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Union Budget 2025-26

Other topics

- Why Iraq is sinking into Earth
- Freedom of Speech in India
- India EFTA
- International Classification Of Diseases (ICD)

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1. POLITY & GOVERNANCE

1.1 NEED FOR A LAW ON DOMESTIC WORKERS

Context

- The Supreme Court directed the Union government to form an inter-ministerial committee to examine the feasibility of a national law for domestic workers.

Who Are Domestic Workers?

- Domestic workers perform household tasks like cleaning, cooking, childcare, and elderly care. They work full-time, part-time, live-in, or live-out.
- According to the reports from the **National Domestic Workers' Movement (NDWM), the estimate of 50 million domestic workers in India,** most of whom are women from marginalized communities lacking formal contracts and legal protections.

Challenges Faced

- **Exclusion from Labor Laws**: Key laws like the *Minimum Wages Act (1948)* and *Equal Remuneration Act (1976)* exclude domestic workers, which results in exploitative wages and insecure employment.
- **Social Devaluation**: Perceived as "unskilled" and "natural" for women, domestic work is undervalued, resulting in low pay and disrespect.
- **Vulnerability to Abuse**: Workers face harassment, physical/sexual abuse, and lack redress mechanisms due to informal employment in private homes.
- **No Social Security**: They lack health insurance, maternity benefits, pensions, and accident coverage.

Existing Legal Framework

- The *Code on Wages (2019)* nominally includes domestic workers, but implementation is hindered by:
  - Varied employment structures (part-time, live-in, etc) complicating standardization.
  - Absence of formal contracts to prove employment.
  - State-level fragmentation (e.g., Kerala's 2021 law v/s no national policy).
- Unorganized Workers' Social Security Act, 2008 aims to **provide social security to unorganized workers, but its implementation concerning** domestic workers has been inadequate.
- Sexual Harassment of Women at Workplace (Prevention, Prohibition and Redressal) Act, 2013 includes domestic workers under its purview, offering them protection against sexual harassment.
- **India has not ratified ILO Convention 189 (2011**), which sets global standards for domestic workers .

Why a Separate Law is Necessary

- A national law would:
  - Bind all states, replacing fragmented policies.
  - Shift employer-worker relationships from charity to formal labor rights.
  - Mandate registration, written contracts, and unions to empower collective bargaining .

Proposed Legal Framework

- Specify "domestic work" (e.g., caregiving, cleaning) and employment types (live-in, part-time).
- Set inflation-linked, location-specific wages to eliminate arbitrary pay .
- **Provide health insurance, maternity leave, and pensions** via schemes like the Unorganized Workers' Social Security Act (2008) .
- Establish accessible mechanisms (e.g., labor courts, helplines) to report abuse .
- License placement agencies to prevent trafficking and ensure fair recruitment .

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How to address Implementation Challenges?

- Campaigns and penalties can shift attitudes toward recognizing homes as workplaces .
- **Mandate mandatory registration** linked to Aadhaar or labor databases .
- Adapt laws to local contexts (e.g., urban v/s rural wage disparities) while ensuring core entitlements nationwide .
- Involve domestic workers' unions (e.g., National Domestic Workers' Movement) in policymaking .

Way Forward

- The committee must prioritize consultations with workers, unions, and employers to draft inclusive legislation.
- Roll out the law in stages, starting with metropolitan areas, while building enforcement infrastructure .
- Use media and grassroots campaigns to educate employers and workers about rights and responsibilities .
- Formalizing employment terms can curb wage theft and empower workers to negotiate better conditions.
- A national law could formalize their employment, ensure fair wages, and protect them from exploitation, aligning India with global standards like ILO Convention 189.

1.2 STATUS OF BEGGING IN INDIA

Context

- The Bhopal district collector issued orders prohibiting begging in the district.

Key Provisions: Bhopal's Order Prohibiting Begging

- The Bhopal district collector issued an order under Section 163 of the *Bharatiya Nagarik Suraksha Sanhita (BNSS), 2023* to **prohibit begging in all public places.**
- The order also **criminalizes giving alms or purchasing goods from beggars,** with violators facing FIRs and penalties under Section 223 of the *Bharatiya Nyaya Sanhita (BNS), 2023* (up to 1 year imprisonment, ₹5,000 fine).
- Beggars will be relocated to a shelter home at the Community Health Centre.
- **Reasons mentioned**:
  - Begging disrupts traffic, poses accident risks, and is linked to criminal activities/drug use.
  - Many beggars reportedly come from other states and have criminal records.

Legal Basis

- Section 163 of the BNSS 2023empowers district magistrates to issue orders in cases of public nuisance or danger. Non-compliance can lead to penalties under Section 223 of BNS 2023.
- Orders under Section 163 last up to 2 months, extendable to 6 months with state approval.

Socio-Economic Factors leads to begging

- **Poverty and Unemployment**: Extreme poverty and lack of employment opportunities are major drivers of begging. Many individuals resort to begging as a last resort to meet their basic needs.
- **Disabilities and Vulnerabilities**: Physical disabilities, loss of the primary breadwinner in a family, and other vulnerabilities limit employment opportunities, pushing individuals into begging.
- **Human Trafficking**: Some individuals, especially children, are forced into begging by traffickers or organized criminal groups.

Challenges and Concerns

- **Criminalizing begging raises ethical concerns** by impinging on an individual's right to livelihood and dignity. Many beggars are victims of circumstances beyond their control.

- Although laws propose rehabilitation, their implementation often falters. Successful rehabilitation requires access to education, skill development, healthcare, and viable employment opportunities, which are often absent.
- **Criminalization sustains the stigmatization of beggars,** deepening societal bias against them and making reintegration into mainstream society difficult.

Way Forward

- Establish rehabilitation centers to provide vocational training, and counseling to encourage beggars' transition into productive roles within society.
- Strengthen social welfare programs, such as poverty alleviation measures, access to education, healthcare, and skill development, to uplift vulnerable populations.
- Collaborative efforts between NGOs and the government can yield more effective rehabilitation programs.
- Public perception of begging needs to be changed through awareness campaigns, this can promote empathy and encourage citizens to participate in poverty eradication efforts.

Conclusion

- Begging in India is not just a legal issue but a representation of deeper socio-economic challenges. Addressing it requires a comprehensive approach that focuses on rehabilitation, social welfare, and policy reforms to restore dignity and self-reliance to marginalized individuals.

1.3 PRESIDENT'S RULE IN MANIPUR

Context

- Manipur Chief Minister N Biren Singh resigned on February 9, 2025, amid ethnic violence, and President's Rule was imposed in the state.

About President's Rule

- President's Rule suspends a state government, transferring administrative powers to the Union via the Governor. It is invoked under Article 356 for governance failures or threats to constitutional norms .
- **Grounds for Imposition**:
  - Inability to elect a Chief Minister.
  - Breakdown of coalition or loss of majority support.
  - Non-compliance with Union directives (Article 365).
  - Governor's report of constitutional failure.

Process of Imposition

- The Governor submits a report to the President, citing governance collapse.
- The President issues a proclamation under Article 356, approved by Parliament within two months via a simple majority .
- **Duration**:
  - Initial term: 6 months.
  - Extensions: Up to 3 years with biannual parliamentary approval .

Consequences of President's Rule

- The state government is dissolved, and the Chief Minister's office is vacated .
- The Governor administers the state, assisted by advisors and the Chief Secretary .
- Parliament exercises legislative authority; the state Assembly is suspended or dissolved .
- The Union oversees state finances.

President's Rule has been imposed 134 times since 1950, most often in Manipur (10 times) and Uttar Pradesh (10 times).

Safeguards against Misuse

The **Supreme Court's judgment in S.R. Bommai v/s Union of India (1994)** established guidelines to prevent arbitrary imposition:

- The proclamation is subject to judicial review for mala fide intentions or irrelevant grounds.
- The Union Government must justify the imposition of Article 356.

- If the imposition is deemed invalid, the court can revive the dismissed state government.
- The state assembly cannot be dissolved before parliamentary approval; it can only be suspended initially.
- Corruption allegations or financial instability are not valid grounds for President's Rule.
- Actions against secularism by a state government can justify Article 356.
- The Governor must explore forming an alternative government before recommending President's Rule.
- Article 356 is an exceptional power and therefore it should be used only in emergencies.

Conclusion

- President's Rule under Article 356 is a constitutional tool to stabilize governance breakdowns, but its history of misuse demands strict safeguards. In Manipur, the Union must balance immediate crisis management with long-term reforms to uphold national integrity while preserving state autonomy.

1.4 ADULTERY AND INDIAN LAW

Context

- The Madhya Pradesh High Court ruled that evidence of sexual intercourse was necessary to prove adultery as a ground for cancellation of maintenance.

About Adultery

- Adultery was defined under Section 497 of the Indian Penal Code, 1860, **as sexual intercourse between a married woman and a man who is not her husband**, without the consent of her husband.
- The man could be punished with up to five years imprisonment and a fine. Notably, only the man could be prosecuted under this section, treating women as subordinate to their husbands.

Decriminalization

- In 2018, the Supreme Court of India struck down Section 497 as **unconstitutional in the case of Joseph Shine v/s Union of India.**
- The Court found that Section 497 of the IPC was discriminatory towards women, treating them as personal possession and violating their fundamental rights to equality (Article 14) and privacy (Article 21).
- The judgment recognized marriage as a personal relationship that should not be subject to criminal sanctions, highlighting individual autonomy and privacy.

> The Bharatiya Nyaya Sanhita (BNS), effective from July 1, 2024, **does not mention adultery, reflecting its decriminalization in civilian law.**

Continued Relevance in Civil Cases

- Despite decriminalization, adultery remains a significant factor in civil proceedings, particularly in divorce and maintenance cases.

Divorce Proceedings

- Under both the Hindu Marriage Act, 1955, and the Special Marriage Act, 1954, **adultery remains a valid ground for divorce.**
- Courts require evidence of voluntary sexual intercourse with someone other than the spouse. For example, in a 1982 Delhi High Court case, the court refused to grant divorce based on mere confidential circumstances without proof of actual sexual intercourse.

Maintenance Claims

- Adultery can affect maintenance claims under Section 125(4) of the CrPC, which states that a **wife living in adultery is not entitled to receive maintenance.**
- The Madhya Pradesh High Court recently reinforced this principle, emphasizing that mere emotional affairs without sexual

intercourse do not constitute adultery for maintenance purposes.

Armed Forces Exception

- **Adultery continues to be an offense for members of the armed forces under the Army Act,** 1950, Navy Act, 1957, and Air Force Act, 1950.
- The Supreme Court has acknowledged the exception, due to the special status of armed forces under Article 33 of the Constitution, that allows for different legal standards to maintain military discipline.

1.5 FREEDOM OF SPEECH IN INDIA

Context

- The Supreme Court has granted interim relief to YouTuber Ranveer Allahbadia (known as BeerBiceps), however, the court imposed a gag order.

Background of the Controversy

- The controversy began when Allahbadia made remarks during an episode of "India's Got Latent" that were widely condemned as obscene and vulgar.
- The Supreme Court granted Allahbadia protection from arrest and stayed all FIRs related to the controversy, including future ones. The court also allowed him to seek police protection if threatened. However, the court imposed two key conditions:
  - Allahbadia must deposit his passport to prevent him from leaving India.
  - He and his associates "shall not air any show on YouTube or any other audio/video platform until further orders."

Legal and Constitutional Concerns

- The gag order represents a form of prior restraint, a legal doctrine that **prohibits speech before it occurs.**
- Courts have historically avoided such orders except in exceptional cases (e.g., national security threats), as they violate the principle of free speech under Article 19(1)(a) of the Constitution.
- In 2022, the Supreme Court rejected a similar gag order in the case of Alt News co-founder Mohammed Zubair, stating that **a blanket ban on social media use would have a "chilling effect" on free speech and unjustifiably restrict one's profession.**
  - The court emphasized that social media is a critical tool for communication and livelihood, making gag orders disproportionate.

Obscenity Laws in India

India's obscenity laws are governed by Section 294 of the Bharatiya Nyaya Sanhita (BNS) and Section 67 of the Information Technology Act, 2000:

- **Section 294 of BNS**: Criminalizes the creation, sale, import, export, advertisement, or distribution of obscene materials, including electronic content.
  - Obscene material is defined as content that is lascivious, appeals to prurient interests, or has the potential to deprave and corrupt.
  - First-time offenders face up to 2 years imprisonment and a fine of up to ₹5,000.
- **Section 67 of the IT Act**: Punishes the publishing or transmission of obscene material in electronic form. The definition of obscenity aligns with Section 294 of BNS. First-time offenders face up to 3 years imprisonment and a fine of up to ₹5 lakh.

Evolution of Obscenity Interpretation

- **Early Rulings and the Hicklin Test**: In *Ranjit D. Udeshi v/s State of Maharashtra* (1964), the Supreme Court relied on the Hicklin test, which defined obscenity as material that could deprave and corrupt individuals susceptible to immoral influences, judged from the

perspective of the most impressionable readers (e.g., children).

- **Shift to Community Standards**: In *Aveek Sarkar v/s State of West Bengal* (2014), the **Supreme Court rejected the Hicklin test and adopted the community standards test.** The court ruled that obscenity must be judged in context and based on evolving societal norms, not isolated passages or the lowest common denominator.
- **Recent Rulings**: In March 2024, the Supreme Court quashed obscenity charges against the creators of the YouTube series "College Romance," differentiating between obscenity and profane or indecent language. The court ruled that **obscenity must arouse sexual or lustful thoughts**, which the show did not.

Balancing Free Speech and Content Regulation

- The **line between obscenity and freedom of speech is drawn based on context, community standards, and the intent of the content.**
- Courts assess whether the material appeals to prurient interests based on contemporary societal norms. Content that reflects anger, frustration, or excitement without provoking lustful thoughts is not considered obscene.
- The Supreme Court has emphasized that **obscenity laws should not be weaponized to stifle free speech.** The focus should be on penalizing harmful content, such as child exploitation or non-consensual pornography, rather than policing consensual adult expression.

1.6 SHORT ARTICLES

Education Sector Budget

Context

- In the Union Budget 2025-26, the Ministry of Education has been allocated ₹1,28,650 crore.

Key Allocations

- The Department of School Education and Literacy receives ₹78,572 crore, which is 61.07% of the total education budget.
- The Department of Higher Education is allocated ₹50,078 crore, with ₹6,990.88 crore designated for scheme expenditures and ₹43,087.07 crore for non-scheme expenditures.

Key Initiatives

- The government allocated funds to **expand broadband connectivity in government secondary schools** under the **Bharat Net project.**
- **Establishing 50,000 Atal Tinkering Labs** in government schools to promote innovation and a scientific mindset among students.
- Infrastructure support for five new IITs (Tirupati, Dharwad, Palakkad, Jammu, and Bhilai) to accommodate an additional 6,500 students.
- Adding 10,000 seats in undergraduate and graduate programs in medical colleges, with a plan to increase this number to 75,000 seats over the next five years.
- **A Centre of Excellence in AI for Education** is proposed with a budget of ₹500 crore. This initiative builds on the three AI centers established in 2023 for sustainable cities, healthcare, and agriculture.
- The **Bharatiya Bhasha Pustak** scheme announced to provide equitable access to digital resources and educational materials for students from diverse linguistic backgrounds.
- Providing 10,000 fellowships under the PM Research Fellowship scheme to boost the research environment.
- Rs 20,000 crore will be directed towards private sector-driven research and innovation.

Furloughs

Context

- The Delhi High Court is reviewing the Delhi Prison Rules 2018, which mandate courts to grant furloughs pending appeals, unlike other states where the executive holds this power.

What is furlough, and how does it Differ from Parole?

	Furlough	Parole
Nature of Release	Temporary conditional release. Sentence continue to run.	Temporary conditional release. Sentence is suspended.
Purpose	Maintain family and social ties; rehabilitation; break monotony of imprisonment.	Address specific emergencies or reasons (e.g., family death/illness, wedding, agricultural operations).
Eligibility	Generally for long-term imprisonment after a certain period served.	May be considered for short-term imprisonment.
Granting Authority	Deputy Inspector General of Prisons.	Divisional Commissioner
Right v/s Privilege	Generally considered a matter of right for eligible prisoners, subject to conditions. Not an absolute right.	Not a right, discretionary and granted for specific reasons. May be denied even with sufficient cause.
Duration	Limited, e.g., maximum of 14 days.	May extend up to one month.
Frequency	Subject to limitations.	Can be granted multiple times.
Reason Required	No specific reason needed, aimed at maintaining ties and breaking monotony.	Specific reason is required.
Sentence Computation	Period spent on furlough is counted as time served.	Period of parole is not counted as remission of sentence.
Discretion	May be denied in the interest of society.	Discretionary, may be denied if not in the interest of society.

State Emblem of India

Context

- The Union Home Ministry has urged state governments to prevent the misuse and improper depiction of the State Emblem.

Key Points of the Directive

- The Ministry highlighted that many government agencies and individuals are using the emblem on stationery, publications, vehicles, buildings, and websites without including the motto "Satyameva Jayate" in Devanagari script.
- Such **incomplete displays violate the *State Emblem of India (Prohibition of Improper Use) Act, 2005***, as the emblem is considered legally incomplete without the motto .
- The emblem must follow design guidelines outlined in the Act's Schedule, featuring:
  - Three lions mounted on an abacus (from the Ashoka Pillar at Sarnath).
  - A central Dharma Chakra, a bull on the right, and a galloping horse on the left.
  - The motto "Satyameva Jayate" inscribed below the Lion Capital in Devanagari script.
- The Ministry directed states to penalize officials responsible for incomplete displays and unauthorized users.
- Violations can result in imprisonment (up to 2 years), fines (up to ₹5,000), or both .

