leading to a surge in the use of aerial fire retardants.

- From 2009 to 2021, over **440 million gallons** of retardant were deployed in the U.S., releasing more than **400 tons of heavy metals** into the environment.

Ongoing Debate:

- **Environmental experts, government agencies, and manufacturers** remain divided over the **safety and sustainability** of fire retardants. The debate continues as wildfires grow more frequent and severe.

Final Thoughts:

While pink fire retardant is a widely used tool in combating wildfires, its **environmental and health impacts** raise significant concerns. As climate change intensifies wildfires, the **balance between effectiveness and ecological harm** remains a critical issue.

Kumbh Mela 2025: A Spiritual Festival with Deep National Significance

Context: The **Maha Kumbh Mela 2025**, one of the largest religious gatherings in the world, is set to begin on **January 13, 2025**, in Prayagraj with the first **holy bath (snan)**.

Expected to attract over **45 crore devotees** over 45 days, this grand festival holds immense spiritual and cultural significance. While its origins are debated—ranging from ancient scriptures like the **Vedas** and **Puranas** to modern interpretations—it remains a unifying event for millions.

The Kumbh Mela: A Festival Rooted in Mythology:

Origin of the Word and Festival:

The Sanskrit word **"Kumbh"** means **pitcher** or **pot**. According to Hindu mythology:

- During the **churning of the ocean (Samudra Manthan)** by Devas (gods) and Asuras (demons), the celestial physician **Dhanvantri** emerged with a **pitcher of amrita (elixir of immortality)**.

- To prevent the Asuras from claiming the amrita, **Jayant**, the son of Indra, fled with the pot, protected by the **Sun**, **Shani (Saturn)**, **Brihaspati (Jupiter)**, and the **Moon**.

- Over the course of **12 divine days** (equivalent to 12 human years), drops of amrita spilled at four locations:
    1. **Haridwar**
    2. **Prayagraj**
    3. **Ujjain**
    4. **Nashik-Trimbakeshwar**

These four sacred sites now host the **Kumbh Mela** every 12 years, based on celestial alignments.

Types of Kumbh Mela:

1. **Maha Kumbh (Poorna Kumbh)**: Held every 12 years.
2. **Ardh-Kumbh**: Held every 6 years in Prayagraj and Haridwar.

Sacred Rivers and Their Significance:

Each Kumbh Mela is held on the banks of sacred rivers:

- **Haridwar**: River **Ganga**

- **Prayagraj**: Confluence of **Ganga**, **Yamuna**, and mythical **Saraswati**

- **Ujjain**: River **Kshipra**, associated with Vishnu's Varah avatar

- **Nashik-Trimbakeshwar**: River **Godavari**, revered as the "Ganga of the South"

Bathing in these rivers during the Kumbh, under specific celestial alignments, is believed to **cleanse sins** and grant **spiritual merit (punya)**.

The Astrological Significance:

The timing and location of the Kumbh Mela are determined by the **positions of Jupiter, the Sun, and the Moon**.

- **Jupiter's 12-year revolution** explains the 12-year interval between Kumbh Melas.

- Specific **astrological alignments** at each site guide the festival's occurrence.

Historical References to Kumbh Mela:

Ancient Texts and Myths:

- The **Skanda Purana** mentions the churning of the ocean but does not explicitly describe the modern festival.

- Some scholars believe the **Rig Veda** contains hymns extolling the benefits of attending sacred river festivals.

Xuanzang's Account:

The **Chinese traveler Xuanzang** described a grand bathing festival at Prayag in the 7th century CE. While unclear if it was the Kumbh Mela, it highlights the region's importance as a sacred site.

Adi Shankaracharya's Influence:

The 8th-century philosopher **Adi Shankaracharya** is credited with formalizing the four Kumbh sites, transforming them into **periodic spiritual gatherings** for ascetics and scholars to guide the public.

How Kumbh Mela Became a Nationalist Platform:

Allahabad as a Cultural and Political Center:

Post-1857, Allahabad (Prayagraj) emerged as a **political and administrative hub** under British rule. The establishment of institutions like the **High Court (1867)** and **Allahabad University (1887)** made it a focal point for intellectual and nationalist activity.

Religious Festivals and Nationalism:

During the late 19th and early 20th centuries:

- Nationalist leaders like **Bal Gangadhar Tilak** and **Gopal Krishna Gokhale** used religious festivals like the Kumbh Mela to promote **Swadeshi** and nationalist ideas.

- The British policy of **non-interference in religion** allowed these gatherings to become platforms for political mobilization.

Congress and Religious Leaders:

By the 1930s:

- The **Congress Party** actively utilized Kumbh Melas to spread nationalist messages.

- **Sadhus and ascetics** played a pivotal role, blending religious authority with nationalist ideals.

- Events like the **1936 Ardh Kumbh** featured displays such as the idol of **Bharat Mata**, symbolizing the fusion of spiritual devotion and patriotism.

Conclusion:

The **Kumbh Mela** is much more than a spiritual gathering. Over centuries, it has evolved into a symbol of **unity, cultural heritage, and national pride**. During the freedom struggle, it became a potent platform for spreading nationalist ideas, shaping its legacy as a socio-religious event of immense significance.

In 2025, as millions gather in Prayagraj, the Maha Kumbh will once again remind us of its timeless role in fostering both **spiritual growth** and **national identity**.

Centre-State Clashes on Vice Chancellor Appointments

Context: The **University Grants Commission (UGC)** has introduced a draft of new regulations to standardize the appointment of Vice Chancellors in universities. These proposals, however, have sparked disputes between the Centre and states, with allegations of undermining **state autonomy** and violating principles of **federalism**.

Understanding VC Appointments:

Central Universities:

- Governed by Acts of Parliament and overseen by the Centre, with the **President of India** serving as the **Visitor**.

- Appointment committees include:

  o Two nominees from the university's **Executive Council**

  o One nominee from the **Visitor**

State Universities:

- **State-specific laws** determine the structure of search committees.

- Generally, the **Chancellor** (often the **Governor**) appoints the VC based on recommendations.

- Example: In **Kerala**, the committee includes nominees from the **university Senate**, **UGC Chairman**, and the **Chancellor**.

Private Universities:

- Private institutions follow similar appointment procedures, with the **UGC** playing a limited role by nominating a representative to the committee.

Key Features of the Draft UGC Regulations 2025:

1. **New Committee Composition:**

   o The **search-cum-selection committee** will now include three members:

     ▪ One nominated by the **Chancellor/Visitor**

     ▪ One by the **UGC Chairman**

     ▪ One by the **university's apex body** (e.g., Senate or Syndicate).

   o This structure gives a **majority** to **Centre-aligned nominees**, raising state concerns.

2. **Expanded Eligibility:**

   o Beyond academic professors, individuals from **senior roles in industries**, **public policy**, **administration**, or **public sector undertakings** can now qualify as VCs.

3. **Chancellor's Role:**

   o The **Chancellor/Visitor** will directly constitute the search committee, marking a shift from the 2018 guidelines, where states had more influence.

Centre vs State: The Battle Over VC Appointments

Kerala:

- Disputes began in **2021** when **Governor Arif Mohammad Khan** challenged VC reappointments.

- The state legislature passed a **Bill to replace the Governor as Chancellor**, but it is awaiting Presidential approval.

West Bengal:

- The **Supreme Court** is hearing disputes over interim VC appointments made by the Governor without consulting the state.

- A Bill to replace the Governor with the **Chief Minister as Chancellor** is stalled due to lack of assent.

Karnataka:

- Proposed laws aim to remove the Governor's role as Chancellor, but these await approval.

Maharashtra:

- The new government in **2022** reversed efforts to limit the Governor's authority in VC appointments.

Tamil Nadu:

- The **DMK government** has pushed to bypass the Governor's approval in VC selections, but its efforts remain blocked.

Federalism Concerns Over VC Appointments:

Erosion of State Autonomy:

- States argue that the new regulations centralize power in Governors, reducing the influence of **state governments**.