About the State Emblem

- The emblem was **adopted in 1950**, symbolizes national integrity, strength, and sovereignty.
- It is adapted from the Ashoka Pillar's Lion Capital (3rd century BCE) and **includes the motto from the *Mundaka Upanishad* ("Truth Alone Triumphs").**

- Its use is governed by laws to prevent misuse and ensure dignity, as misuse undermines the emblem's symbolic value.

Article 22

Context

- The Supreme Court has ruled that the mandatory requirement under Article 22(1) of the Constitution to inform an arrested person about the grounds of arrest is a constitutional requirement.

Supreme Court Judgment

- The Supreme Court ruled that informing an arrestee of the grounds of arrest is not a formality but a **mandatory constitutional obligation**. Failure to comply makes the arrest illegal.
- Non-compliance violates Article 21 (right to life and liberty) and Article 22(1), as it deprives the arrestee of liberty without due process.
- While the law does not mandate written communication, the court recommended it as best practice to avoid confusion and ensure clarity.
- The arrestee's friends, relatives, or nominated persons must also be informed of the grounds of arrest.

Role of Judicial Magistrates

- When an arrestee is produced before a magistrate for remand, **the magistrate must verify if the arrestee was informed of the grounds of arrest.** If not, the magistrate cannot remand the arrestee, and the person must be released.
- Courts must prioritize constitutional safeguards over statutory restrictions. For example, bail cannot be denied if Article 22(1) is violated, even in cases with legal restrictions on bail.

Time use Survey

Context

- A time-use survey 2024 aims to report data on how, on average, people spend their time.

About Time Use Survey

- The survey was **conducted by the National Statistics Office (NSO), Ministry of Statistics and Programme Implementation (MoSPI).**
- It collected data from 1,39,487 households and 4,54,192 individuals aged six and above across India, using computer-assisted personal interviews (CAPI) to record daily activity patterns.

Key Findings of the 2024 Survey

- **Employment Participation**
  - **Women aged 15–59:** Employment-related activity participation rose to 25% in 2024 (from 21.8% in 2019). Women spent an average of 341 minutes per day on employment-related activities.
  - **Men aged 15–59:** Participation increased to 75% (from 70.9% in 2019). Men spent an average of 473 minutes per day on employment-related activities, 132 minutes more than women.
- **Unpaid Domestic Work:** Women's time in unpaid domestic services dropped to 305 minutes per day in 2024 (from 315 minutes in 2019), signaling a gradual shift to paid work. However, women still spent 201 minutes more than men (88 minutes) on such tasks.
- **Caregiving Responsibilities:** 41% of women aged 15–59 participated in caregiving for household members, compared to 21.4% of men. Women spent 140 minutes per day on caregiving, while men spent 74 minutes.
- **Other Activities**
  - **Learning:** Children (6–14 years) spent 413 minutes per day on education.
  - **Leisure/Culture**: All participants spent 171 minutes per day on leisure, with women (164 minutes) trailing men (177 minutes).
  - **Self-care**: Averaged 708 minutes per day (11.8 hours) for all ages.

Drivers of Change

- Rising living costs and financial needs may push more women into paid work.
- Higher female literacy rates and awareness of labor rights are encouraging workforce entry.

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- Government initiatives like the Emigration (Overseas Mobility Facilitation and Welfare) Bill (to regulate employment agencies) and skill development programs could further boost participation.

Devolution Index

Context

- The Union Ministry of Panchayati Raj released the comprehensive Devolution Index Report titled "Status of Devolution to Panchayats in States – An Indicative Evidence-Based Ranking 2024."

Significance of the Report

- The report provides **insights into how effectively powers and responsibilities are being devolved to PRIs**, as expected under the 73rd Constitutional Amendment.
- It offers an empirical and data-driven ranking of states and union territories based on their progress in devolving powers to PRIs.
- The report serves as a roadmap for policymakers, elected representatives, and government officials to identify areas for improvement and adopt best practices.

Six Critical Dimensions of Evaluation

- **Framework:** The legal and institutional framework supporting PRIs.
- **Functions:** The extent to which powers and responsibilities are devolved to PRIs across the 29 subjects listed in the Eleventh Schedule of the Constitution.
- **Finances:** The financial autonomy and resource allocation for PRIs.
- **Functionaries:** The availability and effectiveness of personnel working in PRIs.
- **Capacity Building**: Training and skill development programs for elected representatives and officials.
- **Accountability:** Mechanisms to ensure transparency and accountability in Panchayat functioning.

Overall Rankings

- **Karnataka ranks first** with an overall index score of 72.23, followed by Kerala (70.59) and Tamil Nadu (68.38) in the second and third positions, respectively.

Recommendations for Improvement

- States should enhance tax collection powers and direct fund transfers to PRIs.
- Platforms like e-Gram Swaraj can improve real-time monitoring of PRI activities and fund utilization.
- Ensure timely audits and elections to prevent governance lapses.

Advocate-On-Record (AOR)

Context

- The Supreme Court has ruled that Advocates-on-Record (AoRs) are responsible for the accuracy of petitions filed before the Court, even if they are prepared by other advocates.

About Advocates-on-Record (AoRs)

- They are a **specialized category of legal professionals authorized to practice before the Supreme Court.**
- Introduced under Article 145(1) of the Constitution, AoRs operate under the governance of Order IV of the Supreme Court Rules, 2013.

Requirements to Become an AoR

- Enrollment with any State Bar Council
- Minimum 4 years of legal practice
- Completion of a 1-year training under a senior AoR
- Passing the Supreme Court AoR examination
- Maintaining an office within 10 miles of the Supreme Court in Delhi and employing a registered clerk

Key Responsibilities

- **Filing Vakalatnama**: AoRs are the only advocates authorized to submit this power of attorney document on behalf of a client.
- **Personal Liability**: Accountable for court fees and any misconduct, with penalties including removal from the AoR register under Rule 10 of Order IV.
- **Filing Special Leave Petitions (SLPs):** Only AoRs can file these petitions under Article 136 of the Constitution.

Chief Election Commissioner Appointment

Context

- Appointment of New Chief Election Commissioner.

Appointment

- The Prime Minister, Home Minister Amit Shah, and Leader of Opposition appointed Gyanesh Kumar, a former IAS officer, as the new Chief Election Commissioner (CEC), replacing Rajiv Kumar.
- This marked the **first use of the Chief Election Commissioner and Other Election Commissioners (Appointment, Conditions of Service, and Term of Office) Act, 2023**, which revamped the appointment process.

The New Appointment Process

The 2023 Act established a new mechanism for appointing the CEC and Election Commissioners:

- **Search Committee**: A panel led by the Law Minister (currently Arjun Ram Meghwal) shortlists five candidates.
- **Selection Committee**: The Prime Minister, Leader of Opposition, and a Union Cabinet Minister nominated by the Prime Minister (currently Home Minister Amit Shah) choose the CEC/ECs.
- **Eligibility Criteria**: Candidates must hold or have held a Secretary-level post and demonstrate integrity and election management experience.
- **President's Role**: The President formally appoints the selected candidate based on the recommendation of the Selection Committee.

Under the previous system:

- The President appointed the CEC and Election Commissioners based on the Prime Minister's advice, with no statutory framework.
- The next CEC was generally the senior-most Election Commissioner, determined by tenure.

Why Has the Process Changed?

- The Supreme Court in March 2023 ruled that a selection panel comprising the Prime Minister, Leader of Opposition, and Chief Justice of India should supervise appointments of CEC until Parliament enacted a law.
- However, **the government's 2023 Act excluded the CJI from the panel**, replacing them with a Union Minister (Home Minister), effectively giving the government more control over the appointments.

1.7 SNIPPETS

Topics	Details
Tribhuvan Sahkari University	• **Context:** The Union Government introduced the Tribhuvan Sahkari University Bill 2025 to establish India's first specialized university focused on the cooperative sector. • The institution will be **set up on the campus of the Institute of Rural Management Anand (IRMA) in Gujarat** and declared an institution of national importance . • Sector-specific schools (e.g., dairy, fisheries, banking, cooperative finance) will be established to address sectoral needs . • **IRMA was founded in 1979 by Dr. Verghese Kurien (the "Father of India's White Revolution")**, will dissolve its current society structure and become a Centre of Excellence for Rural Management within the new university.
Enforcement Case Information Report (ECIR)	• **Context:** The Enforcement Directorate has registered 18 Enforcement Case Information Reports (ECIRs) against cooperative banks/societies in Kerala. • The **ECIR serves as the starting point for ED's proceedings,** including asset attachments and arrests, under the Prevention of Money Laundering Act, 2002 (PMLA).

	• The **PMLA Act and its Rules do not explicitly mention the ECIR.** However, the ED routinely lodges an ECIR before initiating action under the Act. • The Supreme Court clarified that an ECIR cannot be equated with a First Information Report (FIR) filed by police for cognizable offenses.
Article 101(4)	• **Context:** Article 101(4) of the Constitution has been in the news. • Article 101(4) of the Indian Constitution states that **if a Member of Parliament (MP) is absent from all meetings of either House for 60 consecutive days without permission, the House may declare their seat vacant.** • However, the 60-day period excludes times when Parliament is prorogued (adjourned sine die) or adjourned for more than four consecutive days. This means absences are counted only during active sittings of Parliament
Arrest Provisions For Women	• **Context:** The Madras High Court ruled that the legal provision prohibiting the arrest of women after sunset and before sunrise is directory, not mandatory. • The Madras High Court's ruling in the **Deepa v/s S. Vijayalakshmi and Others (2025) case** has clarified the legal interpretation of nighttime arrest restrictions for women, balancing public safety with women's rights. • The High Court held that Section 46(4) of the Code of Criminal Procedure (CrPC), 1973 (now Section 43(5) of the Bharatiya Nagarik Suraksha Sanhita (BNSS), 2023) is directory, meaning non-compliance does not automatically invalidate an arrest. ○ This provision **restricts the arrest of women between sunset and sunrise,** except in exceptional circumstances requiring prior magistrate approval.
Remission	• **Context:** The Supreme Court in the case of "In Re: Policy Strategy for Grant of Bail" directed states to proactively consider the premature release of eligible prisoners, even if they do not formally apply for remission. • Remission refers to the **reduction of a convict's sentence before its full term,** without altering the conviction itself. • It is governed by Section 473 of the Bharatiya Nyaya Suraksha Sanhita (BNSS), 2023 and Section 432 of the Code of Criminal Procedure (CrPC), 1973, which empower state governments to remit sentences, either unconditionally or with enforceable conditions (e.g., reporting to police). • If conditions are violated, states may revoke remission and re-arrest the convict without a warrant.
Principal Secretary to Prime Minister	• **Context:** Former Reserve Bank of India (RBI) Governor Shaktikanta Das was appointed the Principal Secretary-2 to the Prime Minister. • Das served as the 25th Governor of the Reserve Bank of India (RBI) from 2018 to 2024. • Das was appointed as Principal Secretary-2 to Prime Minister Narendra Modi, a newly created post alongside incumbent Principal Secretary P.K. Mishra. This marks the **first time two individuals will simultaneously serve as Principal Secretaries to the PM.** • The Principal Secretary is the administrative head of the Prime Minister's Office (PMO) and acts as the PM's chief advisor.

Digital Brand Identity Manual (DBIM)	• **Context:** The Ministry of Electronics and Information Technology (MeitY) launched the Digital Brand Identity Manual (DBIM) in New Delhi. • It aims to e**stablish a standardized and cohesive digital identity for the Union Government**, ensuring uniformity across websites, mobile apps, and social media. • It will simplify government websites and platforms to ensure citizens from diverse backgrounds can easily navigate and access services. • **It integrates Bhashini voice technology**, allowing voice-based access to information in 22 official Indian languages.
Naksha	• **Context:** The Union Rural Development Minister launched NAKSHA (National geospatial Knowledge-based land Survey of urban Habitations) Scheme. • The NAKSHA scheme aims to **address the issue of outdated or non-existent land records in urban areas** across India. • It operates u**nder the Digital India Land Records Modernization Programme (DILRMP)** and is led by the Department of Land Resources (DoLR) u**nder the Ministry of Rural Development.** • It is 100% Centrally Funded project costs, which uses drones, LiDAR, GIS mapping, and AI-driven analytics to ensure accuracy.
Corruption Perceptions Index (CPI) 2024	• **Context:** The Corruption Perceptions Index (CPI) 2024, released by Transparency International, evaluates and ranks 180 countries based on their perceived levels of public sector corruption. • The index uses a **scale from 0 (highly corrupt) to 100 (very clean),** with scores derived from multiple data sources including expert assessments and business surveys. • **Denmark leads** for the seventh consecutive year with a score of 90, followed by Finland (88) and Singapore (84). South Sudan ranks last (180th) with a score of 13. • The average score remains stagnant at 43, with 80% of the global population living in countries scoring below this average. • **India ranks 96th,** with a score of 38, down from 39 in 2023.

1.8 ADDITIONAL TOPICS FOR READING FROM IASGYAN WEBSITE

Topic name	Upload Date
Rajasthan's Bill against 'Unlawful' Religious Conversions	8th February, 2025
Unique Status of Delhi	13th February, 2025
Are Freebies and Welfare Schemes Different?	14th February, 2025
Should Convicted Persons be allowed to contest Elections?	14th February, 2025
Why is the Three-Language Policy Controversial?	25th February, 2025

2. INTERNATIONAL RELATIONS

2.1 INDIA-EFTA

Context

- India and European Free Trade Association (EFTA) Strengthen Economic Ties with the Inauguration of the India-EFTA Desk.

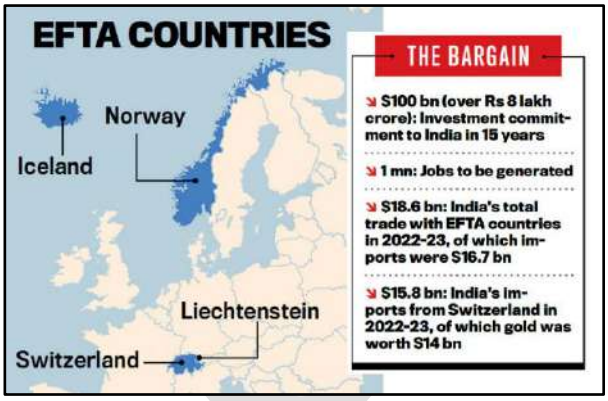
About the India-EFTA Desk

- It is a **single-window mechanism** designed to support businesses from the European Free Trade Association (EFTA)—comprising Switzerland, Norway, Iceland, and Liechtenstein—in investing, expanding, or establishing operations in India.
- This initiative follows the signing of the **Trade and Economic Partnership Agreement (TEPA)** between India and EFTA in 2024, marking EFTA as the **first European bloc** to formalize a trade pact with India.

- **Trade Volume**: India-EFTA trade grew to **$24 billion** in 2023–24 (from $18.65 billion in 2022–23).
- **FDI Inflows**: Switzerland invested **$10.72 billion** in India between April 2000 and September 2024.
- **Job Creation**: Swiss FDI has generated **146,000+ jobs** in India, primarily in manufacturing.

Key Features of TEPA

- EFTA countries pledged to invest **$100 billion in India over 15 years**, focusing on infrastructure, manufacturing, and technology-driven sectors.
- Lower tariffs on goods traded between India and EFTA, boosting competitiveness of Indian exports like pharmaceuticals, garments, chemicals, and machinery.
- The agreement excludes **data exclusivity provisions** (protecting Indian generic drug manufacturers) and certain farm products and gold imports.



Benefits for India

- Indian industries, particularly pharmaceuticals and textiles, will gain a competitive edge in EFTA markets due to reduced tariffs.
- Investments in sectors like railways, manufacturing, and renewable energy could generate over **1 million jobs** and improve infrastructure.
- Inflow of foreign capital will bring advanced technologies, enhancing productivity and innovation.
- Collaboration in R&D and joint ventures will drive long-term economic development.

Benefits for EFTA Countries

- Swiss and Norwegian manufacturers of machinery, luxury goods, and pharmaceuticals will access India's **$3 trillion economy**.
- EFTA businesses can collaborate with Indian researchers and startups in fields like IT, engineering, and renewable energy.
- Greater market penetration could boost sales and profitability for EFTA firms.

Challenges for India

- Switzerland's policy of **zero tariffs** on industrial goods from all nations may limit the competitive advantage of Indian products.
- Strict **sanitary and phytosanitary standards** in EFTA countries could hinder India's agricultural exports.

- Increased imports from EFTA may widen India's trade deficit, though job creation and infrastructure investments could offset this.

Way Forward

- India must improve product quality and compliance with international standards to boost exports.
- Indian exporters need to adopt higher sanitary standards to access EFTA markets.
- Reducing reliance on imports and promoting local manufacturing will help manage trade deficits.

2.2 INDIA- US RELATION

Context

- Prime Minister Narendra Modi and US President Donald Trump have taken several decisions to strengthen bilateral relations.

Outcome of the Visit

Defense Cooperation

- The US proposed selling **F-35 stealth fighter jets** to India, however, the deal remains under review due to India's reliance on Russian systems like the **S-400 air defense system** and concerns about technology leakage.
- A new **Major Defense Partnership framework** signed to focus on joint manufacturing, technology sharing, and interoperability.
- India will procure **six more P-8I maritime surveillance aircraft** to enhance its Indian Ocean capabilities.
- The US will streamline the **International Traffic in Arms Regulations (ITAR)** to ease defense trade and technology transfers.

Counterterrorism and Law Enforcement

- The US Supreme Court approved the extradition of **Tahawwur Rana**, a key suspect in the **2008 Mumbai terror attacks**, to India for prosecution.
- Both nations committed to combating organized crime and terrorism, with a focus on cross-border threats.

Trade and Economic Relations

- The **"Mission 500"** initiative aims to double bilateral trade to **$500 billion annually by 2030**.
- India agreed to increase **oil and gas imports** from the US to reduce trade deficits, though this raises concerns about climate commitments.

India-US Trade Partnership

- In the fiscal year 2024 (FY24), the bilateral trade between India and the US reached $118.2 billion. While this figure slightly decreased from the $128.78 billion recorded in FY22, it remains a significant indicator of strong trade activity.
- India enjoyed a trade surplus of $36.8 billion with the US in FY24, highlighting India's strong export performance.

Technology and Innovation

- **US-India TRUST Initiative**: A new partnership to collaborate on **AI, semiconductors, quantum computing, and biotechnology**.
- **INDUS Innovation**: Expansion of the **India-US Defense Acceleration Ecosystem (INDUS-X)** to foster tech collaboration in space, energy, and emerging fields.
- **Strategic Minerals**: A joint initiative to secure critical minerals like **lithium and rare earth elements** for tech industries.

APTI PLUS

2.3 INDIA-US TRUST AND COMPACT INITIATIVES

Context

- The India–US TRUST and COMPACT initiatives are two bilateral frameworks launched to strengthen strategic cooperation between the two nations.

About India–US TRUST Initiative

- The Transforming Relationship Utilizing Strategic Technology (TRUST) Initiative is a **bilateral framework launched to enhance cooperation in critical minerals**, advanced materials, pharmaceuticals, and emerging technologies like AI, semiconductors, and quantum computing.

What are Critical Minerals?

- Critical minerals are a subset of minerals deemed essential for the manufacturing and technological needs of companies, industries, nations, or the world.
- They are crucial components in various technologies, including renewable energy sources like solar panels and wind turbines, electric vehicles, and advanced batteries.

Key Focus Areas

- **Recovering and processing critical minerals** such as lithium, cobalt, and rare earth elements (REEs) from industries like aluminum, coal mining, and oil and gas.
  - This aims to reduce reliance on China, which **controls about 70% of global rare earth production.**
  - The US will provide investment support and technology to enhance India's mineral sector.
- Active pharmaceutical ingredients (APIs) to diversify supply chains and reduce shortages of life-saving drugs. **Pharma products accounted for 21.9% of India's exports to the US in 2023.**
- **Reduce barriers to technology transfer,** address export controls, and enhance high-tech commerce. It also focuses on AI infrastructure development, semiconductor collaboration, and defense technology co-production.
- **It aligns with India's National Critical Minerals Mission (NCMM),** a 7-year, ₹34,300 crore program to build a resilient mineral value chain. The US will support NCMM's goals, including acquiring overseas mineral assets.

About US–India COMPACT Initiative

- The US–India COMPACT Initiative—standing for Catalyzing Opportunities for Military Partnership, Accelerated Commerce & Technology for the 21st Century—is a 10-year strategic framework to deepen defense ties, streamline technology transfers, and enhance economic collaboration.

Key Focus Areas

- The US and **India will revisit export controls and International Traffic in Arms Regulations (ITAR**) to ease technology transfers.
  - This will enable smoother exchanges of advanced military technologies, including missile defense, space systems, and undersea warfare capabilities.
- Negotiations for a Reciprocal Defense Procurement (RDP) Agreement to allow seamless purchase and co-production of defense goods, including aircraft, missiles, and unmanned systems.
- **India will acquire Javelin anti-tank missiles, Stryker armored vehicles**, and six additional P-8I Poseidon aircraft for maritime reconnaissance. The US will also review supplying F-35 fighter jets to India.
- **Create comprehensive supply chains and improve intelligence sharing** to enhance operational readiness. This includes co-developing autonomous underwater systems through the Autonomous Systems Industry Alliance (ASIA).
- The **US and India aim to double bilateral trade to $500 billion by 2030,** with a focus on high-

tech commerce and defense industrial cooperation.

2.4 SHORT ARTICLES

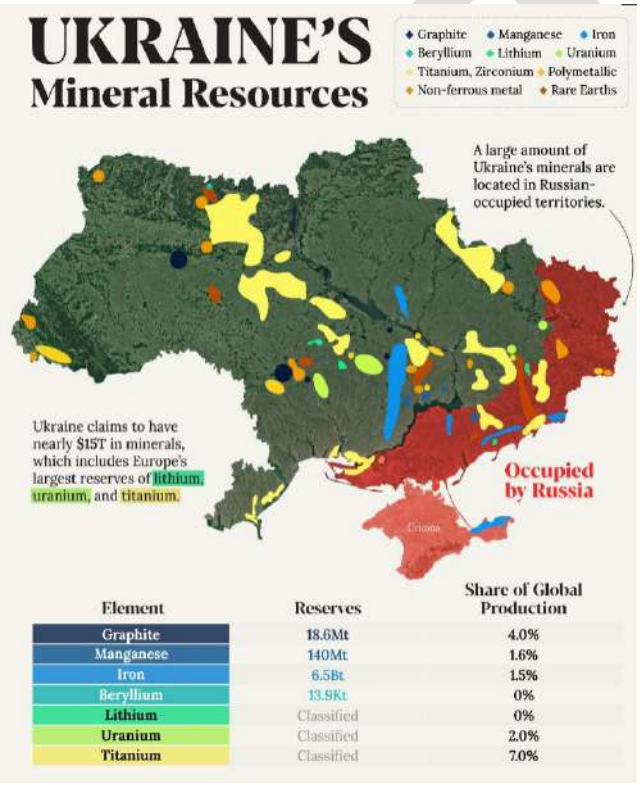
Ukraine's Mineral Resources

Context

- The US proposal to access 50% of Ukraine's critical minerals in exchange for military and economic support against Russia is a complex geopolitical and economic negotiation.

About Critical Minerals

- Critical minerals (e.g., rare earth elements like neodymium, lithium, titanium, graphite, and uranium) are essential for **Advanced weaponry, semiconductors, clean energy**, **Aerospace**, etc.
- Ukraine holds **22 of the 50 minerals deemed critical by the US** and **25 of the 34 prioritized by the EU**, including competitive reserves of lithium, titanium, beryllium, and uranium.
    - These resources are largely untapped due to outdated infrastructure, lack of investment, and Russia's occupation of mineral-rich regions.



Why the US Wants Ukraine's Minerals

- **Reducing Dependence on China**: China controls around 85% of global rare earth production. Access to Ukraine's minerals would diversify supply chains and weaken China's monopoly.
- **Strengthening Defense and Tech Industries**: Critical minerals are indispensable for US military hardware (e.g., F-35 jets) and clean energy goals (e.g., EVs).
- **Offsetting Aid Costs**: Trump claims Ukraine owes the US $500 billion in minerals to repay $69.2 billion in aid since 2014 (though actual aid is far below this figure).

How will the freeze on USAID affect the world?

Context

- The US President has imposed a 90-day freeze on USAID foreign assistance.

About the US Agency for International Development (USAID)

- It was **established in 1961,** to administer civilian foreign aid to promote democracy, global peace, prosperity, and U.S. security interests.
- It operates in over **100 countries**, funding health, education, climate change, and humanitarian projects.
- In 2024, it received **$44.2 billion** (0.4% of the U.S. federal budget), contributing to **42% of global humanitarian aid** tracked by the UN .

Immediate Effects of the Freeze

- Essential initiatives like healthcare (e.g., HIV/AIDS relief via PEPFAR), food security (e.g., Feed the Future), and disaster relief were paused .
- Over **14,000 USAID employees and contractors** were suspended, crippling operations worldwide .

Impact on India

- As of 2024, USAID funded **projects in India** worth $750 million, focusing on health (e.g., HIV/AIDS, maternal care), agriculture, and renewable energy .
- While India's dependence on USAID has declined (2024 allocation: $79.3 million), ongoing projects face delays. The Indian government may need to fund critical gaps .

India and Qatar sign Strategic Partnership Agreement

Context

- Sheikh Tamim Bin Hamad Al-Thani, Amir of Qatar, held bilateral talks with Prime Minister Narendra Modi during his second state visit to India.

Key Outcomes of the Visit

- India and Qatar formally elevated their ties to a **Strategic Partnership**, focusing on **energy security, trade, investment, counterterrorism, and cultural cooperation**.
- Both nations set a target to **double trade from $14 billion (2023) to $28 billion by 2030**.
- **Qatar Investment Authority (QIA)** committed **$10 billion** to invest in India's infrastructure, ports, renewable energy, smart cities, startups, AI, and robotics.
- A **20-year LNG supply deal** (7.5 million metric tonnes annually starting 2028) was signed between Qatar Energy and Petronet LNG Ltd.
- **Two agreements** and **five MoUs** were signed, including:
  - **Strategic Partnership Agreement**.
  - Revised **Double Taxation Avoidance Agreement**.
  - MoUs on economic cooperation, youth affairs, archives, and sports.
- **UPI integration** at Qatar National Bank (QNB) and QNB's expansion into India's GIFT City.

India-Qatar Bilateral Relationship

- Over **835,000 Indians** reside in Qatar (27% of its population), benefiting from labor reforms like the abolition of the Kafala system and minimum wage laws.
- India-Qatar defense ties include naval visits, training slots, and participation in events like DIMDEX. However, the 2008 Defense Cooperation Agreement was not renewed in 2023.
- **Bilateral trade**: $18.77 billion in 2022-23 (India's exports: $1.96 billion; imports: $16.8 billion).
- Qatar ranks among India's top three export destinations (alongside China and Japan) and top import sources.
- Qatar supplies **48% of India's LNG** and **29% of its LPG** (5.33 MMT worth $4.04 billion in 2022-23).

International Criminal Court

Context

- The U.S. President signed an executive order imposing sanctions on the International Criminal Court (ICC) over its investigations into Israel, a close U.S. ally.

About International Criminal Court (ICC)

- It is a permanent international tribunal established in **2002** under the **Rome Statute**, adopted in **1998** and entering into force in **July 2002**.
- It holds individuals accountable for **genocide**, **crimes against humanity**, **war crimes**, and **crimes of aggression**.
- It acts as a **court of last resort**, intervening only when national courts are **unable or unwilling** to prosecute.
- 18 judges from different member countries, elected to **non-renewable nine-year terms.**
- The ICC can prosecute individuals if:
  - The crime occurred in a **member state's territory**.
  - The perpetrator is a **national of a member state**.
  - The **UN Security Council** refers to a situation (e.g., Darfur, Sudan).
  - **125 member states** as of January 2025, major powers like the **US**, **China**, **Russia**, **India**, and **Israel** are not parties to the Rome Statute.

APTI PLUS

Dunki Route

Context

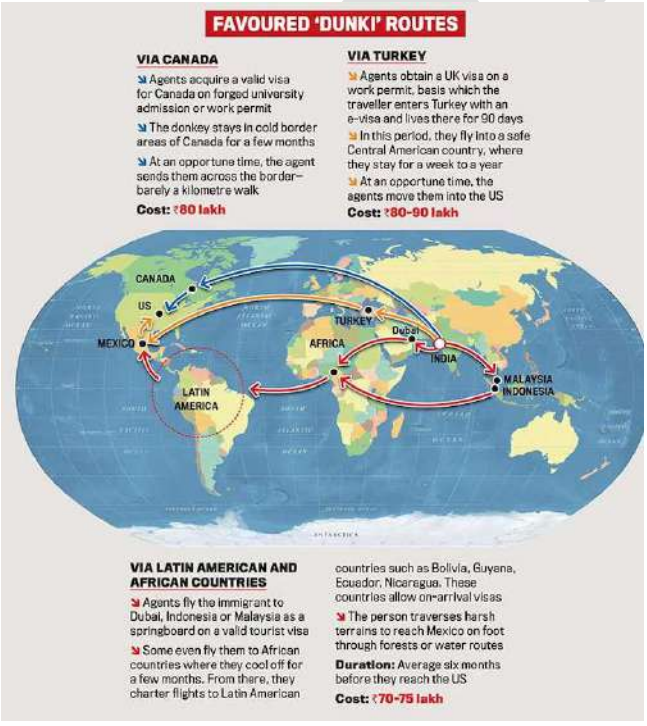
- Indian deportees from the US have shared their traumatic experiences using the "donkey route" for illegal immigration.

What is the Donkey Route?

- The Donkey Route (or Dunki Route) is an illegal migration path used by individuals from India and other countries to enter the US, Canada, or the UK without legal visas.
- The term derives from the Punjabi word *dunki* ("to hop" or "to jump"), which symbolizes migrants' multi-country journeys.

Steps in the Journey

- **Initial Departure**: Migrants leave India using fake documents or tourist visas to enter transit countries like Italy, Ecuador, or Colombia.
- **Crossing Borders**: They travel through multiple nations (e.g., Europe, Central America, or Latin America), crossing jungles, deserts, and seas on foot or in overcrowded vehicles.
- **Final Border Crossing**: Migrants attempt to enter the US via its southern or western borders, risking arrest, detention, or deportation by border authorities.



Why Do People Choose the Donkey Route?

- The promise of higher incomes and better opportunities in the US motivates migrants to take extreme risks.
- Difficulties in obtaining legal visas force individuals to rely on illegal routes.

Risks and Dangers

- Migrants face extreme weather, treacherous terrain, and life-threatening situations.
- Agents charge exorbitant fees, abandon migrants, or exploit them financially.
- Those caught face detention, deportation, and bans on future legal entry.
- Many survive severe trauma, while some die during the journey.

AI Action Summit

Context

- The Paris AI Summit was co-chaired by India and France, aims to balance technological growth and risks.

Highlights of PM Modi's Speech

- Hestressed tha**t open-source platforms democratize AI access,** empowering developers in developing nations and fostering innovation .
- He linked AI to solving global challenges like deforestation, energy optimization, and agriculture, urging integration into sustainability initiatives .
- He expressed optimism about AI creating jobs in data science and ethics, while stressing the need for upskilling workers to adapt to an AI-driven economy .
- He **proposed a global AI governance framework to combat cyber threats and misinformation,** emphasizing trust, transparency, and inclusivity .

The summit centered on five themes:

- **Public Service AI**: Leveraging AI to improve healthcare, education, and governance.
- **Future of Work**: Addressing AI's impact on jobs and reskilling initiatives.
- **Innovation and Culture**: Exploring AI's role in art, creativity, and cultural preservation.

- **Trust in AI**: Ensuring data quality, transparency, and accountability in AI systems.
- **Global Governance**: Pushing for multilateral cooperation on AI's environmental impact and ethical standards.

Key Outcomes and Announcements

- **EU AI Champions Initiative**: Launched with €150 billion in funding to accelerate AI adoption in Europe, emphasizing public-private partnerships .
- **Public Interest AI Partnership**: Backed by governments (e.g., France, Germany, Kenya) and tech firms like Google, this initiative aims to fund open-source AI projects addressing societal challenges.
- **Regulatory Harmonization**: Discussions focused on aligning global AI regulations, with the EU's AI Act serving as a model for safety and transparency.

Panama withdraws from Belt and Road Initiative (BRI)

Context

- Panama withdrew from China's Belt and Road Initiative (BRI).

About Belt and Road Initiative (BRI)

- Launched by China in 2013, the BRI is a global infrastructure and investment program aimed at enhancing trade, connectivity, and economic cooperation.
- It comprises two main components:
  - **The Silk Road Economic Belt**: Focuses on land-based infrastructure connecting China to Europe and the Middle East.
  - **The 21st Century Maritime Silk Road**: Prioritizes sea routes linking China to Southeast Asia, South Asia, Africa, and Latin America. The initiative involves over 140 countries and seeks to modernize ports, railways, roads, and energy networks.

Panama's Involvement in the BRI

- **Panama became the first Latin American country to join the BRI** after severing diplomatic ties with Taiwan and establishing relations with China. The agreement aimed to boost infrastructure and trade links between Asia and Latin America.
- In February 2025, Panama announced it would not renew its BRI Memorandum of Understanding (MoU), mentioning concerns over Chinese influence in the region.

UN Habitat

Context

- C40 Cities (a global network of 97 major cities committed to climate action) and UN-Habitat (United Nations Human Settlements Programme) announced the launch of the Urban Planning Accelerator.

Significance of the Initiative

- **Urban areas are growing 50% faster than population growth**, particularly in climate-vulnerable regions. Without intervention, cities could triple in size by 2050, exacerbating emissions, inequality, and environmental degradation (UNCCD, 2017).
- The initiative aims to help cities worldwide reduce emissions by **25% by 2050** while creating safer, fairer, and more inclusive urban environments.
- African city leaders emphasized the role of youth in driving climate action, given the continent's young population and the urgency of addressing climate risks.

About C40 Cities

- A global network of 97 major cities committed to climate action, united in tackling the climate crisis through bold, scalable solutions.
- Provides a platform for mayors to collaborate on climate goals, share best practices, and

advocate for policy changes at national and international levels .