Democratic Concerns:

- Critics view this move as a challenge to **democratically elected state governments** and their authority in education.

Reactions from State Leaders:

- **Kerala CM Pinarayi Vijayan**: Described the draft as **"anti-federal"** and a violation of state rights.

- **Tamil Nadu CM M K Stalin**: Termed the proposal a **"direct assault on federalism"**.

UGC's Defense:

- **UGC Chairman M Jagadesh Kumar** justified the reforms, stating they align with the **National Education Policy 2020** and aim to ensure **transparent and high-quality leadership** in higher education.

Conclusion:

The proposed UGC regulations have deepened Centre-state tensions, especially regarding the role of Governors in **university governance**.

While the Centre views these reforms as essential for improving education standards, states see them as a threat to **federalism** and **state autonomy**.

The resolution of these disputes will not only shape **higher education policies** but also redefine the **Centre-state relationship** in India's governance.

United Nations World Economic Situation and Prospects 2025

Context: The **United Nations (UN)** flagship report, *World Economic Situation and Prospects 2025*, forecasts that the **Indian economy** will grow by **6.6% in 2025** and **6.7% in 2026**. This growth is expected to be a major driver for the **South Asian region**, highlighting India's pivotal role in the global economic landscape.

About the Report:

The **World Economic Situation and Prospects 2025** is a comprehensive analysis prepared by:

- The **United Nations Department of Economic and Social Affairs (UN DESA)**
- In collaboration with **UN Trade and Development (UNCTAD)**
- And the **five UN regional commissions**

This report offers insights into **global economic trends**, with a focus on **regional and national growth prospects**.

Key Highlights from the Report:

1. **Global Growth Trends:**
   - **Global economic growth** is projected to remain at **2.8% in 2025**, unchanged from 2024.
   - Investments in **infrastructure development** are expected to have strong **multiplier effects**, boosting economic activity in the coming years.

2. **India's Growth Outlook:**
   - The **Indian economy** will expand by **6.6% in 2025** and **6.7% in 2026**, driven by:
     - Growth in the **manufacturing** and **services sectors**.
     - Strong **export performance** in areas like **pharmaceuticals** and **electronics**.
   - Favorable **monsoon rains** in 2024 have enhanced agricultural prospects, improving **crop output expectations** for 2025.

3. **South Asia's Economic Prospects:**
   - South Asia is predicted to grow at **5.7% in 2025** and **6% in 2026**, with **India** leading the charge.
   - India's strong performance will be pivotal for the **region's economic resilience**.

4. **Opportunities for Resource-Rich Economies:**
   - Developing countries with abundant natural resources, like **India**, can leverage the rising demand for **critical minerals** to:
     - Boost **economic growth**
     - Generate **employment**
     - Increase **public revenues** for infrastructure and social investments.

Conclusion:

The *World Economic Situation and Prospects 2025* underscores the **resilience of India** and **South Asia**, even amidst global economic challenges. With robust **capital investment**, expanding **exports**, and promising **agricultural output**, India is well-positioned to lead the region's growth trajectory.

This report also highlights opportunities for resource-rich nations to harness **critical mineral demand**, presenting a path for sustainable development and economic prosperity.

Combat Air Teaming System (CATS) Programme: Advancing India's Air Combat Capabilities

Context: Hindustan Aeronautics Limited (HAL) has achieved a significant milestone in its pioneering **Combat Air Teaming System (CATS)** programme by successfully completing the **engine ground run** of the **CATS-Warrior Loyal Wingman**, a full-scale demonstrator.

What is the CATS Programme?

The **Combat Air Teaming System (CATS)** represents a transformative step in integrating **manned and unmanned combat aircraft systems**. Its primary aim is to develop advanced platforms capable of:

- **High-altitude surveillance** as atmospheric satellites.

- **Autonomous deep-penetration precision strikes** from safe standoff distances.

- Enhancing battlefield awareness and operational efficiency while minimising risks to human life.

Key Components of the CATS Programme:

To achieve its ambitious goals, the **CATS programme** incorporates multiple platforms, each designed for a specific combat role:

1. **CATS-Warrior (Loyal Wingman UCAV):**
   - A **stealth unmanned combat aerial vehicle (UCAV)** designed to operate alongside manned fighter jets as a loyal wingman.
   - Equipped with **Smart Anti-Airfield Weapons (SAAWs)** and **Next-Generation Close Combat Missiles (NG CCMs)** in internal weapon bays for enhanced strike and self-defence.
   - Features stealth technology to evade enemy radars and air defence systems.
   - Capable of deep penetration up to **700 km** into enemy territory for precision strikes.

2. **CATS-Hunter (Low-Observable Cruise Missile):**
   - An air-launched cruise missile designed for precision strikes deep within enemy territory.
   - Comparable to the **SCALP missile** used in the Indian Air Force's Rafale jets.

3. **ALFA-S Swarm Drones:**
   - Released from a **carrier pod** mounted on the mothership, these drones perform air-to-ground and air-to-air missions.
   - Functions include neutralising enemy air defence systems.
   - **Tejas Light Combat Aircraft (LCA)** can carry three pods (12 drones), while **Su-30MKIs** can carry up to four pods (16 drones).

4. **CATS-Infinity Pseudo Satellite:**
   - A **solar-powered pseudo satellite** operating at an altitude of **70,000 feet** with an endurance of up to **90 days**.
   - Acts as a bridge between satellites and UAVs for high-altitude surveillance and tracking targets.
   - Features advanced sensors and **synthetic aperture radar** for intelligence gathering.

o Supports **4G and 5G communication networks**, enhancing military communication systems.

Tejas as the Mothership:

The **Tejas Light Combat Aircraft (LCA)** serves as the central command or "mothership" for the **CATS-Warrior** and other autonomous platforms. This synergy enables the efficient coordination of multiple aerial systems, ensuring superior combat efficiency.

Conclusion:

The **CATS programme** showcases India's leap towards **next-generation aerial warfare technology**, combining cutting-edge advancements in **autonomous systems**, **stealth capabilities**, and **high-altitude surveillance**. With platforms like **CATS-Warrior**, **CATS-Hunter**, and **Infinity Pseudo Satellite**, the programme strengthens India's position as a global leader in air combat innovation.

How Temple Traditions Impact Elephant Welfare and Wild Captures

Context: The use of elephants in religious ceremonies has sparked significant debate over **animal welfare**, **public safety**, and **wild captures**. A recent incident in Malappuram, Kerala, where a distressed elephant injured 24 people during a mosque feast, has reignited these discussions, especially amidst ongoing legal disputes.

Key Statistics:

- Kerala reported **24 captive elephant deaths** in 2024 and **154 deaths** since 2019.

- Between 2011 and 2023, captive elephants killed **196 people** at festivals.

- The **Supreme Court** recently invoked *volenti non fit injuria* (voluntary assumption of risk), stating that devotees attending festivals with elephants accept inherent risks.

Court Stances on Elephant Use:

Kerala High Court's Intervention:

In November 2024, the Kerala High Court mandated strict safety measures for festivals involving elephants:

- **3 meters** between elephants.

- **5 meters** between an elephant and flaming torches.

- **8 meters** between elephants and the public or percussion displays.

- **100 meters** between elephants and fireworks.

These measures, intended to prevent overcrowding, effectively limited the number of elephants used during festivals.

Impact on Thrissur Pooram:

The iconic **Thrissur Pooram** festival, initiated in the late 18th century, faced challenges adhering to these guidelines. Organizers deemed the **3-meter distance rule** impractical and escalated the matter to the Supreme Court.

Supreme Court's Decision:

- The **Supreme Court** stayed the Kerala HC order, emphasizing that courts should not legislate.

- It reinstated the **Kerala Captive Elephants (Management and Maintenance) Rules, 2012**, which are often flouted, as evidenced by incidents like parading five elephants within confined spaces.

Suffering of Elephants in Religious Ceremonies:

Lack of Choice for Elephants:

Unlike devotees who voluntarily attend festivals, **elephants are forced into stressful and dangerous environments**.

- The elephant involved in the Malappuram tragedy had a history of aggression and was reemployed after a brief break.

Health and Stress Impacts:

A 2019 study by the **Center for Cellular and Molecular Biology (CCMB)** revealed alarming stress levels in elephants participating in festivals:

- **Stress hormones** (glucocorticoid metabolites) led to issues like **hyperglycemia**, **suppressed immunity**, and **neuronal cell death**.
- Captive elephants in forest camps or zoos had lower stress compared to those in festivals.

Visible Signs of Distress:

- **Stereotypic behavior**: Head bobbing, weaving, and swaying due to monotony and mental distress.
- **Physical strain**: Kneeling, trunk-lifting, and prolonged standing exacerbate health issues.
- **Noise and light exposure** worsen their agony during ceremonies.

Continued Wild Captures Despite Legal Protections:

Legal Restrictions:

- The **1977 ban on capturing wild elephants** remains, except for treating animals unfit for the wild.
- **Trading captive elephants** was banned in 1986, but loopholes persist, such as gifting elephants to temples.

Challenges:

- **Ineffective breeding**: Captive breeding is rare due to challenges in managing aggressive male elephants during musth.
- **Illegal practices**: Wild elephants are falsely registered as captive-bred by tampering with microchips.

Exploiting Human-Wildlife Conflicts:

Man-elephant conflicts provide a pretext for capturing wild elephants. Politicians often propose relocating "problem elephants" to temples, perpetuating the cycle of captivity.

The Way Forward:

Wildlife Act Amendment (2022):

The amendment allows the central government to frame rules for transferring elephants for "religious and other purposes." This provision risks undoing decades of conservation efforts.

DNA Mapping for Better Regulation:

- In 2022, the Centre launched **DNA profiling** of captive elephants to identify bloodlines and improve regulation.
- In six months, **270 elephants** were genotyped, marking a step towards transparency.

Balancing Culture and Welfare:

Elephants are deeply entrenched in Kerala's cultural and religious traditions, making their removal from festivals challenging. A balanced approach is necessary:

- **Leveraging cultural pride** to promote elephant welfare.
- Implementing and expanding Kerala High Court's safety measures.
- **Judicial guidance**, rather than legislation, to ensure safer practices while respecting traditions.

Conclusion:

The use of elephants in religious ceremonies highlights the conflict between **tradition, safety, and animal welfare**. While festivals symbolize cultural heritage, ensuring the **well-being of these majestic animals** is crucial. By adopting balanced measures and stricter regulations, India can honor its traditions without compromising the dignity and safety of elephants.

Z-Morh Tunnel: Unlocking Year-Round Access to Ladakh and Sonamarg

Context: Prime Minister **Narendra Modi** recently inaugurated the **6.5-km Z-Morh Tunnel** in Jammu and Kashmir's Ganderbal district.

Constructed at a cost of **2,400 crore**, the tunnel ensures **seamless connectivity** between **Gagangir** and **Sonamarg**, improving accessibility to **Ladakh** and enhancing summer travel options.

The project, managed by the **National Highways and Infrastructure Development Corporation Limited (NHIDCL)**, commenced in May 2015 and concluded in 2024. Recognized as an **"engineering marvel,"** the tunnel is set to be a **game changer** for the region.

Z-Morh Tunnel: Overview

About the Tunnel:

The **Z-Morh Tunnel** is a vital infrastructure project providing **year-round connectivity** between **Sonamarg** and the **Kashmir Valley**.

- It is part of the larger **Zojila Tunnel Project**, which aims to ensure uninterrupted connectivity between **Srinagar** and **Ladakh**.
- The name **"Z-Morh"** comes from the **Z-shaped roadway** that existed prior to the tunnel's construction.

Timeline and Challenges:

- **Initial Delays:** Conceived in **2012** by the **Border Roads Organisation (BRO)**, the project faced financial and administrative setbacks under its initial contractor, **Tunnelway Ltd**.
- **Retendering in 2019:** After **IL&FS** halted work in 2018 due to financial issues, the project was retendered.
- **Completion Timeline:** Originally expected to finish by **2016-2017**, delays pushed the completion of the Z-Morh Tunnel to **2024**, while the Zojila Tunnel is targeted for **December 2026**.
- **Soft Opening:** Conducted in **February 2024**, with the final inauguration delayed due to the Model Code of Conduct for Jammu and Kashmir elections.

Technological Features:

The **two-lane tunnel** incorporates cutting-edge technology for real-time updates and seamless connectivity:

- Equipped with a **7.5-meter-wide parallel escape passage** for emergencies.
- Capable of handling **1,000 vehicles per hour** at speeds of up to **70 km/h**.
- Significantly reduces travel time between **Srinagar** and **Sonamarg**, ensuring a safe and efficient journey.

Significance of the Z-Morh Tunnel:

Strategic Importance:

At an altitude of **8,650 feet**, the Z-Morh Tunnel ensures **all-weather connectivity** to the strategically important **Ladakh region**.

- Strengthens the link between Ladakh and the rest of India.
- Bypasses routes prone to **landslides** and **avalanches**, ensuring uninterrupted access.

- Alongside the Zojila Tunnel, it guarantees access to **Baltal** and Ladakh for both **civilian** and **military traffic**, enhancing mobility and strategic preparedness.

Reduced Dependence on Air Transport:

Currently, the **Indian Army** relies heavily on **Indian Air Force** aircraft to supply forward positions in Ladakh.

- The Z-Morh Tunnel enables **cost-effective road transportation** of troops, equipment, and supplies, reducing reliance on air operations.
- This shift extends the operational lifespan of military aircraft and eases logistical challenges.

Defense and Geopolitical Benefits:

In a region marked by tensions with **Pakistan** and **China**, the tunnel enhances India's **defense posture**.

- Improved road access allows for faster deployment and better logistical support to critical areas like the **Siachen Glacier**, **Turtuk sub-sector**, and other border posts.

Boost to Winter Tourism:

The Z-Morh Tunnel transforms **Sonamarg** into a **year-round tourist destination** by overcoming snowfall-related disruptions.

- Facilitates **winter tourism**, **adventure sports**, and **economic growth**.
- Opens possibilities for developing Sonamarg as a **premier skiing destination**, complementing **Gulmarg**.

Economic Impact:

- **All-weather access** boosts local livelihoods by expanding tourism and creating opportunities for winter sports infrastructure.
- Contributes significantly to the region's **economic development** by attracting investment and increasing visitor numbers.

Conclusion:

The **Z-Morh Tunnel** is more than just a road—it's a **gateway to progress**. By enhancing **connectivity**, improving **defense preparedness**, and fostering **economic growth**, the tunnel ensures that Ladakh and Sonamarg are not just accessible but **thriving year-round**. With the **Zojila Tunnel** on the horizon, the region is poised for transformative change, bridging the gap between tradition and modernity.

Environment Protection (End-of-Life Vehicles) Rules, 2025

Context: The **Ministry of Environment, Forest & Climate Change** has recently notified the **Environment Protection (End-of-Life Vehicles) Rules, 2025**, under the **Environmental Protection Act, 1986**. These rules, which are set to come into effect on **April 1, 2025**, are a significant step towards managing **End-of-Life Vehicles (EoLV)** in an environmentally responsible manner.

An **End-of-Life Vehicle (EoLV)** refers to any vehicle that is no longer validly registered or has been declared unfit by **Automated Fitness Centres**, or whose registration has been canceled.

Key Highlights of the EoLV Rules:

Applicability:

The rules apply to:

- **Producers** involved in vehicle manufacturing
- **Registered owners** of vehicles
- **Registered Vehicle Scrapping Facilities (RVSF)**
- **Automated Testing Stations** that perform vehicle inspections
- Entities responsible for **handling**, **processing**, and **scrapping** EoLVs.