About UN-Habitat

- **Founded in 1978** following the first UN Conference on Human Settlements (Habitat I) in Vancouver, Canada .
- Promote socially and environmentally sustainable towns and cities, with a goal to provide adequate shelter for all.
- **Governance Structure**:
  - **UN-Habitat Assembly**: A universal body of 193 UN member states convening every four years.
  - **Executive Board**: 36 member states elected to oversee operations, meeting three times annually.
  - **Committee of Permanent Representatives (CPR)**: Meets biannually to coordinate policies .
- **Headquarters**: Nairobi, Kenya.

2.5 SNIPPETS

Topics	Details
Asian Fisheries And Aquaculture Forum	• **Context:** The 14th Asian Fisheries and Aquaculture Forum (14 AFAF), with the theme "Greening the Blue Growth in Asia-Pacific" was organized in New Delhi. • It is a **triennial event of the Asian Fisheries Society.** • The event is **hosted in India for the 2nd time** after the 8AFAF held at Kochi in 2007. • It provides a platform to strengthen international partnerships, and promote innovative approaches for sustainable, resilient, and economically viable fish production systems. • **India occupies 2nd position in total fish production** and also aquaculture production globally. • **Headquarters:** Kuala Lumpur, Malaysia
Indian Ocean Conference (IOC)	• **Context:** Indian Ocean Conference (IOC) was organised in Muscat, Oman, under the theme "Voyage to New Horizons of Maritime Partnership." • IOC is an **annual international platform launched by the India Foundation in 2016** to promote regional cooperation and address challenges in the Indian Ocean region. • It brings together heads of government, senior officials, scholars, and industry leaders to discuss maritime security, economic development, environmental sustainability, and geopolitics.
Project Waterworth	• **Context:** Meta announces Project Waterworth to enhance global connectivity with AI-driven subsea cable infrastructure. • **Meta, the parent company of Facebook and Instagram, has announced Project Waterworth,** which will span over 50,000 kilometers—longer than the Earth's circumference. • The **project will connect five continents**: the US, India, Brazil, South Africa, and Australia. • The **cable will be laid at depths of up to 7,000 meters and buried in high-risk areas** (e.g., shallow coastal zones) to avoid damage from ship anchors and hazards.
International Organization of Aids	• **Context:** India is elected as the Vice President of the International Organization of Aids to Marine Navigation (IALA) during its inaugural

To Marine Navigation (IAIA)	General Assembly in Singapore. • It was **established in 1957 as an NGO**, however, it became an inter-governmental organization (IGO) in 2024. • **It unites 80 countries** to standardize aids to navigation (AtoN), including lighthouses, buoys, and digital systems. • Its goal is to ensure vessels navigate safely, efficiently, and sustainably while protecting marine ecosystems.
Bay of Bengal Programme Inter-Governmental Organisation (BOBP-IGO)	• **Context:** India took over the Chairmanship of the Bay of Bengal Inter-Governmental Organisation (BOBP-IGO) from Bangladesh during the 13th Governing Council Meeting in Malé, Maldives. • **It was established in 2003**, as a regional fisheries body to promote sustainable fisheries in the Bay of Bengal region. • **Member Countries:** India, Bangladesh, Maldives, and Sri Lanka. Cooperating non-contracting parties include Indonesia, Malaysia, Myanmar, and Thailand. • **BOBP-IGO evolved from the Bay of Bengal Programme (BOBP),** a project of the Food and Agriculture Organization (FAO) of the United Nations, which was established in 1979.
Organization of The Petroleum Exporting Countries (OPEC+)	• **Context:** Brazil officially joined the OPEC+, a coalition of major oil-exporting nations. • OPEC (Organization of the Petroleum Exporting Countries) was **founded in 1960 by Iran, Iraq, Kuwait, Saudi Arabia, and Venezuela to stabilize global oil markets.** • As of 2024, OPEC has **12 members, accounting for 38% of global oil production and 79.5% of proven reserves,** with the Middle East holding 67.2% of OPEC's reserves . • In 2016, OPEC partnered with 10 non-OPEC nations (including Russia) to form **OPEC+**, aiming to counter falling oil prices driven by U.S. shale production. The **alliance now includes 23 members, with Brazil joining in February 2025.**

2.6 ADDITIONAL TOPICS FOR READING FROM IASGYAN WEBSITE

Topic Name	Date
How Trump's New Tariffs will affect China, and the US	7th February, 2025
India and Steel Dumping, Price Wars	14th February, 2025
India-US 123 Agreement of 2007	15th February, 2025
China's Dam Project opens The Floodgates of Concern	15th February, 2025
PM's France Visit	15th February, 2025

3. ECONOMY

3.1 EXCESSIVE FINANCIALISATION

Context

- The Economic Survey 2024-25 warned against excessive financialisation.

What is Excessive Financialisation?

The Survey defines excessive financialisation as the **rapid growth of financial markets and products that outpace the real economy's needs.** This leads to:

- Complex, risky financial instruments (e.g., securitized mortgages).
- Diversion of resources from productive sectors (e.g., manufacturing) to speculative activities (e.g., real estate).
- Increased systemic risks, as seen during the 2008 global financial crisis, triggered by reckless lending and over-securitization.

How Can Excessive Financialisation Harm India's Economy?

- **Resource Misallocation**: Financial markets compete with the real economy for capital and skilled labor, prioritizing high-collateral, low-productivity projects (e.g., construction) over innovation-driven ventures. This misallocation strains long-term economic growth and exacerbates inequality.
- **Financial Instability**: Over-reliance on asset prices (e.g., stocks) for growth can create bubbles, as seen in India's rising household savings in equities.
- A 2025 study found that **financialisation increases public and private debt levels,** particularly in low-middle-income countries like India.

Role of Financial Markets in Economic Growth

- **Benefits**: Financial markets reduce transaction costs, facilitate price discovery, and channel capital into innovative activities (e.g., startups).
    - They enable consumption smoothing (e.g., loans for education) and shock absorption for households and firms.
- **Risks:** Overgrowth of financial markets relative to the economy's capital needs can destabilize the real economy, as highlighted by the Survey.

The "Tipping Point" for Financial Development

- The Survey notes that **while financial growth drives economic progress, excessive expansion can hinder productivity.** For example:
    - Rapid private credit growth in Ireland and Thailand reduced productivity due to over-investment in non-productive sectors.
    - India's credit-to-GDP ratio, though below the trend line, requires careful monitoring to avoid speculative bubbles.

Way Forward

- **Align Financial Growth with Real Economy Needs**: Financial markets must grow in alignment with the economy's capital requirements, not outpace them.
- **Robust Regulation**: Curbing complex products (e.g., securitized loans) and ensuring transparency in AI-driven finance.
- **Prioritize Inclusive Growth**: Finance should focus on poverty reduction, inequality mitigation, and shock absorption for vulnerable households.
- **Leverage Technology Responsibly**: AI and fintech can enhance financial inclusion but require safeguards to prevent bias and systemic risks.

Conclusion

- Excessive financialisation poses significant risks to India's economic stability, particularly in a low-middle-income context. By balancing

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financial sector growth with the economy's needs and prioritizing inclusive policies, India can harness finance as a tool for sustainable development.

3.2 EXTRA-LONG STAPLE (ELS) COTTON

Context

- The Union Finance Minister announced a five-year mission to promote extra-long staple (ELS) cotton varieties.

About Extra-Long Staple (ELS) Cotton

- ELS cotton is a premium variety with fiber lengths of **30 mm or more**, making it softer, stronger, and finer than medium or short staple cotton.
- It is derived from the **species *Gossypium barbadense*** (Egyptian or Pima cotton) and is grown in countries like China, Egypt, Australia, and Peru.
- In India, ELS cotton is cultivated only in limited regions:
  - **Atpadi taluka** in Maharashtra's Sangli district.
  - **Coimbatore** in Tamil Nadu.
- ELS cotton is required for high-quality textiles, luxury fabrics, and fine clothing due to its superior durability and smooth texture.

Why is ELS Cotton not widely grown in India?

- ELS cotton yields **7–8 quintals per acre**, compared to **10–12 quintals per acre** for **medium staple cotton (Gossypium hirsutum), which dominates 96% of India's production.**
- Farmers struggle to secure premium prices due to inadequate market linkages. The infrastructure is underdeveloped, and the Minimum Support Price (MSP) for ELS is not higher than medium staple cotton.
- ELS cotton requires specific growing conditions and intensive care, **increasing costs.** Without guaranteed returns, farmers hesitate to invest in this variety.
- Medium staple cotton is easier to grow and has higher yields, leading to a lack of focus on ELS cultivation.

India's Cotton Yield v/s Global Standards

- **India's average yield**: 10–12 quintals per acre for medium staple cotton, and even lower for ELS.
- **Global benchmarks**:
  - **Brazil**: 20 quintals per acre.
  - **China**: 15 quintals per acre.
- **Gap Reasons**: Outdated farming practices, limited access to advanced technologies, and insufficient agronomic support.

Five-Year Mission to Promote ELS Cotton

In the **Union Budget 2024–25**, the Finance Minister announced a five-year mission to improve cotton productivity and sustainability, with ELS cotton as a priority. Key steps include:

- Provide farmers access to **genetically modified (GM) seeds**, such as herbicide-tolerant Bt (HtBT) cotton, to manage weeds and boost yields.
- Develop high-yielding ELS varieties suited to Indian conditions through research institutions.
- Guide farmers on best practices for irrigation, fertilization, and pest control to maximize yields.
- Strengthen market connections to ensure farmers receive premium prices for ELS cotton, incentivizing its cultivation.
- Introduce advanced pest control techniques to reduce crop losses and improve productivity.

3.3 WHAT ARE SANCTIONS

Context

- The US sanctioned four Indian companies as part of its campaign to cripple Iran's oil revenue.

What Are Sanctions?

Sanctions are economic, diplomatic, or military penalties imposed by one country or a group of countries to pressure or punish a target nation, entity, or individual. They restrict economic interactions in various ways:

- **Import/Export Bans**: Prohibiting trade of specific goods (e.g., oil) or all goods
- **Asset Freezing**: Blocking access to financial assets in the sanctioning country's jurisdiction
- **Financial Restrictions**: Banning use of banking systems or currencies (e.g., USD)
- **Targeted vs Comprehensive Sanctions**: Targeted sanctions focus on specific individuals/businesses (e.g., Iranian oil brokers), while comprehensive sanctions affect an entire country's economy (e.g., Cuba's US embargo)

Why Did the US Impose Fresh Sanctions on Iran?

The US has a decades-long history of sanctioning Iran over concerns about its nuclear program, support for proxy militias (e.g., Hezbollah), and human rights abuses. The latest sanctions are part of President Donald Trump's renewed "maximum pressure" campaign to:

- **Cut Iran's Oil Revenue**: Oil sales fund Iran's military and proxy groups, which the US claims destabilize the Middle East
- **Disrupt "Shadow Networks":** Iran allegedly uses a clandestine fleet of ships, brokers, and managers to evade sanctions and sell oil. The US Treasury accused Iran of relying on "ship-to-ship transfers" in international waters to hide oil origins

Which Indian Companies Were Sanctioned, and Why?

- Flux Maritime, BSM Marine, and Austinship are accused of acting as commercial/technical managers for vessels involved in Iranian oil shipments. Cosmos Lines is directly accused of transporting Iranian petroleum.
- **US Allegations:** These companies helped Iran bypass sanctions by managing ships in the "shadow fleet," enabling oil sales to Asia.

Implications for India

- Sanctioned Indian firms face asset freezes and bans on US-dollar transactions. The move complicates India's balancing act between strategic ties with the US and energy dependence on Iran. India stopped importing Iranian oil in 2019 but may face pressure to further isolate Iran.

3.4 2025-26 UNION BUDGET

The budget's theme is to build on India's status as the fastest-growing major global economy, emphasizing balanced regional growth and the vision of 'Sabka Vikas' (Development for All). The budget focuses on inclusive development, structural reforms, and global competitiveness.

Four engines of development are highlighted

- Agriculture as the primary driver of rural growth
- MSMEs as the backbone of the economy
- Investment to fuel infrastructure and industrial growth
- Exports to enhance global competitiveness

Agriculture as the 1st Engine

Key initiatives include:

- **Prime Minister Dhan-Dhaanya Krishi Yojana:** Targets 100 low-productivity districts to enhance agricultural productivity, promote crop diversification, improve post-harvest storage, upgrade irrigation, and facilitate access to credit. Expected to benefit 1.7 crore farmers.
- **Rural Prosperity and Resilience Programme:** Addresses under-employment in agriculture through skilling, investment, and technology, focusing on rural women, young farmers, and marginalized groups.

- **Aatmanirbharta in Pulses:** A 6-year mission to achieve self-sufficie ncy in Tur, Urad, and Masoor pulses.
- **Comprehensive Programme for Vegetables & Fruits:** Promotes production, efficient supply chains, processing, and fair prices for farmers.
- **Makhana Board in Bihar:** Established to improve production, processing, and marketing of makhana.
- **National Mission on High-Yielding Seeds:** Strengthens research and propagation of high-yield, pest-resistant, climate-resilient seeds.
- **Fisheries Framework:** Sustainably harnesses fisheries from India's Exclusive Economic Zone and High Seas.
- **Mission for Cotton Productivity:** A 5-year mission to improve cotton farming productivity and sustainability.
- **Enhanced Credit through KCC:** Increases loan limits under the Modified Interest Subvention Scheme for Kisan Credit Card holders.
- **Urea Plant in Assam:** New plant with annual capacity of 12.7 lakh metric tons.
- **India Post's Role:** Repositioned to support the rural economy through its vast network.

MSMEs as the 2nd Engine

Key measures include:

- **Revision in MSME Classification Criteria:** Increased investment and turnover limits to enable economies of scale and better capital access.
- **Enhanced Credit Guarantee Cover:** Raised from ₹5 crore to ₹10 crore for Micro and Small Enterprises, and from ₹10 crore to ₹20 crore for startups.
- **Credit Cards for Micro Enterprises:** Customized credit cards with ₹5 lakh limit for micro enterprises.
- **Fund of Funds for Startups:** Expanded with fresh contribution of ₹10,000 crore.
- **Scheme for First-Time Entrepreneurs:** Provides term loans up to ₹2 crore for women, SC, and ST entrepreneurs.
- **Focus Product Scheme for Footwear & Leather:** Enhances productivity and competitiveness in these sectors.
- **Toy Sector Development:** Aims to make India a global toy manufacturing hub.
- **Support for Food Processing:** Establishes National Institute of Food Technology, Entrepreneurship, and Management in Bihar.
- **National Manufacturing Mission:** Supports industries under "Make in India" with focus on Clean Tech manufacturing.

Investment as the 3rd Engine

This includes three sub-domains:

A. Investing in People

- **Saksham Anganwadi and Poshan 2.0:** Provides nutritional support to over 8 crore children, 1 crore pregnant women, and 20 lakh adolescent girls.
- **Atal Tinkering Labs:** Plans to set up 50,000 labs in government schools over five years.
- **Broadband Connectivity:** Under Bharatnet project, provides broadband to all government secondary schools and primary health centers in rural areas.
- **Bharatiya Bhasha Pustak Scheme:** Provides digital Indian language books for education.
- **National Centres of Excellence for Skilling:** Establishes five centers with global expertise.
- **Expansion of Capacity in IITs:** Creates additional infrastructure in five IITs established after 2014.
- **Centre of Excellence in AI for Education:** Focuses on leveraging AI to enhance educational outcomes.
- **Expansion of Medical Education:** Adds 10,000 medical seats next year, with a goal of 75,000 in five years.
- **Day Care Cancer Centres:** To be established in all district hospitals within three years.
- **Strengthening Urban Livelihoods:** New scheme for socio-economic upliftment of urban workers.
- **PM SVANidhi Revamp:** Enhances support for street vendors.
- **Social Security Scheme:** For welfare of online platform workers.

B. Investing in Economy

- **3-Year Pipeline of PPP Projects:** Each infrastructure ministry develops a 3-year pipeline of PPP projects.
- **Support to States for Infrastructure:** ₹1.5 lakh crore outlay for 50-year interest-free loans to states.
- **Asset Monetization Plan 2025-30:** Aims to generate ₹10 lakh crore for new projects.
- **Jal Jeevan Mission Extension:** Extended until 2028 with enhanced outlay.
- **Urban Sector Reforms:** Incentivized to improve urban infrastructure and services.
- **Urban Challenge Fund:** ₹1 lakh crore fund to finance urban projects.
- **Nuclear Energy Mission:** Aims to develop 100 GW of nuclear energy by 2047.
- **Maritime Development Fund:** ₹25,000 crore fund for maritime industry financing.
- **Modified UDAN Scheme:** Enhances regional connectivity to 120 new destinations.
- **Greenfield Airport in Bihar:** Develops new airports alongside expanding existing ones.
- **Western Koshi Canal Project:** Financial support for canal project benefiting farmers in Bihar.
- **SWAMIH Fund 2:** Blended finance facility to complete stressed housing units.
- **PM Gati Shakti Data Access:** Provides private sector access to relevant data and maps.
- **Tourism for Employment-Led Growth:** Develops top 50 tourist destinations with various support measures.
- **Medical Tourism Promotion:** Positions India as a global healthcare destination through partnerships and capacity building.

C. Investing in Innovation

- **Private Sector-Driven R&D Initiative:** ₹20,000 crore allocated for implementation.
- **Deep Tech Fund of Funds:** Explored to catalyze next-generation startups.
- **PM Research Fellowship:** Provides 10,000 fellowships for technological research.
- **Gene Bank for Crops Germplasm:** Establishes second gene bank with 10 lakh germplasm lines.
- **National Geospatial Mission:** Develops foundational geospatial infrastructure and data.
- **Gyan Bharatam Mission:** Focuses on conserving India's manuscript heritage.