Exceptions:

The rules **do not apply** to:

- **Waste batteries** (covered under the **Battery Waste Management Rules, 2022**)
- **Plastic packaging** (covered under the **Plastic Waste Management Rules, 2016**)
- **Waste tyres** and **used oil** (covered under the **Hazardous and Other Wastes (Management and Transboundary Movement) Rules, 2016**)
- **E-waste** (covered under the **E-Waste (Management) Rules, 2022**)

Responsibilities of Producers and Registered Owners:

Producer's Responsibilities:

- Producers must comply with the **Extended Producer Responsibility (EPR)** framework, either by:
    o Purchasing **EPR certificates** generated by their own RVSF
    o Obtaining EPR certificates from any entity possessing an RVSF.
- The **EPR certificates** will be issued by the **Central Pollution Control Board (CPCB)** via a centralized **online portal** in favor of the **RVSF**.

Registered Owner and Bulk Consumer Responsibilities:

- Registered owners and bulk consumers are required to deposit their **End-of-Life Vehicles (EoLV)** at any of the producer's **designated sales outlets**, **Collection Centres**, or an **RVSF** within **180 days**.

Implementation and Oversight:

Implementation Committee:

To ensure the effective implementation of the **End-of-Life Vehicles Rules**, the **Central Government** has constituted an **Implementation Committee**, chaired by the **Chairman of CPCB**. This committee will oversee the progress and ensure compliance across all relevant sectors.

Conclusion:

The **Environment Protection (End-of-Life Vehicles) Rules, 2025** are a crucial initiative aimed at managing the growing issue of vehicle disposal and ensuring environmentally sustainable practices in the handling of **End-of-Life Vehicles**. By establishing clear responsibilities for producers and vehicle owners and setting up a framework for **Extended Producer Responsibility (EPR)**, these rules are poised to make a significant impact on waste management and environmental conservation.

Odisha Joins the Ayushman Bharat PM-JAY Scheme as 34th State

Context: Odisha has recently become the **34th state** to implement the **Ayushman Bharat Pradhan Mantri Jan Arogya Yojana (AB PM-JAY)**. This move will benefit millions in the state by providing comprehensive healthcare coverage.

The **AB PM-JAY** scheme in Odisha will be implemented in **convergence** with the existing **Gopabandhu Jan Arogya Yojana**, ensuring a wider reach and better healthcare access for the people of the state.

Under this scheme, families will receive coverage of **Rs. 5 lakh** per year, with an **additional Rs. 5 lakh** coverage specifically for **women members**.

About Ayushman Bharat PM-JAY:

Ayushman Bharat PM-JAY is the world's **largest health insurance/assurance scheme**, launched in 2018 by the **Ministry of Health & Family Welfare (MoH&FW)** under the **Ayushman Bharat** initiative. Its primary goal is to achieve **Universal Health Coverage (UHC)** for the nation.

Key Objectives:

- **Target:** To cover **12 crore families** (approximately **55 crore beneficiaries**).
- **Implementing Agency: National Health Authority (NHA)**, an autonomous body under MoH&FW.
- **Funding Pattern:**
  o Fully financed by the government.
  o **60:40** ratio for states (with **90:10** for **Northeastern States** and **Himalayan states** like **Himachal Pradesh**, **Uttarakhand**, and **J&K**).
  o For **UTs with legislature**, the funding follows the same ratio, and for **UTs without legislature**, the **Central government** covers **100%** of the cost.

Key Features and Benefits of AB PM-JAY:

- **Coverage:**
  o Provides **cashless hospital cover** of **Rs. 5 lakh** per family per year for **secondary and tertiary care** in both **public and private empanelled hospitals**.
  o Covers expenses for **up to 3 days of pre-hospitalization** and **15 days post-hospitalization**, including diagnostics and medicines.
- **Special Provision for Senior Citizens:**
  o In 2024, the **Union Cabinet** approved an expansion to include all **senior citizens aged 70 and above** under the scheme.
- **Focus on Women:**
  o Women members of the family are eligible for an **additional Rs. 5 lakh** cover, enhancing the benefits of the scheme.

Status and Progress of PM-JAY:

- **Digitization and Reach:**
  o The scheme is **fully digitized** and has reached approximately **45%** of India's population.

- **Hospital Admissions:**
  - Since its inception, **8.19 crore hospital admissions** have been recorded.
  - **Rs. 1.13 lakh crore** has been spent to provide healthcare to marginalized communities.

- **Impact on Healthcare Access:**
  - The scheme has improved **access to healthcare**, particularly for cancer patients, with a **33% increase** in treatment availability.

Conclusion:

The **Ayushman Bharat PM-JAY** scheme is a monumental step in India's healthcare landscape, and with Odisha now on board, millions of families will have access to quality medical care. The expansion of the program, particularly its focus on **senior citizens** and **women**, reflects the government's commitment to improving health equity across the nation.

National Livestock Mission (NLM) Operational Guidelines 2.0 Unveiled

Context: The **National Livestock Mission (NLM)** Operational Guidelines 2.0 have been officially released by the **Ministry of Fisheries, Animal Husbandry & Dairying (FAHD)**. The **NLM** has been operational since the **2014-15** financial year, with its objectives focused on enhancing the livestock sector.

The guidelines have been revised and realigned starting **FY 2021-22** to address the evolving needs of the sector, ensuring a more **efficient and sustainable** approach to livestock development.

Key Features and Objectives of NLM 2.0:

NLM 2.0 aims to foster **entrepreneurship**, increase **per-animal productivity**, and significantly boost the production of **meat**, **milk**, **eggs**, and **wool** across various animals such as goats, camels, donkeys, and sheep. The mission also focuses on **innovative solutions** and sustainable practices in the livestock industry.

Key Sub-Components:

- **Breed Development:** Focus on improving the genetic quality of livestock to enhance productivity.

- **Feed and Fodder Development:** Ensuring adequate and nutritious feed to support animal health and productivity.

- **Innovation and Extension:** Encouraging technological advancements and providing extension services to enhance sector efficiency.

Funding:

The mission consists of **Centrally Sponsored** components and **Central Financial Assistance (CFA)** components, aimed at supporting and promoting growth in the sector.

Impact on India's Livestock Sector

India boasts the **largest livestock population** in the world and plays a pivotal role in the global livestock industry. The country ranks:

- **1st** in **milk production**

- **2nd** in **egg production**

- **5th** in **meat production**

The contribution of the livestock sector to India's total agriculture and allied sector **Gross Value Added (GVA)** has shown a marked improvement. From **24.38%** in **2014-15**, it rose to **30.23%** in **2022-23** (at current prices), reflecting the growing importance and value of the sector in the national economy.

Conclusion:

The release of the **NLM 2.0** guidelines marks a significant step forward in enhancing India's livestock sector. With its focus on **sustainable development**, **entrepreneurship**, and **technological innovation**, the guidelines aim to unlock new opportunities and further strengthen India's position as a global leader in livestock production.

Tropical Flora's Resilience During Deccan Volcanism: A Groundbreaking Study

Context: A recent study conducted by the **Birbal Sahni Institute of Palaeosciences (BSIP)** has shed light on the remarkable **resilience of tropical flora** during the massive **Deccan Volcanism** event that occurred approximately **66 million years ago**.

The study challenges previous assumptions about the devastating impacts of volcanic activity on plant life, revealing that **tropical flora** showed a notable ability to withstand **climatic stresses** associated with the volcanic eruptions.

Key Findings and Insights:

- **Resilience of Tropical Flora**: The study found that tropical plants, particularly those in rainforests, exhibited a higher resilience to the stresses caused by volcanic eruptions, with no significant negative impact from the **Deccan Volcanism**.

- **Impact of Toxic Greenhouse Gases**: While tropical flora managed to endure the volcanic activity, the release of **toxic greenhouse gases** into the atmosphere contributed to the **Cretaceous-Paleogene (K-Pg) mass extinction**, leading to a rise in global temperatures.

- **K-Pg Mass Extinction**: The **K-Pg extinction** event is one of the **'Big Five' mass extinctions** in Earth's history, occurring at the end of the **Cretaceous period** and marking the beginning of the **Tertiary period**. This extinction event had catastrophic consequences for terrestrial life, notably the extinction of **dinosaurs**.

- **Relevance of the Study**: One of the key takeaways is that **tropical rainforests** have a remarkable ability to **recover quickly** under favorable climatic conditions, highlighting the resilience of these ecosystems in the face of severe disruptions.

Understanding the Deccan Volcanism:

The **Deccan Volcanism** was a series of massive volcanic eruptions that took place around **66 million years ago**, contributing significantly to the environmental changes that marked the K-Pg mass extinction.

- **Lava Flows**: The eruptions resulted in some of the longest lava flows on Earth, stretching over **1500 km**.

- **Formation of the Deccan Traps**: These volcanic eruptions produced the **Deccan Traps**, an extensive plateau of basaltic lava that spans **500,000 km²** across the **west-central Indian subcontinent**.

- **Geological Significance**: The Deccan Traps were formed when **India** passed over the **Reunion hotspot**, a volcanic hotspot that continues to be active today, last erupting on the **Reunion Island**.

Impact of the K-Pg Mass Extinction: The **K-Pg mass extinction** was triggered by a combination of **volcanic activity** and other environmental factors, causing a dramatic shift in Earth's climate and atmosphere. While **tropical flora** showed resilience, the extinction event led to the loss of many species, including the **dinosaurs**, and drastically altered ecosystems worldwide.

Significance of the Findings: This study underscores the **remarkable resilience** of **tropical ecosystems**, specifically **rainforests**, even in the face of major climatic and environmental upheavals. The findings highlight the importance of protecting these vital ecosystems, which have the capacity to **recover** and maintain biodiversity if left undisturbed.

The research also provides valuable insights into the long-term **impact of volcanic events** on global ecosystems and climate, furthering our understanding of Earth's geological and ecological history.

Kisan Pehchan Patra: Empowering Farmers with a Digital Identity

Context: The **Union Ministry of Agriculture and Farmers' Welfare** has introduced a **mandatory Farmer ID** for enrolling new beneficiaries under the **Pradhan Mantri Kisan Samman Nidhi (PM-KISAN)**. This initiative marks a significant step towards empowering farmers with a **unique, Aadhaar-linked digital identity**, which will streamline access to various government services and schemes.

Key Features of the Farmer ID:

The **Kisan Pehchan Patra**, or **Farmer ID**, is a **digital identity card** designed to collect and store important information about farmers. Here are some of the key features:

- **Aadhaar Linked**: The ID is **linked to Aadhaar** for accurate identification and tracking.
- **State Land Records Integration**: It is **dynamically connected** to the state land records, ensuring up-to-date and accurate data.
- **Comprehensive Data**: The ID will include **demographic details**, **crops cultivated**, and **land ownership information**, creating a detailed profile for each farmer.

Benefits for Farmers:

The **Kisan Pehchan Patra** is not just an identification card; it brings a range of **benefits** to farmers:

- **Access to Financial Services**: The ID will help farmers access **crop insurance**, **loans**, and other **government schemes** with ease.
- **Improved Data Accuracy**: The system will improve the accuracy of farmer data, enabling **better targeting of services** and policies.
- **Streamlined Processes**: It will **simplify the registration process** for various government schemes, eliminating delays and paperwork.

Impact on the Farming Sector:

The implementation of the **Farmer ID** will play a crucial role in improving the **productivity and sustainability** of the farming sector by:

- **Improving Access to Services**: Farmers will be able to easily access support services such as insurance and loans, which will enable them to invest in improving their productivity.
- **Enabling Targeted Interventions**: The data collected through these IDs will allow for **tailored interventions** based on individual farmer needs, leading to more effective policy implementations.

The initiative aims to enhance the overall welfare of farmers, creating a more **efficient and sustainable farming ecosystem** across India.

Conclusion:

The **Kisan Pehchan Patra** is a game-changer for farmers, providing them with a **unique digital identity** that is linked to vital agricultural data. By improving access to government services and ensuring **data accuracy**, this initiative will pave the way for a **more productive, efficient, and sustainable agricultural sector**.

GS Paper 3 – Economic Development

Bharat Cleantech Manufacturing Platform: A Leap Towards India's Clean Energy Future

Context: The **Union Minister of Commerce & Industry** recently launched the **Bharat Cleantech Manufacturing Platform** — a bold initiative aimed at bolstering India's **cleantech value chains** across key sectors like **solar, wind, hydrogen**, and **battery storage**. This platform is designed to foster collaboration among Indian firms, promote **co-innovation**, and create a conducive environment for financing, sharing **ideas**, **technologies**, and **resources**.

About the Bharat Cleantech Manufacturing Platform:

The **Bharat Cleantech Manufacturing Platform** is a visionary initiative to strengthen India's position as a global leader in the **cleantech** and **sustainability sectors**. Key highlights of the platform include:

- **Collaboration and Co-Innovation**: The platform offers an opportunity for Indian firms to **collaborate**, share insights, and **innovate** together, ensuring cutting-edge advancements in the **clean energy space**.

- **Financing Support**: It aims to provide a solid **financing platform** to drive innovation, making the clean energy sector more viable for businesses.

- **Technology and Resource Sharing**: By enabling firms to share **technologies** and **resources**, the platform will boost **efficiency** and **sustainability** in the clean energy sector.

Significance of the Platform:

The platform's establishment is a crucial step in **transforming India** into a **global leader** in the **sustainability** and **cleantech sectors**. It not only enhances India's **manufacturing capabilities** but also attracts **global investments**, driving India towards its clean energy goals.

India's Ambitious Clean Energy Targets:

India is accelerating its journey towards becoming a **clean energy powerhouse**. Here are the key targets:

- **500 Gigawatt Target**: India aims to achieve **500 gigawatts** of clean energy sources by **2030**, a major milestone in reducing dependence on non-renewable energy.

- **Global Performance**: India has been recognized as one of the **best-performing countries** in meeting its **Nationally Determined Contributions (NDCs)** under the **Paris Agreement** and the **UNFCCC**.

- **Early Achievement**: India has successfully met its target of installing renewable or **clean energy** capacity by **2022**, **8 years ahead of schedule**.

- **World's Largest Interconnected Grid**: India boasts the world's **largest interconnected electricity grid**, reinforcing its **renewable energy infrastructure**.

Pioneering Clean Energy States:

- **Gujarat** has been a frontrunner in adopting **solar power**, setting a precedent for other states to follow and accelerating India's clean energy growth.

Conclusion: India's Path to Clean Energy Leadership

The **Bharat Cleantech Manufacturing Platform** marks a pivotal moment in India's clean energy revolution. By enhancing **collaboration**, **innovation**, and **resource-sharing**, this initiative promises to catapult India towards achieving its **sustainability goals** and solidify its position as a **global leader** in the **cleantech** sector. With ambitious clean energy targets and a history of early successes, India is on track to become a key player in the global clean energy landscape.

Nag Mk-2 Anti-Tank Missile: A Game-Changer in Defense Technology

Context: Recently, the **Field Evaluation Trials** of the **Nag Mk-2 Anti-Tank Missile** were successfully completed, marking a significant milestone for India's defense capabilities. This missile, developed indigenously, is set to become a key asset in the nation's arsenal, strengthening its defense readiness.

About the Nag Mk-2 Missile:

The **Nag Mk-2** is a **third-generation Anti-Tank Guided Missile (ATGM)** designed to provide India with enhanced precision and power in countering modern armored threats. Here are the key highlights of this cutting-edge weapon:

Key Features of Nag Mk-2:

- **Indigenous Development**: Developed **indigenously**, the Nag Mk-2 signifies India's growing capabilities in advanced defense technologies.

- **Fire-and-Forget Technology**: It is a **fire-and-forget** missile, meaning once launched, it requires no further guidance, allowing for quick and efficient engagement of targets.

- **Lock-on After Launch (LOAL)**: The missile is equipped with **lock-on after launch** capabilities, enabling it to lock onto targets after being fired, increasing its effectiveness in dynamic battlefield scenarios.