Exports as the 4th Engine

Key initiatives include:

- **Export Promotion Mission:** Establishes missions with sectoral and ministerial targets.
- **BharatTradeNet (BTN):** Digital platform for international trade documentation and financing.
- **Integration with Global Supply Chains:** Supports domestic manufacturing capacities and forms facilitation groups.
- **Industry 4.0 Opportunities:** Supports domestic electronic equipment industry.
- **National Framework for Global Capability Centres (GCC):** Guides states in promoting GCCs in tier 2 cities.
- **Warehousing Facility for Air Cargo:** Upgrades infrastructure and streamlines customs protocols.

Tax Reforms

- **Basic Customs Duty (BCD) Exemptions:** For 36 lifesaving drugs, cobalt powder, lithium-ion battery scrap, and other critical minerals.
- **Tax-Free Income Limit:** Increased to ₹12 lakh under the new tax regime.
- **FDI in Insurance Sector:** Increased from 74% to 100%.
- **India Post Payment Bank Expansion:** Deepens financial inclusion in rural areas.
- **Grameen Credit Score Framework:** Developed by Public Sector Banks.
- **KYC Simplification:** Revamped Central KYC Registry rolled out in 2025.
- **Bilateral Investment Treaties:** Revamped model BIT to attract foreign investment.

Budget Estimates

Revised Estimates for 2024-25

- Total receipts (excluding borrowings): ₹31.47 lakh crore
- Net tax receipts: ₹25.57 lakh crore

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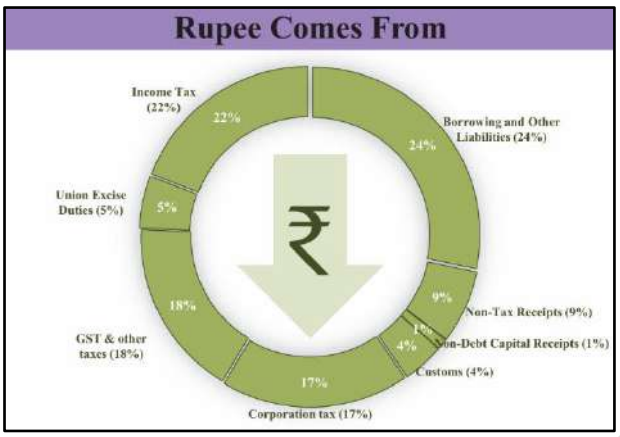
- Total expenditure: ₹47.16 lakh crore
- Capital expenditure: ₹10.18 lakh crore
- Fiscal deficit: 4.8% of GDP

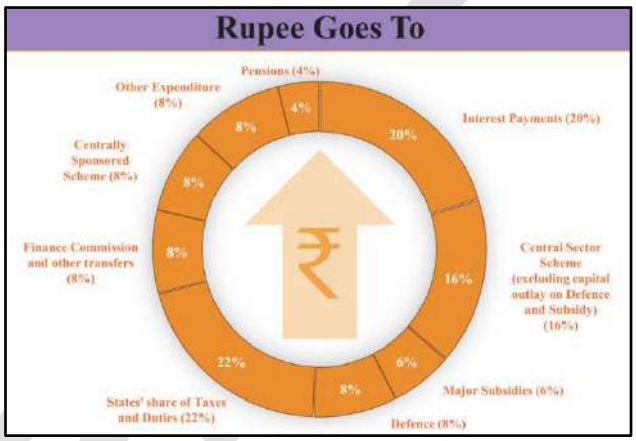
Budget Estimates for 2025-26

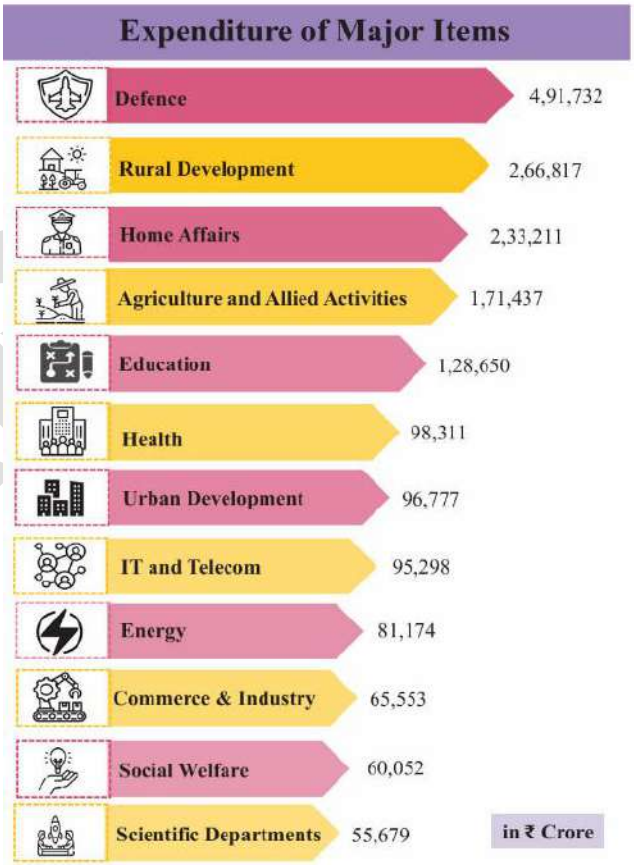
- Total receipts (excluding borrowings): ₹34.96 lakh crore
- Net tax receipts: ₹28.37 lakh crore
- Total expenditure: ₹50.65 lakh crore
- Fiscal deficit: 4.4% of GDP

Financing the Fiscal Deficit

- Net market borrowings: ₹11.54 lakh crore from dated securities
- Gross market borrowings: ₹14.82 lakh crore
- Other sources: Small savings and other financing mechanisms.







3.5 SHORT ARTICLES

Digital Payment Index

Context

- The Reserve Bank of India's (RBI) released digital payments index (DPI).

About the RBI Digital Payments Index (DPI)

- **It was launched in 2021**, to measure the extent of digitization in the payment ecosystem.
- **Base year:** March 2018 (score set at 100).
- As of September 2024, the index stands at **465.33**, up from 445.5 in March 2024, reflecting rapid adoption of digital payments.
- Growth in payment infrastructure (e.g., UPI, PoS terminals) and transaction performance (e.g., volume, value).

Parameters of the RBI-DPI

The index is calculated using five parameters, each with a specific weightage:

- **Payment Enablers (25%):** Factors like internet penetration, mobile connectivity, Aadhaar-based payments, and regulatory support (e.g., RBI's Payment Infrastructure Development Fund).
- **Demand-Side Infrastructure (10%):** Consumer-facing tools such as digital payment apps, FASTags, prepaid instruments, and mobile/internet banking adoption.
- **Supply-Side Infrastructure (15%):** Business-enabling tools like Point-of-Sale (PoS) terminals, QR codes, ATMs, and payment gateways.
- **Payment Performance (45%):** Metrics such as transaction volume, value, frequency, and cash displacement (e.g., UPI transactions grew 82% in Q2 2020–21).
- **Consumer Centricity (5%):** Accessibility, user education, complaint resolution, and system reliability (e.g., reduced downtime).

Grameen Credit Score

Context

- The Grameen Credit Score (GCS) is a new initiative introduced by the Finance Minister in the Union Budget 2025.

About Grameen Credit Score (GCS)

- It is a framework developed by public sector banks to assess the creditworthiness of rural

women entrepreneurs in Self-Help Groups (SHGs).
- It aims to integrate SHG members into India's formal financial system by evaluating non-traditional data (e.g., savings behavior, microloan repayments) instead of relying on conventional credit histories like CIBIL.

Why Is GCS Needed?

- **Financial Exclusion**: Rural borrowers, particularly women in SHGs, lack access to formal banking due to insufficient credit histories. GCS bridges this gap by using alternative data.
- **Comprehensive Assessment**: Factors like SHG meeting attendance, savings patterns, and microloan repayment records provide a more accurate credit evaluation, enabling access to formal loans.

Key Features of GCS

- **Data Collection** sources include SHG transaction records, mobile banking data, and government schemes to create a "digital footprint" for borrowers.
- Scores update dynamically as borrowers save, repay loans, or attend meetings, allowing banks to offer customized interest rates and repayment terms.
- Banks can design microcredit or credit cards (limits up to ₹5 lakh) for SHG members, expanding financial access.

Gross Domestic Knowledge Product (GDKP)

Context

- The Union Government is reviving the Gross Domestic Knowledge Product (GDKP) plan to better measure the economic and social impact of knowledge, innovation, and intellectual assets in India.

About Gross Domestic Knowledge Product (GDKP)

- It is a proposed metric to quantify the contributions of knowledge-driven sectors (e.g., research, technology, education), innovation, and intellectual assets (e.g., patents, copyrights) to a country's growth.
- Unlike GDP, which measures the total monetary value of goods and services, GDKP focuses on **non-monetary, intangible contributions** like digital innovation, human capital, and traditional knowledge systems.

Satellite Accounts: A Key Tool for GDKP

- The **Ministry of Statistics and Programme Implementation (MoSPI) plans to develop GDKP as a satellite account**, similar to existing accounts for tourism, culture, or the blue economy.
- Satellite accounts provide detailed insights into sectors that traditional GDP overlooks. For example: Tourism satellite accounts measure economic activity tied to travel.
- GDKP's satellite account would track knowledge production across sectors like education, healthcare, and digital innovation.

Challenges in Measuring GDKP

- **No clear framework exists to capture knowledge's economic impact**. Parameters like "innovation" or "cultural heritage" are subjective and require refinement.
- Data on intellectual property, research output, and digital innovation is fragmented. Perception-based surveys may be needed, introducing subjectivity.
- Some GDKP components are already included in GDP, risking duplication.
- Ensuring GDKP complements GDP without redundancy requires robust methodology.

Way Forward

- A refined GDKP could inform policies for education, research, and technology, guiding investments in knowledge infrastructure (e.g., R&D, digital connectivity).
- Many advanced economies measure intangible assets. India's GDKP framework could align with international efforts and position the country as a leader in knowledge economy metrics.
- GDKP could highlight the role of traditional knowledge systems (e.g., Ayurveda) in enhancing well-being.

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Market Intervention Scheme (MIS)

Context

- The Union government has revised the Market Intervention Scheme (MIS) guidelines.

About the Market Intervention Scheme (MIS)

- It is a **state-sponsored initiative implemented by the Ministry of Agriculture and Farmers Welfare**, at the request of state/UT governments to protect farmers from distress sales.
- It **focuses on perishable agricultural / horticultural commodities** like tomatoes, onions, and potatoes, which lack Minimum Support Prices (MSPs).
- This ensures farmers receive fair prices during market crashes, stabilizes income, and reduces post-harvest losses.

Under MIS:

- States procure commodities at a fixed **Market Intervention Price (MIP)**.
- The central government bears 50% of losses (75% for North-Eastern states), while states cover the remaining 50%.
- NAFED, Farmer Producer Organizations (FPOs), Farmer Producer Companies (FPCs), and state-nominated agencies handle procurement, storage, and transportation.

Revised MIS guidelines

- MIS is now a component of the integrated **Pradhan Mantri Annadata Aay Sanrakshan Abhiyan (PM-AASHA)** scheme.
- **It** will be activated only if market prices drop by **10%** compared to the previous normal year.
- The procurement limit for crops has risen from **20% to 25%** of total production.
- States can now pay the difference between MIP and selling price directly into farmers' bank accounts instead of physical procurement.
- Central agencies like NAFED and NCCF will refund operational costs for transporting perishable crops (e.g., tomatoes, onions) from producing to consuming states.

Debt-GDP Ratio

Context

- The Union Government has shifted its focus from fiscal deficits to the "debt-GDP ratio".

Government's New Fiscal Anchor

- Starting from the **2026–27 financial year**, the Union Government will adopt the **debt-to-GDP ratio** as its primary fiscal anchor, replacing the traditional focus on fiscal deficit.

Current Debt-to-GDP Estimates:

- **2024–25**: 57.1% (revised estimate).
- **2025–26**: 56.1%.
- **Target by 2031**: Reduce to **50±1%**, in line with international benchmarks.

Fiscal Deficit Targets for Coming Years

- **2024–25**: Estimated at **4.8% of GDP** (revised from 4.9%).
- **2025–26**: Targeted at **4.4% of GDP**.
- **Long-Term Goal**: Gradually reduce the fiscal deficit as part of a **fiscal consolidation strategy**, though it will remain above the FRBM Act's 3% target until 2031.

Why the Shift from Fiscal Deficit to Debt-to-GDP Ratio?

- The **debt-to-GDP ratio captures the cumulative impact of past and current fiscal decisions**, unlike the fiscal deficit, which reflects only annual borrowing. This provides a clearer picture of long-term fiscal sustainability.
- It **allows the government to respond to economic shocks (e.g., pandemics, global crises) without rigidly adhering to annual deficit targets**. For example, during the COVID-19 pandemic, fiscal deficits surged to 9.2% of GDP in 2020–21, but the debt-to-GDP ratio remained manageable at 57.1% in 2024–25.
- The government highlights proper disclosure of off-budget borrowings, to ensure alignment with the debt-to-GDP ratio, which reduces hidden liabilities and rebuilds fiscal buffers for growth-enhancing expenditures.

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Three Degrees of Fiscal Consolidation

The government has outlined three scenarios to achieve the 50% debt-to-GDP target by 2031, based on nominal GDP growth rates:

- **Mild Consolidation**:
  - **10% nominal GDP growth**: Debt-to-GDP ratio of **52.0%** by 2031.
  - Fiscal deficit: 3.5% by 2031.
- **Moderate Consolidation**:
  - **10% nominal GDP growth**: Debt-to-GDP ratio of **50.6%** by 2031.
  - Fiscal deficit: 3.5% by 2031.
- **High Consolidation**:
  - **10% nominal GDP growth**: Debt-to-GDP ratio of **49.3%** by 2031.
  - Fiscal deficit: 3.5% by 2031.

The **Fiscal Responsibility and Budget Management (FRBM) Act** targets:

- **40% debt-to-GDP ratio**.
- **3% fiscal deficit**.

NaBFID's Partial Credit Guarantee

Context

- In the Union Budget 2025–26, the Finance Minister announced that NaBFID will establish a Partial Credit Enhancement Facility for corporate bonds in the infrastructure sector.

NaBFID's Partial Credit Enhancement Facility

- This facility aims to **upgrade the credit ratings** of infrastructure bonds issued by companies rated below "AA" (e.g., "A" rated firms) to the "AA" category.
- This makes the bonds eligible for investment by **pension funds and insurance companies**, which are legally required to invest only in "AA"-rated or higher securities.

Impact:

- **Attracts long-term capital**: Pension and insurance funds, which currently dominate government bond markets, will now have an alternative investment avenue in infrastructure bonds.
- **Reduces bank dependence**: Infrastructure firms can bypass traditional bank loans and access bond markets directly, lowering borrowing costs and diversifying funding sources.
- The move aims to **democratize the corporate bond market** by allowing smaller or lower-rated infrastructure companies to tap into bond financing, aligning with fiscal consolidation efforts (reduced sovereign bond issuance).

About NaBFID

- It was created in 2021 under the *National Bank for Financing Infrastructure and Development Act, 2021* as India's fifth All-India Financial Institution (AIFI).
- **Mandate**:
  - Address gaps in **long-term non-recourse infrastructure financing** (loans not backed by project sponsors' assets).
  - Strengthen India's bond and derivatives markets to support infrastructure projects.
  - Boost economic growth sustainably through credit flow and investment channelization.
- Supervised by the Reserve Bank of India (RBI) as an AIFI.
- It raises capital via government grants, multilateral institutions, and private investors. It plans to sanction ₹3 lakh crore in infrastructure projects by March 2026.

National Manufacturing Mission

Context

- The Union Minister for Finance announced the National Manufacturing Mission in the Union Budget 2025-26.

About National Manufacturing Mission

- It covers **small, medium, and large industries**, providing policy support, execution roadmaps, and a governance framework for central ministries and states to boost manufacturing growth.
- **Credit guarantee cover** for MSMEs will increase from **₹5 crore to ₹10 crore**.
- **Classification limits for MSMEs will rise:**
  - Investment limit: 2.5 times current levels
  - Turnover limit: 2 times current levels
  - This will enable more enterprises to access credit and scale operations.
- The mission aims to raise manufacturing's share of India's GDP from 17% to 25%.

The mission prioritizes five key pillars:

- **Ease and Cost of Doing Business**: Simplifying regulations and reducing operational costs to create a business-friendly environment.
- **Future-Ready Workforce**: Investing in skill development programs to equip workers with competencies for emerging industries (e.g., Industry 4.0).
- **Vibrant MSME Sector**: Strengthening micro, small, and medium enterprises (MSMEs) through innovation, funding, and market access.
- **Technology Availability:** Promoting adoption of advanced technologies (e.g., IoT, AI) across industries.
- **Quality Products**: Encouraging production of high-standard goods to meet domestic and global demand.

Agricultural and Processed Food Products Export Development Authority (APEDA)

Context

- The Agricultural and Processed Food Products Export Development Authority (APEDA) facilitated India's first commercial sea shipments of premium Sangola and Bhagwa pomegranates of Maharashtra to Australia.