- **All-Weather Capability**: The **Nag Mk-2** is designed to function in all weather conditions, making it a reliable asset in diverse operational environments.

Specifications and Performance:

- **Range**: While the **exact range** of the **Nag Mk-2** remains classified, it is estimated to have a range of **7 to 10 kilometers**, a significant upgrade over its predecessor, the **Nag Mk-1**, which had a range of just 4 kilometers.

- **Warhead**: The missile features a **tandem high-explosive anti-tank (HEAT) warhead**, which enhances its destructive capability, making it highly effective against modern armored vehicles.

- **Top-Attack Capability**: It also boasts **top-attack** functionality, targeting the most vulnerable part of armored vehicles, ensuring maximum damage and effectiveness against enemy tanks.

Launch and Mobility:

- **Launch Vehicle**: The **Nag Mk-2** missile is launched from the **NAMICA** (Nag Missile Carrier), an armored vehicle based on the Indian-made **BMP-2 Sarath**.

- **Sarath**: This vehicle is based on the **Russian-origin BMP-2 system** and is equipped with amphibious capabilities, adding versatility to its operational deployment.

- **NAMICA**: It provides a **mobile and robust platform** for the Nag missile system, allowing rapid deployment across varied terrains and improving operational efficiency.

Effectiveness Against Modern Armored Vehicles:

The **Nag Mk-2** is designed to target and neutralize **modern armored vehicles**, including those equipped with advanced defense mechanisms like **Explosive Reactive Armor (ERA)**. Its top-attack and HEAT warhead capabilities make it a formidable force on the battlefield.

Conclusion: Strengthening India's Defense Arsenal

The successful trials of the **Nag Mk-2** mark a significant leap forward in India's defense technology. With its advanced features, increased range, and formidable effectiveness against modern armored threats, the **Nag Mk-2** is poised to become a key component of India's military strength. The missile's versatility and power ensure that India is well-prepared to face evolving defense challenges.

Harvest Festivals of India: Celebrating Prosperity and Gratitude

Context: Harvest festivals are being celebrated across India, showcasing the diversity and cultural richness of the nation.

Understanding Harvest Festivals:

Harvest festivals are **annual celebrations** observed during the peak harvest season in different regions. These festivals are deeply rooted in **agriculture-based traditions** and serve as a way to express **gratitude** for a successful harvest.

Significance of Harvest Festivals:

1. **Gratitude to Nature**: These festivals honor the bounty of crops and acknowledge the labor of farmers.
2. **Community Bonding**: They bring communities together to celebrate the end of the growing season.
3. **Spiritual Connections**: Many harvest festivals have a **religious or spiritual origin**, tied to ancient agricultural rituals.
4. **Cycle of Life**: They symbolize the **completion of the agricultural cycle** and often mark the **end of the year**.

Major Harvest Festivals of India:

Festival	States Celebrated	Date	Significance
Lohri	Punjab, Haryana, Delhi, Himachal Pradesh, J&K	**13th January**	Marks the **end of winter**; celebrated with folk songs and dances.
Makar Sankranti	Maharashtra, Gujarat, Uttar Pradesh, West Bengal, etc.	**14th January**	Marks the **sun's transition** from Sagittarius to Capricorn.
Pongal	Tamil Nadu	**14th January**	Celebrated as **Pogi, Surya Pongal**, and more, marking the Tamil month of Thai.
Magh Bihu	Assam	**January**	Celebrates the **end of the harvest season** and Assamese New Year.
Onam	Kerala	**August-September**	Marks the **homecoming of King Mahabali** during Chingam month.
Baisakhi	Punjab, Haryana, Delhi	**13th/14th April**	Signals the **start of the new agricultural season**.
Nuakhai	Odisha	**Bhadraba month (Aug-Sep)**	Welcomes the **new crop season**.
Vaisakha	Bihar	**October-November**	Devotees offer water to the **sun god** and take holy dips in rivers.
Hemis	Ladakh	**June-July**	Celebrates Guru **Padmasambhava's birth anniversary** at Hemis Monastery.
Dree	Arunachal Pradesh	**5th July**	A significant festival for the **Apatani tribe** to celebrate harvest.
Hornbill	Nagaland	**First week of December**	Dedicated to the **Hornbill bird**; features the **Hornbill International Rock Festival**.
Nabanna	West Bengal	**Vishwakarma Puja day**	First crop of the season is offered to the deity, followed by a grand feast.

Conclusion:

India's harvest festivals reflect the **cultural diversity and agrarian roots** of the country. From **Pongal in Tamil Nadu** to **Baisakhi in Punjab**, these celebrations not only honor the **hard work of farmers** but also act as a reminder of the strong connection between humans and nature. Through music, dance, and rituals, communities come together to celebrate **prosperity and gratitude**.

Centre Urges States to Ensure Compliance with Forest Rights Act (FRA)

Context: The **Ministry of Tribal Affairs** has directed states to establish a mechanism to ensure compliance with the **Forest Rights Act (FRA)** and address grievances of forest-dwelling communities.

Key Directives from the Centre:

1. **Objective**: Protect forest-dwelling communities from unlawful evictions under the FRA.

2. **Reason**: Multiple complaints from villages in **tiger reserves** across Madhya Pradesh, Maharashtra, and West Bengal about pressure to vacate lands without due recognition of rights under the FRA and Wildlife Protection Act.

3. **Details Sought from States**:

   o   A report on villages within tiger reserves.

   o   Details of tribes and forest-dwelling communities residing in such villages.

   o   Data on forest rights claims received, approved, and rejected.

   o   Processes for seeking consent and compensation mechanisms.

Forest Cover in India (ISFR 2023):

- **Total Forest and Tree Cover**: **8,27,357 sq. km**, constituting **25.17%** of India's geographical area.

- **Top States by Forest Cover**:
  1. **Madhya Pradesh**: 77,073 sq. km
  2. **Arunachal Pradesh**: 65,882 sq. km
  3. **Chhattisgarh**: 55,812 sq. km

- **Maximum Increase in Cover**: Chhattisgarh, Uttar Pradesh, Odisha, Rajasthan.

Forest Protection Laws in India:

1. The Indian Forest Act, 1927:

- Aimed at managing timber and other forest resources.

- Empowers state governments to declare forests as **reserved** or **protected**.

2. Forest Conservation Act, 1980:

- Regulates diversion of forest land for non-forest purposes.

- Requires **central government approval** for such diversions.

- Ensures sustainable forest management and conservation.

3. Forest Rights Act (FRA), 2006:

- Recognizes the rights of **Scheduled Tribes** and **Traditional Forest Dwellers** over forest resources.

- **Key Provisions**:

   o   **Individual and Community Rights**: Include cultivation, habitation, grazing, fishing, and access to water bodies.

- o **Developmental Rights**: Allocation of forest land for basic infrastructure.

- o **Role of Gram Sabha**: Empowers local communities in decision-making and forest conservation.

- o **Habitat Rights**: Special provisions for **Particularly Vulnerable Tribal Groups (PVTGs)** and pastoral communities.

Challenges in FRA Implementation:

1. **Bureaucratic Delays**: Slow processing and inadequate resources hinder progress.

2. **Resistance from Forest Officials**: Concerns over losing control of forest resources.

3. **Awareness Gap**: Many communities remain unaware of their rights.

4. **Land Title Issues**: Disputes and outdated records complicate claims.

5. **Forced Evictions**: Conservation efforts often prioritize wildlife protection over community rights.

6. **Weak Forest Rights Committees (FRCs)**: Inefficient functioning due to lack of training and political interference.

7. **Inconsistent Political Will**: Uneven implementation across states.

Way Forward:

1. **Awareness Campaigns**: Educate communities and train FRCs for effective claims management.

2. **Streamlined Processes**: Simplify procedures for claims verification and land demarcation.

3. **Collaboration with Forest Authorities**: Train officials to balance conservation with community rights.

4. **Technological Integration**: Use advanced mapping tools to resolve land disputes and update records.

5. **Protection Against Evictions**: Focus on safeguarding rights instead of displacement.

6. **Regular Monitoring**: Implement transparent mechanisms to track progress and address grievances.

Conclusion:

Ensuring the **rights of forest-dwelling communities** while promoting sustainable forest management is crucial. By strengthening institutional mechanisms and fostering cooperation, India can strike a balance between conservation and the welfare of indigenous communities.

GS Paper 3 – Economic Development

Rupee Declines to an All-Time Low of 86 Against the US Dollar

Context: The Indian rupee has hit a historic low, crossing the **86 mark against the US dollar**, reflecting significant currency depreciation.

Understanding Currency Depreciation:

Currency depreciation refers to a decline in the value of a country's currency relative to another currency. The Indian rupee has periodically weakened, particularly against the **US dollar**, influenced by various domestic and global factors.

Key Reasons for Rupee Depreciation:

1. **Rising Crude Oil Prices**: Increased global crude oil prices lead to higher **import bills**, exerting downward pressure on the rupee.

2. **Outflows by Foreign Portfolio Investors (FPIs)**: Global economic uncertainties have caused FPIs to withdraw investments, reducing the availability of foreign currency in India.

3. **Increased Demand for US Dollars**: A surge in dollar demand from foreign banks has accelerated the rupee's depreciation.

4. **Weak Domestic Markets**: Underperformance of **equity and bond markets** has reduced India's appeal to foreign investors.

Impact of Rupee Depreciation:

1. **Exports and Imports**:
   - **Positive**: Makes Indian goods cheaper and boosts exports.
   - **Negative**: Increases the cost of imports, particularly for essential commodities like crude oil and machinery.

2. **Foreign Debt Servicing**: For companies and governments with foreign currency loans, a weaker rupee raises debt repayment costs, straining financial resources.

3. **Inflation**: Higher import costs lead to increased consumer prices, affecting **purchasing power** and driving inflation.

4. **Investor Sentiment**: A declining currency reduces **investor confidence**, impacting **foreign direct investment (FDI)** and increasing capital outflows.

How the RBI Manages Rupee Value:

1. **Forex Market Intervention**: The **Reserve Bank of India (RBI)** buys or sells dollars to stabilize the rupee and mitigate excessive volatility.

2. **Monetary Policy Adjustments**: **Higher interest rates** attract foreign investments, supporting the rupee.

3. **Forex Reserve Management**: The RBI maintains a buffer of foreign exchange reserves to manage currency fluctuations effectively.

Way Forward:

1. **Encouraging Long-Term Investments**:
    o India must focus on attracting **foreign direct investment (FDI)** over volatile foreign portfolio investments (FPI) to stabilize the rupee.

2. **Maximizing Remittance Inflows**:
    o Policies that simplify remittance processes for **Non-Resident Indians (NRIs)** can increase foreign currency inflows and bolster the rupee.

3. **Boosting Export Competitiveness**:
    o Strengthen sectors like **technology, pharmaceuticals, textiles**, and manufacturing to enhance export potential and improve India's trade balance.

Conclusion:

The depreciation of the rupee presents challenges, but it also creates opportunities for export growth. By focusing on **long-term economic policies**, fostering **global competitiveness**, and effectively managing foreign exchange, India can navigate currency fluctuations and achieve financial stability.

Rebalancing India's Debt Market

Context: The **NITI Aayog Vice Chairman**, Suman Bery, recently emphasized the urgent need to **balance the government debt market** and **corporate debt market** in India to ensure sustainable economic growth.

What is the Debt Market?

The **debt market**, also called the **bond market** or **fixed-income market**, is a platform where entities like governments and corporations raise funds by issuing debt instruments.

Key Debt Instruments:

- **Government Securities (G-Secs)**
- **Corporate Bonds**
- **Certificates of Deposit (CDs)**
- **Debentures**

The debt market is critical for providing capital for infrastructure, operations, and development projects.

Current State of India's Corporate Debt Market

While India's **corporate debt market** has witnessed growth, it remains significantly underdeveloped compared to the **government securities (G-Secs) market**.

- **Government Debt**: Raised ₹11.63 lakh crore in FY25.
- **Corporate Debt**: Raised ₹7.3 lakh crore in the first nine months of FY25.

This disparity reflects the **dominance of G-Secs**, driven by **Statutory Liquidity Ratio (SLR)** mandates requiring banks to invest heavily in government bonds.

Challenges in Developing the Corporate Debt Market:

1. **Dependence on Bank Lending**: Corporates predominantly rely on **bank credit**, which limits diversification in funding sources.

2. **Regulatory Complexities**: Complicated regulations and limited **credit rating penetration** discourage smaller firms from issuing bonds.

3. **Investor Preference**: **Low-risk options**, like G-Secs and fixed deposits, are favored over corporate bonds by Indian investors.

4. **Market Infrastructure Gaps**: Lack of active secondary markets and market-making mechanisms restrict trading activity.

5. **Creditworthiness Issues**: Many smaller corporates struggle to achieve ratings that would attract investors.

Steps to Strengthen the Corporate Debt Market:

1. **Mandatory Corporate Bond Issuance**: SEBI requires large corporations to raise at least **25% of incremental borrowings** via corporate bonds.

2. **Credit Enhancement Tools**: **Partial credit guarantees** by organizations like IIFCL boost investor confidence.

3. **Tax-Friendly Instruments**: Promotion of tax-efficient tools such as **Infrastructure Investment Trusts (InvITs)** and **Real Estate Investment Trusts (REITs)**.

4. **Retail Investor Participation**: Introduction of initiatives like **Bharat Bond ETFs** to attract retail investors into corporate bonds.

5. **Enhanced Credit Rating Framework**: Greater transparency and reliability in credit ratings ensure better risk assessment for investors.

Path Forward:

1. **Boosting Liquidity**: Encourage institutional investors, such as **insurance companies** and **pension funds**, to participate in secondary markets.

2. **Increased Retail Engagement**: Promote **awareness campaigns** on the benefits of corporate bonds and launch **investor-friendly products**.

3. **Improved Credit Access**: Support **small and medium enterprises (SMEs)** with easier access to credit ratings and **partial guarantees**.

4. **Leveraging Technology**: Utilize **digital platforms** to simplify the issuance, trading, and accessibility of corporate bonds.

Conclusion:

A well-balanced debt market is essential for fostering **economic resilience** and promoting **inclusive growth**. By addressing existing challenges and implementing strategic reforms, India can build a robust corporate debt market that complements its thriving government debt segment.

Mission Mausam: Revolutionizing Weather Forecasting in India

Context: The **Prime Minister inaugurated Mission Mausam** to commemorate the **150th anniversary** of the **India Meteorological Department (IMD)**, ushering in a new era of advanced weather forecasting and disaster preparedness.

About Mission Mausam:

Objective:

To **upgrade India's weather forecasting capabilities** by incorporating cutting-edge technologies for more precise predictions and effective dissemination.

Key Features:

1. **Budget Allocation**: 2,000 crore allocated for the first two years of implementation.

2. **Focus Areas**: Enhancing **weather surveillance**, refining **modelling techniques**, and improving **forecasting accuracy**.

3. **Beneficiary Sectors**: **Agriculture**, **aviation**, **defence**, **disaster management**, **tourism**, and **healthcare** will benefit from more reliable weather predictions.

4. **Implementation Phases**:

   o **Phase 1 (2025–March 2026)**: Expand observational infrastructure and conduct simulation experiments.

   o **Phase 2 (2026 onwards)**: Deploy **satellites** and **aircraft** for more precise observations.

5. **Supervising Institutions**:

   o Mission Mausam will be led by three institutions under the **Ministry of Earth Sciences**:

      ▪ **India Meteorological Department (IMD)**

      ▪ **Indian Institute of Tropical Meteorology (IITM), Pune**

      ▪ **National Centre for Medium-Range Weather Forecasting (NCMRWF), Noida**

Cloud Chamber: A Key Component:
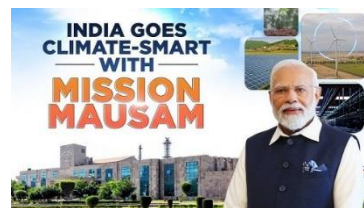
What is a Cloud Chamber?