APEDA's Role and Functions

- APEDA was **established in 1986** under the Agricultural and Processed Food Products Export Development Authority Act
- It works **under the Ministry of Commerce and Industry.**
- Its headquarters is at New Delhi, and has 15 Regional Offices.
- **Its core functions include:**
    - Facilitating International market access for Indian products.
    - Conducting inspections of meat slaughterhouses and food processing plants to ensure global standards.
    - Providing financial aid to exporters for market development, infrastructure, and quality upgrades under the Agriculture Export Promotion Scheme.
    - Organizing technical training for stakeholders in packaging, marketing, and international compliance.
- It also has the responsibility to **monitor the import of sugar.**
- It serves as the Secretariat for the **National Accreditation Board (NAB)** under the National Programme for Organic Production (NPOP), accreditation certification bodies for organic exports.

It has the responsibility of export promotion and development of:

- Fruits, Vegetables and their Products
- Meat and Meat Products
- Alcoholic and Non-Alcoholic Beverages
- Dairy Products
- Confectionery, Biscuits and Bakery Products
- Poultry and Poultry Products
- Cocoa and its products, chocolates of all kinds
- Honey, Jaggery and Sugar Products
- Groundnuts, Peanuts and Walnuts
- Pickles, Papads and Chutneys
- Guar Gum
- Cereal and Cereal Products
- Herbal and Medicinal Plants
- De –oiled rice bran
- Floriculture and Floriculture Products
- Green pepper in brine
- Cashew Nuts and Its Products
- Basmati rice

Deposit Insurance

Context

- Government is considering increasing the insurance cover for bank deposits from the current limit of Rs 5 lakh.

What is Deposit Insurance?

- Deposit insurance is a **financial safety net that protects depositors' money in case a bank fails.**
- The protection is **provided by the Deposit Insurance and Credit Guarantee Corporation (DICGC)**, a subsidiary of the Reserve Bank of India (RBI).
- The DICGC insures deposits up to a specified limit (currently Rs 5 lakh per depositor, per bank) across all branches of an insured bank.

- The insurance covers both principal and interest amounts.
- As of March 2024, **97.8% of accounts in India were fully protected under this scheme, exceeding the international benchmark of 80%.**

Deposit insurance was introduced in India in 1962 with a coverage limit of Rs 1,500 per depositor. The coverage has been enhanced six times since then, most recently to Rs 5 lakh in 2020 following the Punjab & Maharashtra Co-operative Bank (PMC Bank) crisis.

How Does Deposit Insurance Work?

- When a bank fails, the liquidator submits a claim list to the DICGC. Depositors must provide proof of identity, a "willingness declaration" to receive up to Rs 5 lakh, and bank account details for payout.
- The DICGC compensates eligible depositors within 90 days of restrictions or two months after liquidation.

RBI $10 Bn Buy-Sell Swap

Context

- The Reserve Bank of India (RBI) is conducting its largest-ever $10 billion dollar-rupee buy-sell swap auction to address a severe liquidity crunch in the banking system, stabilize the rupee, and maintain foreign exchange reserves.

Why Was the Swap Initiated?

- **Liquidity Crisis:** Banking system faced its worst liquidity deficit in over a decade in January 2025, peaking at Rs 3.15 lakh crore on January 23—the lowest level in nearly 15 years. Factors included tax outflows, GST payments, and RBI's dollar sales to stabilize the rupee, which drained equivalent rupee liquidity from the system.
- **Rupee Volatility:** The rupee depreciated 3.3% against the dollar between October 2024 and February 2025, hitting 86.86/USD on February 25, 2025. Foreign investors withdrew $31 billion from Indian equity markets since December 2024, exacerbating forex outflows.
- **Forex Reserve Management:** RBI's net forward dollar sales surged to $67.93 billion by December 31, 2024, as it intensified efforts to stabilize the rupee. The swap aims to replenish dollar reserves while injecting rupee liquidity.

How the Swap Works?

- **First Leg (Buy):** Banks sell US dollars to the RBI at the Financial Benchmarks India Private Ltd (FBIL) Reference Rate on the auction date. The RBI credits the equivalent rupee amount to the banks' accounts and receives the dollars in its nostro account. This leg injects rupee liquidity into the banking system.
- **Second Leg (Sell):** At the end of the swap period (in this case, 3 years), banks repurchase the US dollars from the RBI by returning the rupee funds they initially received, along with a predetermined swap premium. This reverses the initial liquidity injection, but over a longer timeframe.

3.6 SNIPPETS

Topics	Details
Jevons Paradox	• Microsoft CEO Satya Nadella recently highlighted the Jevons Paradox in the context of artificial intelligence (AI). • The Jevons Paradox (coined by economist William Stanley Jevons) states that **improving a resource's efficiency often increases its consumption rather than reducing it.** ○ For example, coal-efficient steam engines in 19th-century Britain led to higher coal demand due to lower costs and expanded industrial use. • Efficiency reduces costs, making the resource more attractive, which boosts demand and offsets savings.

Algo Trading	• SEBI introduced a framework to allow safer participation of retail investors in algorithmic trading. • Algorithmic trading (or "algo trading") uses advanced computer programs to **automatically execute trades based on mathematical and statistical models.** • Previously, algo trading was restricted to institutional investors (e.g., foreign funds, proprietary trading firms) due to high costs and technical barriers. In a bid to increase access, the Securities and Exchange Board of India (SEBI) allowed retail investors.

Repo Rate Cut	• The Reserve Bank of India (RBI) cut the repo rate by 25 basis points to 6.25%, marking the first reduction in nearly five years.
	• The **repo rate is the interest rate at which the central bank lends money to commercial banks.**
	• Reduce Repo rate, banks are likely to reduce interest rates on home loans, car loans, and business credit. For example:
	  ○ A 25-basis-point cut could reduce EMIs on a ₹50 lakh, 30-year home loan from ₹39,335 to ₹38,446 (a 2.3% drop).
	  ○ Borrowers may opt to reduce loan tenures instead of EMIs, saving on total interest paid.

Telecom Disputes Settlement & Appellate Tribunal (TDSAT)	• The Telecom Disputes Settlement & Appellate Tribunal has stayed financial penalties of over '141 crore on Jio, Airtel, and Vodafone Idea for not curbing spam. • It was established in 2000 by amending the **Telecom Regulatory Authority of India (TRAI) Act of 1997**. • **It adjudicates disputes and disposes of appeals** in the telecom sector, protecting the interests of both service providers and consumers. • **The chairperson** is appointed by the Central Government, and he must be a sitting or retired **Judge of the Supreme Court** or **Chief Justice of a High Court**. He serves for a maximum **four years** or until the age of **70**, whichever comes first.
Nuclear Energy Mission	• The Union Finance Minister announced a ₹20,000 crore Nuclear Energy Mission in the Union Budget 2025-26 to develop indigenous Small Modular Reactors (SMRs). • **The Mission** aims to operationalize **at least five SMRs by 2033**, advancing India's goal of achieving **100 GW of nuclear energy by 2047** under the *Viksit Bharat* initiative. • SMRs are advanced reactors (50–300 MW capacity) offering modularity, scalability, enhanced safety, and lower costs compared to traditional reactors. • The **Department of Atomic Energy (DAE)** received **₹24,049 crore** for 2025-26, slightly lower than the **₹25,882 crore** spent in 2023-24. ○ The ₹20,000 crore for SMR development is part of this allocation, though no specific funds for SMR construction are listed in the 2025-26 fiscal year.
Tax Year	• The Income Tax Bill 2025 aims to simplify India's tax structure by introducing the tax year. • The current income tax system operates under the Income Tax Act, 1961, which has been in force since April 1, 1962. This system uses two distinct periods for tax calculation and assessment:

	○ **Previous Year (PY):** This is the financial year (April 1 to March 31) during which income is earned. ○ **Assessment Year (AY):** This is the year following the Previous Year when taxes on the earned income are calculated, filed, and assessed. • **Current System:** Income earned between April 1, 2024 – March 31, 2025 (Previous Year) is taxed in Assessment Year (AY) 2025–26. • **New System:** Income earned between April 1, 2025 – March 31, 2026, will be taxed in Tax Year 2025–26 (same period).
Dinesh Khara Committee	• The Insurance Regulatory and Development Authority of India (IRDAI) established the Dinesh Khara Committee. • The Dinesh Khara Committee, a seven-member committee, is set up **to review proposed amendments to the Insurance Act of 1938.** • The committee is formed as the Union government prepares to introduce the Insurance Amendment Bill to Parliament. • The **proposed amendments include increasing the foreign direct investment cap from 74% to 100%**, reducing paid-up capital requirements, introducing a composite license system, and streamlining regulatory processes.

3.7 ADDITIONAL TOPICS FOR READING FROM IASGYAN WEBSITE

Topic Name	Upload Date
The kind of jobs needed for the 'Viksit Bharat' Goal	6th February, 2025
The Saga of Regulating India's Thermal Power Emissions	7th February, 2025
Is Private Investment expected to rise?	12th February, 2025
Middle Class 2.0	19th February, 2025
On building Resilient Telecom Infrastructure	21st February, 2025
Can India replicate the Amul success story for the Food and Vegetables' Sector?	21st February, 2025
How can Indian farmers be weaned away from Urea, Dap and Potash?	25th February, 2025

4. DEFENSE & SECURITY

4.1 NATIONAL DEFENSE& BUDGETARY ALLOCATIONS

Context

- **Total Defence Budget: ₹6.81 trillion, a marginal increase from ₹6.22 trillion in FY25,** accounting for 1.9% of India's GDP.
- **Capital Outlay: ₹1.8 trillion, up from ₹1.72 trillion in FY25,** for modernization and infrastructure development.
- **Revenue Expenditure:** ₹4.89 trillion, including ₹1.61 trillion for pensions, for maintaining and operating existing defence assets.

Focus Areas: Infrastructure and Border Security

- **BRO Allocation: ₹7,000 crore, up from ₹6,500 crore in FY25,** to enhance border infrastructure and connectivity.

Defence Research and Development

- **DRDO Allocation: ₹26,800 crore to strengthen indigenous defence technology** and reduce reliance on imports.
- **iDEX Allocation:** ₹450 crore to promote innovation and entrepreneurship in the defence sector.

Maritime Security

- **Naval Fleet Allocation:** ₹24,391 crore to modernize and expand the naval fleet.
- **Aircraft and Aero Engines Allocation:** ₹48,614 crore to enhance air power and capabilities.
- **Other Equipment Allocation:** ₹63,099 crore for various defence equipment and systems.

About Innovations for Defence Excellence (iDEX)

Launch	**Initiated by the Prime Minister in 2018.**
Objective	Promote **innovation and technology development** in defence and aerospace sectors.
Platform	Collaborative space for stakeholders to co-create and develop innovative defence technologies.
Programs	Defence India Startup Challenge **(DISC), Open Challenge, Thematic Open Challenge, ADITI Challenge.**
Ecosystem Creation	Engages industries, MSMEs, start-ups, individual innovators, R&D institutes, and academia.
Support	**Provides grants, funding, and additional support for R&D activities.**
Governance	Defence Innovation Organization (DIO) formed as a not-for-profit company under **Section 8 of the Companies Act 2013, established by HAL and BEL.**

About Acing Development of Innovative Technologies with iDEX (ADITI) Scheme

Sub-scheme within iDEX, launched by the Defence Minister **on 4th March 2024**

Funding	**Offers grants of up to Rs 25 crore for R&D** in critical defence technologies.
Budget	**Rs 750 crore for the period 2023-24 to 2025-26.**
Objective	Address the needs of modern armed forces.

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Challenges	**First Round:17 challenges. ADITI 2.0: 19 new challenges in AI, quantum technology, and military communications.**
Recent Developments	**DISC 12 launched with 41 challenges across various technology domains, grants up to Rs 1.5 crore.**
Collaboration and Participation	Over 9,000 applications and collaboration with more than **450 startups and MSMEs.**

4.2 MILITARY CAPABILITIES & HARDWARE

A. Missile Systems:

Very Short-Range Air Defence System (VSHORADS)

- **Context: DRDO conducted 3 consecutive flight trials of VSHORADS** off the **Chandipur Coast, Odisha.**
- **VSHORADS is a Man Portable Air Defence System.**
- Target Neutralization: **Designed to neutralize drones** and low-altitude aircraft.
- **Key Points of the Flight Trials**
  - **Targets:** High-speed, low-altitude targets, low-flying drones.
  - **Flight Data Captured: Telemetry, Electro-Optical Tracking System (EOTS), Radar.**
  - **Flight Conditions:** Tests conducted under real-world operational conditions with 2 field operators.
- **Significance of the VSHORADS System**
  - **Versatility:** Suitable for use by the Indian Army, Navy, and Air Force.
  - **Self-Reliance (Atmanirbhar Bharat):** Developed indigenously, reducing dependence on foreign defense imports.
  - **Countering Modern Aerial Threats:** Designed to neutralize drones and low-altitude aircraft.
- **Enhanced Defense Capabilities:** Strengthens India's defense modernization by providing a *cost*-effective, highly mobile air defense solution.

Iran Test-Fires Ghadr-380 Anti-Warship Missile

- **Context: Iran has successfully test-fired the advanced Ghadr-380 anti-warship cruise missile**. This missile is capable of **targeting** and potentially hitting U.S. Navy ships deployed in the **Persian gulf and gulf of Oman.**
- **Key Highlights**
  - **Missile Type: Ghadr-380, an anti-warship cruise** missile with a **range of 1,000 kilometers (600 miles).**
  - **Launch Site: Underground missile facility in central Iran,** part of a network of dozens of facilities in **southern Iran.**
  - **Launch Time: Can be launched by 1 personnel in under 5 minutes.**
- **Key Features of the Missile**
  - **Anti-Jamming Capability:** Resistant to electronic interference, ensuring a high success rate.
  - **Speed:** Capable of reaching **speeds of up to Mach 3 (3,700 km/h or 2,300 mph).**
  - **Warhead:** Can carry a 200-300 kg warhead, capable of causing significant damage.
  - **Guidance System:** Equipped with an advanced guidance system, ensuring high accuracy.
- **Iran's Military Strength and Strategy**
  - **Missile Capability:** Claims to have missiles capable of **striking targets up to 2,000 kilometers** away, covering the entire Middle East region.
  - **Ballistic Missile Program:** Developed as a deterrent **after the 8-year Iran-Iraq War,** which resulted in over 1 million casualties.
  - **Domestic Production:** Iran has developed its missile systems domestically, **with over 90% of its missile production** being indigenous.
  - **Annual Military Budget:** Iran's annual military budget is estimated to be **around $20-30 billion.**
- **Impact on Regional Security**

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- **Concerns for the U.S. and Western Allies:** Iran's missile and nuclear programs **heighten regional tensions, with over 10,000 U.S. troops deployed in the region.**
- **U.S. Naval Presence:** Development and deployment of long-range missiles increase tensions with the U.S., which has over **20 warships deployed in the Persian Gulf.**
- **Regional Instability:** Iran's military activities contribute to regional instability, **with over 100,000 people killed in the Syrian Civil War,** which Iran has supported.

Iskander-M Tactical Ballistic Missile

- **Context: Russia's most significant military advancement** that is **currently under development** is the **Iskander-M tactical ballistic missile.**
- This missile, part of Russia's cutting-edge missile technology.

Key Features of the Iskander-M Missile

Missile Name	9K720 Iskander-M
Type	Medium-range ballistic missile
Range	**1000 km**
Warhead	**Conventional and nuclear warheads**
Development Bureau	Machine-Building Design Bureau (Kolomna)
Purpose	Precision strikes on NATO weaponry
Production Start	**Expected in 2025**
Target	NATO's **military infrastructure, particularly in Eastern Europe**

Deployment of Oreshnik Missile Systems in Belarus

- **Russia plans to deploy Oreshnik missile systems in Belarus.**
- **Belarus is a key ally of Russia** and **hosts a joint regional force group with Russia.**

Pinaka Multiple Rocket Launch Systems (MRLS):

- **Context: The Pinaka Multiple Rocket Launch Systems (MRLS) is an all-weather, indirect area fire artillery weapon system developed by the Defence Research and Development Organisation (DRDO).** The system was **1st used during the Kargil War** and neutralised enemy positions on the mountain.
- **Key Features**
  - **Quick Response:** Fast reaction time and high volume of fire against enemy targets.
  - **Launcher Capacity:** Each launcher carries 12 rockets, with a battery consisting of 6 launchers (total 72 rockets).
  - **Warheads:** Can deliver high-explosive and submunition warheads.
  - **Range:** 60-75 kilometers.
  - **Guidance:** Initially unguided, but the Pinaka-Guided version uses **INS/GPS** for precision strikes.
  - **Mobility:** Can be mounted on a Tatra truck for easy mobility.
- **Variants**
  - **Pinaka Mk 1:** The initial version with a range of 40 km.
  - **Pinaka Mk 2:** An upgraded version with a range of 60-75 km and guided capability.
  - **Pinaka Mk 3:** A long-range version under development with a range of 120 km and 300 km.
- **Deployment**
  - Each Pinaka regiment consists of three batteries of **6 Pinaka launchers.**
  - The Indian Army has plans to **operate 10 regiments by 2022 and increase to 22 regiments by 2032.**
  - As of November 2024, four regiments of Pinaka have been inducted by the Army.
- **Exports**

- **Armenia has signed a deal worth ₹2,000 crore for four Pinaka batteries** and other defense equipment.
- **Indonesia, Nigeria, and some Southeast Asian and European nations have shown interest** in acquiring the Pinaka MBRL system.