- A **state-of-the-art facility** to be established at IITM, Pune.

- It is a **cylindrical or tubular chamber** where water vapor and aerosols are injected under controlled **humidity** and **temperature** conditions to simulate cloud formation.

Purpose:

- Study the formation of **cloud droplets** and **ice particles** under realistic conditions to better understand **monsoon behavior**.

The Need for Mission Mausam:

1. **Enhanced Forecasting**: Improve weather forecast accuracy by **5-10%** and provide predictions at the **panchayat level** with a **10-15 day lead time**.

2. **Advanced Technology**: Leverage **AI, machine learning,** and **supercomputers** to develop better weather models.

3. **Air Quality Management**: Improve **air quality forecasts** for metro cities by up to **10%**.

4. **Real-Time Updates**: Reduce the frequency of **nowcasting** updates from three hours to one hour for near-instant updates.

Significance of Mission Mausam:

1. **Addressing Extreme Weather Events**: With rising incidents of **cloudbursts**, **lightning**, and **heavy rainfall**, this mission will significantly improve disaster preparedness.

2. **Weather Modification Techniques**:

   o Explore innovations like **cloud seeding** (used in the US, China, and UAE) to:

      ▪ **Induce rainfall** in drought-prone regions.

      ▪ **Prevent floods** by dispersing excessive rainfall.

3. **Localized Solutions**: Tackle challenges such as **simultaneous droughts and floods** by enabling more localized and precise interventions.

India Meteorological Department (IMD):

- **Established**: 1875.

- **Role**: The principal government agency for all meteorological and weather-related activities.

- **Governance**: Functions under the **Ministry of Earth Sciences (MoES)**.

Conclusion:

Mission Mausam is a transformative initiative aimed at addressing India's **climatic challenges** and enhancing **disaster resilience**. By integrating advanced technologies and localized approaches, it promises to revolutionize how India predicts, manages, and responds to weather-related events.

Israel-Hamas Draft Ceasefire Deal: A Path Toward Resolution

Context: Hamas has agreed to a draft **ceasefire agreement** for the **Gaza Strip**, including the release of numerous hostages.

Key Highlights:

Mediation Efforts:

- The ceasefire proposal has been mediated by the **United States**, **Egypt**, and **Qatar** over the past year.
- The agreement requires final approval from the **Israeli Cabinet**.

What is Hamas?

- **Hamas** is the largest **Palestinian Islamist militant group** and one of the primary political parties in the region.
- It governs more than **two million Palestinians** in the **Gaza Strip**.
- **Foundation**: Established during the late 1980s amid the first Palestinian uprising against Israel's occupation of the West Bank and Gaza.
- **Designation**: Hamas is considered a **terrorist organization** by **Israel**, the **United States**, the **European Union**, the **United Kingdom**, and several other countries.

Understanding the Israel-Palestine Conflict:

1. **Historical Roots**:
   o Stemming from the mid-20th century, the conflict began when **Britain facilitated the establishment of a Jewish homeland** in present-day **Israel**.
   o The Palestinians claim territories, including the **West Bank** and **Gaza Strip**, that Israel currently occupies.

2. **Peace Efforts**:
   o Agreements such as the **Oslo Accords** and **Abraham Accords** have aimed to normalize relations, but the stalemate over a **two-state solution** persists.

Details of the Ceasefire Agreement:

Three-Phase Plan:

1. **Phase One**:
   o Gradual release of **33 hostages** over six weeks in exchange for **Palestinian women and children prisoners** in Israel.
   o Israeli forces will withdraw from population centers during this **42-day phase**.

2. **Phase Two**:
   o Hamas will release the remaining hostages, including **male soldiers**, in exchange for additional prisoner releases.
   o Israel will implement a **complete withdrawal** from Gaza.

3. **Phase Three**:
   o The remains of deceased hostages will be returned.

o A **three-to-five-year reconstruction plan** for Gaza will be executed under **international supervision**.

Future Governance of Gaza:

1. **Complex Governance Issue**:

   o The governance of Gaza has not been addressed in the talks due to its intricate nature.

2. **Israel's Position**:

   o Israel has declared that **Hamas** will have no role in Gaza's future governance.

   o It also opposes the involvement of the **Palestinian Authority** (established under the Oslo Accords).

3. **International Perspective**:

   o The global community insists that Gaza must be governed by **Palestinians**.

   o However, attempts to identify alternatives within **civil society** or among **clan leaders** have been largely unsuccessful.
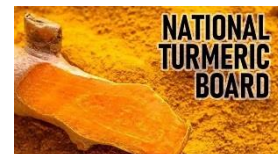
Conclusion:

The **Israel-Hamas Draft Ceasefire Deal** represents a critical step toward addressing a prolonged and devastating conflict. While significant hurdles remain, especially regarding Gaza's governance, this draft agreement offers a pathway to **de-escalation**, **hostage recovery**, and the **reconstruction of Gaza** under international guidance.

National Turmeric Board: A New Era for the Golden Spice

Context: The **Union Minister of Commerce & Industry** recently inaugurated the **National Turmeric Board** in **New Delhi**, with **Palle Ganga Reddy** appointed as its first **Chairperson**.

Overview of the National Turmeric Board:

About the Board:

- The **National Turmeric Board** is a **dedicated body** established to promote the **cultivation**, **research**, and **exports** of turmeric.
- It aims to ensure **holistic growth** in the turmeric sector and improve the livelihoods of farmers.
- **Headquarters**: Located in **Nizamabad**, **Telangana**.
- **Ministry**: The Board operates under the **Ministry of Commerce and Industry**.

Primary Goals:

- **Enhance Turmeric Production**: Increase the output of turmeric through improved practices and technology.
- **Support Farmers**: Focus on farmer welfare by promoting sustainable practices and providing better market access.
- **Boost Exports**: Enhance **global exports** of turmeric and its **value-added products**.

Core Functions:

- **Awareness Campaigns**: Educate about the **medicinal** and **nutritional benefits** of turmeric.
- **Research and Development**: Foster innovations to **increase yield** and improve the **logistics and supply chain** to reach **new markets**.

About Turmeric: The Golden Spice

Botanical Information:

- **Scientific Name**: **Curcuma longa**
- **Family**: **Zingiberaceae** (ginger family)
- **Region**: Native to the **Indian subcontinent** and **Southeast Asia**.
- **Common Name**: Known as the **"Golden Spice"** due to its distinct yellow color and wide usage in cooking and medicine.

Growing Conditions:

- **Temperature**: Thrives in temperatures between **20°C to 30°C** with high **annual rainfall**.
- **Farmers**: Turmeric is cultivated by farmers across **20 Indian states**, including **Maharashtra**, **Tamil Nadu**, **Andhra Pradesh**, **Telangana**, **Madhya Pradesh**, and **Meghalaya**.

Turmeric Production in India:

India's Role in Global Turmeric Trade:

- India is the **largest producer**, **consumer**, and **exporter** of turmeric globally.

- The country cultivates **30 varieties** of turmeric and accounts for over **70% of global turmeric production**.

Production Statistics:

- **Cultivation Area**: India has a total cultivation area of **3.05 lakh hectares**.

- **Production**: In **2023-24**, India produced **10.74 lakh tonnes** of turmeric.

- **Global Trade**: India holds more than **62%** of the global turmeric trade. In **2023-24**, **1.62 lakh tonnes** of turmeric and its products were exported, valued at **226.5 million USD**.

The Path Forward:

The **National Turmeric Board** is set to revolutionize the turmeric sector by not only enhancing production but also creating awareness about its **health benefits** and **medicinal properties**. This move will also facilitate more **efficient exports**, bringing India closer to its goal of leading the global market for **turmeric** and its **value-added products**.