India-Russia deal for the Klub-S anti-ship cruise missile:

- **Context: In February 2025, India signed a deal with Russia to procure the Klub-S missile system,** which will enhance the operational capabilities of the Indian Navy's submarine fleet.
- **Klub-S Missile System Features**
  - **Developer:** NPO Novator, Russia
  - **Induction Year:** 1994 into Russian defense forces
  - **Warhead Payload:** 400 kg
  - **Targeting Capabilities:** Surface ships, submarines, and ground targets
  - **Range:** Up to 300 km
  - **Fire Control System:** Ensures accurate targeting and missile guidance
  - **Vertical Launcher Unit (VLU):** Launches missiles from submarines
  - **Resistance to Electronic Warfare:** Operates effectively in heavy enemy fire and electronic warfare conditions
  - **Terminal Phase Speed:** Achieves supersonic speeds, making interception difficult
  - **Cruising Altitude:** Flies at 10-15 meters, reducing enemy reaction time
- **Significance**
  - The Klub-S missile system will **boost the Indian Navy's submarine fleet with advanced targeting, long-range precision, and resistance to electronic warfare.** This deal represents one of the few successful defense agreements between India and Russia since the start of the Russia-Ukraine war

BrahMos NG Missile - Key Facts

- **Context:** The BrahMos NG missile will undergo its first flight test in 2026, with production starting by 2027-28. It is designed to be more compact and lightweight.
- **What is BrahMos NG?** An advanced, lighter, and more compact version of the BrahMos supersonic cruise missile, developed by India and Russia.
- **Key Facts**:
  - **Range**: 290 km
  - **Speed**: 3.5 Mach
- **Platform Integration**: **Sukhoi-30MKI, LCA Tejas**
- **Global Interest**: **Philippines**: $375 million deal for 3 BrahMos batteries (2022), **Indonesia**: Ongoing $450 million deal
- **History**: **1998**: BrahMos Aerospace formed as a joint venture between DRDO (India) and NPOM (Russia). **2001**: First successful launch from Chandipur, Odisha.

R-37M Hypersonic Missile.

- **Context: India's acquisition of the R-37M hypersonic missile from Russia is a significant development in the region's defense landscape.** This missile, with its **Mach 6 speed and extended range**, can engage targets at 300-400 km, making it a game-changer for the Indian Air Force (IAF).
- **Key Features of the R-37M Missile**
  - **Hypersonic Speed:** Reaches speeds up to Mach 6 (around 7,400 km/h)
  - **Weight:** 510 kilograms
  - **Warhead Weight:** 60 kilograms
  - **Guidance and Navigation:** Inertial navigation guidance system with mid-course updates
  - **Extended Range:** Engages targets at 300-400 km
- **Impact on Regional Defense**
  - **India:** Strengthens India's defense industry and provides strategic autonomy in future military engagements
  - **Pakistan:** Affects Pakistan's defensive posture, as its F-16 fighter jets are

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vulnerable to interception beyond the Line of Control (LoC)
    - **China:** Changes strategic calculations in the China-India standoff, regarding air superiority in the region
    - **Bangladesh:** May push Bangladesh to strengthen its own defense capabilities through regional alliances or defense procurements

Javelin Anti-Tank Guided Missiles: India-US Procurement & Co-Production - Key Facts

- **Context: In February 2025, India & US announced plans to procure and co-produce Javelin anti-tank guided missiles after discussions between PM Modi and US President Trump. Co-production strengthens defense ties between India and the US.**
- **About the Javelin Missile**:
    - **Type: Man-Portable**, FGM 148 Javelin, an advanced American-made anti-tank guided missile
    - **Self-Guided:** The missile guides itself to the target after launch, allowing the operator to take cover
- **Other Areas of Cooperation between India and the US**:
    - **10-Year Defense Framework**: To be signed in 2025, focusing on Indo-Pacific security
    - **US Defense Equipment**: Includes C-130J, C-17, P-8I, Chinooks, Seahawks, Harpoon missiles, MQ-9B drones, F-35 jets
    - **Defense Co-Production**: Joint production of Javelin missiles and Stryker vehicles
    - **India's Defense Status**: Increased cooperation, including ITAR review
    - **Joint Exercises**: Including the tri-service exercise Tiger Triumph.

B. Naval & Air Assets

P-8I Aircraft

- **Context: India plans to purchase 6 additional P-8I aircraft from the U.S., discussed between PM Modi and President Trump in February 2025, as part of strengthening defense cooperation.**
- **What is P-8I?** The P-8I is a long-range maritime patrol and anti-submarine warfare aircraft used by the Indian Navy to counter China's growing naval presence in the Indian Ocean Region (IOR).
- **Key Facts**:
    - **Manufacturer**: Boeing (U.S.)
    - **User**: Indian Navy
    - **Replacement:** Tu-142 aircraft
    - **Missions:** Anti-submarine warfare, anti-surface warfare, maritime patrol, reconnaissance
- **Procurement**:
    - India has purchased 12 P-8I aircraft (8 in 2009, 4 in 2016). 6 more approved in 2019; sale authorized in May 2021 at $2.42 billion.

INS Tamal: Key Facts

- **Context: INS Tamal is a stealth-guided missile frigate currently under construction in Russia, as part of a defense cooperation between India and Russia.**
- Combines **Russian design** with **Indian technology**.
- **Indigenous Contributions**: 26% of its components are sourced from **Indian manufacturers**, highlighting India's increasing self-reliance in defense technology.
- **Background and Significance**
    - **Class:** INS Tamal is an upgraded version of the **Krivak III class frigate**.
    - **Deal:** The ship is part of a $2.5 billion defense deal between India and Russia for **four stealth frigates**: 2 frigates will be built in Russia, 2 more will be constructed at **Goa Shipyard Limited** in India.
    - **First Ship:** The first of this class, **INS Tushil**, was commissioned in December 2024.
    - **Future Focus:** INS Tamal will be the last foreign-built warship commissioned by

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India, as India is shifting focus to designing and constructing its own warships.
    - **Key Features of INS Tamal :** Designed for **blue water operations**, meaning it can operate in open oceans, far from the coast, Capable of engaging in various forms of naval warfare, including: **Air warfare, Surface warfare, Underwater warfare, Electronic warfare**
- **Armament & Weapon Systems :**
    - Two **Indigenous Triple Torpedo Launchers** capable of launching **324mm torpedoes**, enhancing its anti-submarine capabilities, **BrahMos supersonic cruise missiles** provide offensive capabilities, **Vertically launched Shtil surface-to-air missiles** offer defensive protection against aerial threats.

Upgraded Hindustan Jet Trainer 36, renamed 'Yashas'

- **Context: Recently, Hindustan Aeronautics Limited (HAL) has renamed its Hindustan Jet Trainer (HJT-36) to Yashas,** following major upgrades that enhance performance, flight characteristics, and avionics.
- **Key Upgrades**
    - **Performance Upgrades:** Enhanced departure characteristics and spin resistance, with a wider flight envelope for safer training.
    - **Avionics and Cockpit:** New ultra-modern cockpit with **Multi-Function Displays (MFDs)** and Head-Up Display (HUD) for real-time data.
    - **Indigenous Components:** Old imported components replaced by **indigenous Line Replaceable Units (LRUs),** reducing cost.
    - **Weight Reduction:** Aircraft weight reduced while enhancing functionality for improved efficiency.
    - Engine: Powered by **FADEC-controlled AL-55I jet engine for better thrust** management and reliability in training.
- **Training and Operations**
    - **Training Role:** Designed for **Stage II training,** including complex maneuvers, aerobatics, and counter-insurgency operations.
    - **Armament Training:** Can **carry up to 1,000 kg of armament,** suitable for counter-surface force operations.
    - **Aerobatics:** Ideal platform for advanced aerobatic training, enhancing pilot skills.
    - **Single-Point Ground Refuelling:** Equipped with a single-point refueling system for quicker turnaround times during operations.
- **About Hindustan Aeronautics Limited (HAL)**
    - **Established: 1940 as Hindustan Aircraft Limited,** renamed Hindustan Aeronautics Limited in **1964.**
    - **Notable Projects:** Tejas, Sukhoi Su-30MKI, Dhruv, and Jaguar.

Gravehawk Air Defense System - Key Facts

- **Context: The UK introduced the Gravehawk system to aid Ukraine in defending against Russian air attacks, using Soviet R-73 missiles in a ground-based role.**
- **Key Features**:
    - **Type:** Mobile surface-to-air missile system
    - **Missile Used:** R-73 (AA-11 Archer)
- **R-73 Missile**:
    - **Range**: 40 km (front), 300 meters (rear)
    - **Guidance:** Infrared seeker
    - **Usage:** Also used in Ukraine's drone boats and unmanned vessels
- **Previous Hybrid Systems**:
    - **Franken SAM**: Developed by the US & NATO
    - **UK's System**: AIM-132 ASRAAM on mobile transporter.

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4.3 MILITARY EXERCISES & OPERATIONS

Exercise Name	Key Points
TROPEX 25 Exercise	A major exercise conducted by the Indian Navy in the Indian Ocean Region from January to March 2025.
Objectives	• Validate and refine naval strategies for conventional and non-conventional warfare. • Integrate advanced **cyber and electronic warfare to protect assets,** - Enhance coordination among services.
Participation	• **Indian Navy**: Lead participant. • **Indian Air Force (IAF)**: Participating with aircraft and personnel. • **Indian Coast Guard**: Participating with ships and personnel. • **Indian Army**: Participating with personnel and assets.
Assets	• **Indian Naval Ships**: 65 ships. • **Submarines**: 9 (including Kalvari Class). • **Aircraft**: Over 80, including MiG 29K, P-8I, HALE Sea Guardian, and MH-60R. • **IAF Assets**: Sukhoi-30, Jaguar, C-130J Hercules, and AWACS.
13th Edition of Exercise Ekuverin (2025)	• Joint military exercise between the Indian Army and the Maldives National Defence Force (MNDF), held from February 2-15, 2025 in the Maldives.
Objectives	• Enhance interoperability and cooperation between the Indian Army and MNDF in counter-insurgency and counter-terrorism operations. • Conduct joint humanitarian assistance and disaster relief operations.
Key Facts	• **Meaning of Ekuverin**: 'Friends' in the Dhivehi language. • **Location**: Maldives. • **Duration**: February 2-15, 2025. • **Previous Editions**: First edition held in 2009, conducted annually since then.
Exercise CYCLONE-III	• A joint special forces exercise between India and Egypt held at Rajasthan's Mahajan Field Firing Ranges from February 10-23, 2025.
Objectives	• Develop advanced special forces combat techniques suitable for high-intensity environments. • Boost operational synergy through joint tactical drills. • Conduct counter-terrorism operations and training for real-world threats in desert terrains.
Participation	• **Indian Special Forces Battalions**. • **Egyptian Special Forces Group and Task Force**.
Exercise Dharma Guardian 2025	• 6th edition of **India-Japan Joint Military** Exercise Dharma Guardian, held from February 25 to March 9, 2025, at Mount Fuji, Japan.
Objectives	• Strengthen India-Japan defense relations. • Improve interoperability between Indian and Japanese forces. • Focus on joint urban warfare and counter-terrorism tactics. • Simulate UN-mandated operations.
Key Facts	• **Historical ties**: Buddhism was introduced to Japan in the 6th century.

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	• **Diplomatic Relations**: Established in 1952, strengthened by post-WWII economic ties, with India supplying iron ore. • **Security Cooperation**: Regular "2+2" Dialogue meetings, Acquisition & Cross-Servicing Agreement (ACSA) signed in 2020, operational in 2021.
Other Joint Exercises	• **Shakti**: Army exercise. • **JIMEX**: Naval exercise. • **Dharma Guardian**: Army exercise focused on counter-terrorism operations.
Naval Operations: Navika Sagar Parikrama II	INSV Tarini completed the 3rd leg of Navika Sagar Parikrama II on February 18, 2025, by entering Port Stanley, promoting women empowerment, maritime excellence, and self-reliance.
Purpose	Promotes women empowerment. Focuses on maritime excellence and self-reliance.
Expedition Details	The expedition began on October 2, 2024, with a 40,000 km journey in 5 legs: 1. Goa to Fremantle (**Australia**). 2. Fremantle to Lyttleton (**NewZealand**). 3. Lyttleton to Port Stanley (**FalklandIslands**). 4. Port Stanley to Cape Town (**SouthAfrica**). 5. Cape Town to Goa (**finalleg**).
Challenges Faced	Encountered 3 cyclones during the Point Nemo passage. Crossed the treacherous Drake Passage and Cape Horn, which are known for their dangerous conditions.
INSV Tarini	Inducted into the Indian Navy on February 18, 2017. Participated in the first Navika Sagar Parikrama in 2017. Operated by 2 Lieutenant Commander women officers.

4.4 CYBERSECURITY & DIGITAL INFRASTRUCTURE

Indirect Prompt Injection attacks on Chatbots - Key Facts

- **Context: AI researchers have identified that chatbots are vulnerable to indirect prompt injection attacks, where malicious commands are hidden within content.**
- **What is Indirect Prompt Injection?** Indirect prompt injection is a cybersecurity attack where malicious commands are concealed within content (text, images, documents) that causes the chatbot to perform harmful actions.
- **How does it work?**
  - **Direct Prompt Injection**: AI bots receive commands directly.
  - **Indirect Prompt Injection**: Hidden commands are embedded within external sources (documents, web pages, or media) that the AI interprets or analyzes later.
- **Details**:
  - Large Language Models (LLMs) are more vulnerable because they are programmed to follow instructions within the text they process.
  - **Risks**: These attacks can spread misinformation, execute harmful commands (e.g., downloading malware), or lead to data breaches if the AI is integrated with sensitive systems.
- **Way Forward**:
  - Tech companies like Google and OpenAI are working to strengthen their systems against such attacks.

- A major challenge remains: distinguishing between user input and hidden commands through improved AI training. However, a foolproof solution is still elusive.

DDoS Cyberattack on Karnataka's Kaveri 2.0 Portal - Key Facts

- **Context: In December 2024 and January 2025, Karnataka's Kaveri 2.0 portal, launched in 2023 for property registration, faced a major disruption due to a Distributed Denial of Service (DDoS) attack, initially mistaken for technical glitches.**
- **What is a DDoS Attack?**
  - A DDoS attack involves multiple computers overwhelming a website with excessive traffic, causing it to crash or slow down, making it unavailable to legitimate users.
  - **Botnet**: A group of infected devices used for the attack.
  - **Goal:** Block users from accessing the service.
  - **Details of the Kaveri 2.0 Attack:** Cybercriminals created fake accounts and flooded the portal with 6.2 lakh requests in just 2 hours. Resulted in delays in property registrations and other services.
  - **Impact of DDoS Attacks:** Disruption of services leads to financial losses, Repeated attacks can erode user trust, Can hide other attacks like data breaches.
  - **Protection Measures**: Tools to differentiate real traffic from fake, Set limits on the number of requests per user in a short period, Use CAPTCHA to block bots, Implement strong security, including passwords and multi-factor authentication, Raise awareness to prevent phishing attacks.
  - **Other Examples of DDoS Attacks: X (Twitter)**: Faced a similar attack in August 2024, **GitHub**: Attacked by a China-based botnet in 2015, affecting services.

Key Facts on Regulating Digital Content: Need for a New Legal Framework

- **Context: India is facing increasing issues with harmful content (violence, obscenity) on social media and OTT platforms.**
- **Government Focus**: Considering whether new laws are needed to regulate these platforms while balancing free speech and public decency.
- **YouTube Obscenity Case (February 2025)**:
  - **Incident:** A controversial comment on a popular YouTube show led to outrage and legal action in Maharashtra and Assam.
  - **Legal Action**: The Supreme Court intervened, protecting the individuals involved but criticizing the content. The National Commission for Women (NCW) also took action.
- **What is Obscenity?**
  - Content that is considered offensive or morally unacceptable, particularly involving sex or crude behavior. It can shock or offend public sensibilities.

Existing Laws in India

- **Intermediary Guidelines and Digital Media Ethics Code (IT Rules, 2021) :** Platforms must self-regulate and classify content, but effectiveness is questioned.
- **Indecent Representation of Women (Prohibition) Act, 1986 :** Bans obscene depiction of women.
- **POCSO Act :** Protects children from harmful content.
- **Bharatiya Nyaya Sanhita (BNS), 2023:** Section 294 makes selling or displaying obscene content illegal.
- **Section 67, IT Act, 2000:** Penalizes online obscenity with up to 3 years in prison and a ₹5 lakh fine.

Freedom of Expression vs. Obscenity

- **Article 19** of the Indian Constitution protects free speech but allows limitations for public decency and morality.
- **Recent Cases**: Public figures like Urfi Javed (2023) and Ranveer Singh (2022) faced legal

action for obscene content, highlighting the ongoing tension between freedom of speech and public decency.

4.5 LEGAL & HISTORICAL CONTEXT

Torres Ponzi Scam and the MPID Act - Key Facts

- **Context: In feb 2025,** Mumbai Police's Economic Offences Wing (EOW) is investigating the Torres Ponzi scam involving manipulation of investors with high-return schemes in jewelry.
- Torres company promised returns up to 500% annually but stopped paying in December 2024, leading to protests from investors.
- **What is the Torres Ponzi Scam?**
  - **Scheme:** Torres attracted investors with high returns (up to 500%) from investments in jewelry and goods.
  - **Fake Returns**: Returns to earlier investors were paid using funds from new investors, not actual profits.
  - **Incentives:** Investors were offered incentives (iPhones, jewelry, cars, apartments) to attract new participants.
- **What is the MPID Act (Maharashtra Protection of Interest of Depositors Act, 1999)?**
  - Approved in 2000, enabling fast asset seizure from fraudulent entities, Protects investors from fraudulent financial institutions in Maharashtra.
- **Key Provisions of the MPID Act**:
  - **Liability**: Promoters, directors, managers, and employees of fraudulent institutions are held accountable.
  - **Penalty:** Conviction can lead to up to 6 years in jail and fines up to ₹1 lakh.
  - **Asset Seizure**: The government can seize and sell fraudulent institution assets to compensate victims.
- **Constitutional Validity of MPID Act**:
  - **2005 Bombay High Court Ruling:** Initially declared unconstitutional, conflicting with national laws.
  - **2011 Supreme Court Ruling:** Overruled the Bombay HC decision, validating the MPID Act and recognizing the need for state laws to address unregulated financial institutions.
- **Other Ponzi Scams in India**:
  - **Saradha Scam (2013):** A large chit fund fraud in West Bengal.
  - **Rose Valley Scam:** A ₹15,000 crore scam in West Bengal.
  - **Speak Asia (2011):** A pyramid scheme posing as an online survey platform.
  - **PACL Scam:** A ₹49,100 crore fraud involving false land investments.
- **Key Regulations**:
  - **Prize Chit and Money Circulation (Banning) Act, 1978:** Bans money circulation schemes, making Ponzi schemes illegal.
  - **Unregulated Deposit Schemes Act, 2019:** Specifically outlaws Ponzi schemes and strengthens fraud prevention.
  - **SEBI & RBI:** Regulatory bodies overseeing financial institutions to prevent Ponzi and similar schemes.

Fort William Renamed to Vijay Durg

- **Context: Kolkata's historic Fort William has been renamed Vijay Durg,** marking a significant step in India's efforts to change **colonial influences** and reassert its identity.
- The **decision to rename the fort was taken in mid-December 2024**, and since then, official communications have stopped using the old name.
- The **new name Vijay Durg serves as a tribute to the Maratha Empire** and its naval base under **Chhatrapati Shivaji Maharaj.**
- **Background of Fort William:**
  - **Fort William was originally built by the British in 1781**, and it was **named after King William III of England.**
  - The fort served as the **headquarters of the Eastern Army Command during British**

rule, which lasted for 166 years from **1781 to 1947.**

- **Changes to Other Locations:**
- **Kitchener House, a building inside the fort**, has been **renamed Manekshaw House in honor** of **Field Marshal Sam Manekshaw**, a renowned Indian military leader.
- **St George's Gate, another important location inside the fort**, has been **renamed Shivaji Gate in memory of Chhatrapati Shivaji Maharaj.**
- **Broader Reforms:**
  - The **Indian Navy released a new naval flag in September 2022**, which removed colonial elements and **incorporated symbols of Indian history inspired by Chhatrapati Shivaji.**
  - The **Beating Retreat ceremony, a traditional military ceremony,** now features **Indian compositions**, replacing colonial-era tunes.
  - The **Indian Army has reviewed its ceremonial practices and dresses to align with Indian culture and heritage**, reflecting India's efforts to promote its indigenous traditions.

5. ENVIRONMENT & ECOLOGY

5.1 SPECIES

Golden-headed Cisticola

- **Context**: The Golden-headed Cisticola (Cisticola exilis) was recently sighted in Mathikettan Shola National Park, Idukki, Kerala.
- **Scientific Name**: Cisticola exilis
- **Other Names**: Bright-capped Cisticola
- **Family**: Cisticolidae (Warblers)
- **Preferred Habitat**: Grasslands, especially in hilly or mountainous areas with tall grasses
- **Global Distribution**: Asia and Australia
- **In India**: Karnataka, Tamil Nadu, northern Kerala, and Mathikettan Shola National Park
- **Conservation Status**: **IUCN Red List:** Least Concern

Black Kites

- **Scientific Name**: Milvus migrans
- **Distribution**: Tropical areas of Australasia, Eurasia, and Africa
- **Common Name**: Black Kite
- **Habitat**: Urban and semi-urban areas, open fields, forests, wetlands
- **Conservation Status**: **IUCN – Least Concern, CITES – Appendix II, Wildlife Protection Act, 1972 – Schedule-II**

Whale Vomit (Ambergris)

- **Context**: Ambergris, also known as whale vomit, is a rare and valuable substance produced by sperm whales.
- **Origin**: Ambergris is formed when sperm whales eat squid and cuttlefish, but don't digest it all. The undigested matter is expelled as vomit, but most of it becomes ambergris in the whale's intestines.
- **Characteristics**: Fresh ambergris is soft, waxy, and smooth. Over time, it becomes hard and scaly on the outside, while remaining soft and waxy on the inside.
- **Value**: Highly sought after in the perfume industry because it acts as a fixative, helping perfumes last longer on the skin.
- **Legality**: Legal in some countries, such as the United Kingdom, New Zealand, France, Switzerland, and the Maldives. Restricted in India and prohibited under the Wildlife Protection Act, 1972.

Conservation Status of Sperm Whales:

- **IUCN Red List of Endangered Species**: Vulnerable
- **CITES (Convention on International Trade in Endangered Species)**: Appendix I
- **Wildlife Protection Act, 1972**: Schedule II
- **Convention on Migratory Species (CMS)**: Appendix I

Invasive Fish for Mosquito Control

- **Context**: The National Green Tribunal has raised concerns about the ecological harm caused by releasing invasive fish species.

Invasive Fish Species:

- **Gambusia Affinis (Mosquitofish)**
- **Native Range**: Mississippi River Basin, USA
- **IUCN Status**: Least Concern
- **Poecilia Reticulata (Guppy)**
- **Native Range**: Northern South America and Caribbean
- **IUCN Status**: Least Concern
- **Characteristics**: Considered one of the 100 worst invasive alien species by the IUCN. Consumes 100-300 mosquito larvae per day.
- **Concerns**: Threat to native fish species, biodiversity loss, ecosystem disruption.

New Crustacean Species: Bryospilusbharaticus

- **Context**: A new species of water flea, Bryospilusbharaticus, has been discovered in the Western Ghats.
- **Characteristics**:

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- **Habitat**: Lives in semi-terrestrial environments, specifically in the thin layer of water on mosses
- **Relatives**: Similar species found in rainforests of West Africa, South and Central America, and New Zealand
- **Adaptations**: Has unique features that help it survive in semi-terrestrial conditions

Conservation Implications:

- **Habitat Protection**: Important to protect semi-terrestrial habitats from human disturbance
- **Air Pollution**: Rising air pollution could affect such species and their habitats.

Marsupials

- **Context**: Scientists successfully created 28 kangaroo embryos using In Vitro Fertilization (IVF).
- **Key Features**:
- **Pouch**: Most marsupials have a pouch on the mother's belly where babies grow after birth.
- **Epipubic Bone**: Marsupials have an extra bone called the epipubic bone that supports the pouch and helps the mother to move while carrying the baby.
- **Examples**: Kangaroos, Koalas, Tasmanian Devils, Opossums, Wombats, Wallabies, Bandicoots, Thylacine (extinct).

Salamanders

- **Context**: Salamanders can control the blood flow in their toe tips, which helps them grip surfaces like tree bark better.

Key Facts:

- **Blood Flow Control**: By changing the blood flow, they can adjust the pressure in their toes to hold on uneven surfaces more easily.
- **Easier Detachment**: When they need to let go, the blood flow helps them reduce contact with the surface, making it easier for them to detach with less effort.
- **Future Uses**: It could help create robots that can move more easily on rough surfaces.
- **Definition**: Small amphibians that look like a mix of lizards and frogs, with long bodies and tails. Live in moist places, mostly near water, like ponds, streams, and under rocks. Known for their ability to regenerate lost limbs, toes, and tails in a few weeks.

Burmese Pythons

- **Context**: Invasive Burmese pythons have become a major problem for Florida's wildlife.
- **Key Facts**:
- **Size**: Can grow up to 20 feet long and weigh over 250 pounds.
- **Non-Venomous**: Burmese pythons are non-venomous snakes.
- **Species Recognition**: Recognized as a distinct species since 2009.
- **Native Range**: Native to eastern and north eastern India, Myanmar, southern China, Southeast Asia, and parts of the Indonesian archipelago.
- **IUCN Classification**: Classified as Vulnerable by the IUCN.

Asian Elephants

- **Scientific Name**: Elephas maximus
- **Subspecies**: Indian Elephant, Sumatran Elephant, Sri Lankan Elephant
- **Population**: Less than 50,000 individuals left, divided across 13 countries.
- **Habitat**: Grasslands, scrublands, evergreen and deciduous forests.

Conservation Status:

- **IUCN Red List**: Endangered
- **Wildlife (Protection) Act, 1972**: Schedule I
- **CITES**: Appendix I (International trade ban)

Conservation Initiatives:

- **Project Elephant**: Launched in 1992 by the Government of India to protect elephants and their habitats.
- **Elephant Reserves**: 33 reserves across 14 states, with highest populations in Karnataka, Assam, and Kerala.

Crocodile Catfish (Bagariussuchus)

- **Scientific Name**: Bagariussuchus
- **Distribution**: Native to freshwater habitats in South and Southeast Asia
- **Conservation Status**: Classified as "Near Threatened" on the IUCN Red List.

Killer Whales (Orcas)

- **Context**: Over 150 false killer whales recently stranded on a remote beach in Tasmania.
- **Key Facts**:
- **Size**: Largest dolphin species and apex predators in the ocean.
- **Hunting**: Hunt in teams and use unihemispheric sleep, keeping one half of their brain alert while the other rests.
- **Social Animals**: Live in pods of related individuals and communicate via sounds.
- **Conservation Status**: Listed as Data Deficient by the IUCN, indicating insufficient data on their extinction risk.

Arctic Marine Mammals

- **Context**: A recent study highlighted the impact of marine heatwaves (MHWs) on Arctic and Subarctic marine mammals.
- **What Are MHWs?**: Occur when ocean temperatures rise 3-4°C above average for at least five days.

Impact on Marine Mammals:

- **Increased Deaths**: Whales and seals experience higher mortality during extreme warmth.
- **Lower Birth Rates**: Heatwaves affect reproduction and raising offspring.
- **Higher Disease Risk**: Warmer waters increase the spread of harmful diseases.
- **Effects on Specific Species**:
- **Whales and Dolphins**: Species like narwhals and bowhead whales struggle with the heat due to thick blubber layers.
- **Other Mammals**: Humpback and fin whales saw higher deaths after MHWs in the Gulf of Alaska (2014-2016).
- **Polar Bear Death**: A polar bear died from avian influenza in 2024, likely due to warmer temperatures.
- **Seal Deaths**: Ice seals in the Bering and Chukchi seas faced high mortality due to warm conditions.

Blue-Cheeked Bee-Eater

- **Context**: Blue-Cheeked Bee-Eater (Merops persicus) first breeding site discovered in Aandivilai saltpans, near Manakudy Mangroves, Kanniyakumari.
- **Habitat**: Semi-desert areas, acacia trees for breeding.
- **Behavior**: Nests solitarily or in small colonies (up to 10).
- **Conservation Status**: Least Concern (IUCN).

Strobilanthesgigantra

- **Context**: A new flowering plant, Strobilanthesgigantra, discovered in Arunachal Pradesh, Indian Himalayan Region (IHR).
- **Special Features**: Can grow as large as a tree, with unique flowers and densely packed leaves.
- **Group**: Part of the Strobilanthes group (2nd largest in the Acanthaceae family), with 450 species worldwide, 167 in India.
- **IHR**: A biodiversity hotspot, covering 18% of India's area, home to 50% of its forest cover and biodiversity.
- **Eastern Himalayas**: Arunachal Pradesh has 41 known types of Strobilanthes.

Northern Pintail Ducks

- **Scientific Name**: Anas acuta
- **Type**: Migratory waterfowl known for its striking appearance and interesting behavior.
- **Migratory Nature**: Known as "northern nomads," these ducks migrate across most continents except Antarctica.
- **Breeding and Habitats**: They breed in different locations, avoiding permanent settlement, and migrate widely but do not settle permanently in any one place.
- **Conservation Status**:
- **IUCN Red List**: Classified as "Least Concern" — currently not at risk of extinction but still requires monitoring due to their migratory nature.

Slender-Billed Gull

- **Scientific Name**: Chroicocephalusgenei

- **Type**: Medium-sized seabird.

Distribution & Migratory Pattern:

- **Breeding Habitat**: Found around the Mediterranean and the northern part of the western Indian Ocean (including Pakistan). It breeds on islands and coastal lagoons.
- **Migratory Nature**: Most of the population migrates to northern Africa and India during winter. Some have been recorded in western Europe.
- **Presence in India**: Regularly found along the western coast and also seen in northern India's wetlands.
- **Conservation Status**: **IUCN Red List**: Least Concern

Gharial

- **Scientific Name**: Gavialis gangeticus
- **Type**: Critically endangered crocodilian with a long, narrow snout.
- **Diet**: Primarily fish.

Habitat & Distribution:

- **Primary Habitat**: Chambal River (Madhya Pradesh, Uttar Pradesh, Rajasthan).
- **Other rivers**: Ganges, Yamuna, Son.
- **Threats**: Habitat destruction, overfishing, pollution, and historical exploitation.

Palaeognath Birds

- **Definition**: Flightless birds with unique palate structure.

Two Categories:

- **Tinamiformes**: Weak fliers, e.g., tinamous in South & Central America.
- **Ratitae**: Flightless birds with flat sternum, e.g., ostriches, emus, rheas, kiwis, cassowaries.

Key Features:

- Largest and heaviest birds on Earth.
- Evolved early from dinosaurs.
- **Conservation Status**: Some species like tinamous are threatened due to habitat loss, hunting, and urbanization.
- **IUCN**: Solitary tinamou listed as Near Threatened.

China's Last Wild Alligators

Background:

- **Habitat**: Freshwater wetlands in eastern China, mainly in the Yangtze River basin.
- **Conservation Status**: Critically Endangered (IUCN).

Challenges:

- **Habitat Destruction**: Wetlands converted into farmland.
- **Hunting**: Although reduced, illegal hunting persists.
- **Pollution**: Agricultural runoff contaminates habitats.
- **Low Genetic Diversity**: Fragmented populations increase vulnerability.
- **Human Conflict**: Farmers view alligators as threats to livestock.
- **Conservation Efforts**: National reserve established and ex-situ breeding efforts. Awareness and better land-use practices needed.

Black Demon Fish (Abyssal Anglerfish)

- **Context**: First video footage of an adult Abyssal anglerfish, also known as the Black Demon Fish, off the coast of Tenerife, Spain.
- **Scientific Name**: Melanocetus johnsonii.
- **Family**: Anglerfish (Melanocetidae).
- **Nickname**: "Black devil" due to its dark color, sharp teeth, and monstrous appearance.
- **Habitat**: Found in the deep ocean, 2,000 meters deep in darkness and high-pressure environments.
- **IUCN Red List**: Least Concern.
- **Features**: Large head, sharp glassy teeth, body can stretch to catch larger prey, "fishing rod" on its nose with a glowing lure to trap prey. Found in tropical and subtropical seas globally.

Bull Ants

- **Context**: Two species of nocturnal bull ants, Myrmecia pyriformis and Myrmeciamidas, use polarised moonlight for navigation.
- **What is Polarised Light?**: Polarised light travels in one direction after scattering in the

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atmosphere. Moonlight, like sunlight, is polarised when passing through Earth's atmosphere. Some animals detect e-vector patterns.

- **How Do Bull Ants Use It?**: Ants use polarised moonlight to navigate, even in dim light. During a full moon, they navigate more accurately.
- **Discovery**: Scientists used a polarisation filter to observe the ants' navigation. Changing light direction showed ants adjust their path, confirming they use polarised moonlight.

5.2 PARKS, SANCTUARIES, AND CONSERVATION AREAS

Deepor Beel

- **Location**: Located in an old channel of the Brahmaputra River in Guwahati, Assam.
- **Recognition**: Recognized as a Ramsar Site in 2002, (Only Ramsar Site in Assam).
- **IBA Recognition**: Recognized as an Important Bird and Biodiversity Area (IBA) in 2004.

DibruSaikhowa National Park

- **Location**: Located on the south bank of the Brahmaputra River in the eastern part of Assam. The park is bounded by the Brahmaputra and Lohit Rivers (north) and Dibru River (south).

Conservation Status:

- **Wildlife Sanctuary**: Declared as Dibru-Saikhowa Wildlife Sanctuary in 1986.
- **National Park**: Upgraded to Dibru-Saikhowa National Park in 1999.
- **Vegetation and Climate**:
- **Vegetation**: Moist mixed semi-evergreen forests and moist mixed deciduous forests.
- **Climate**: Tropical monsoon climate with hot and wet summers, and cool, dry winters.
- **Bird Species**: Identified as an Important Bird Area (IBA) with over 382 species of birds, including Greater Adjutant Stork, Lesser Adjutant Stork, and Greater Crested Grebe.
- **Special Feature**: DibruSaikhowa National Park is home to the largest salix swamp forest in northeastern India.

Bhimgad Wildlife Sanctuary

- **Location**: Western Ghats, Belgavi District, Karnataka.
- **Etymology**: Named after Bhimgad Fort, built by Shivaji in the 17th century.

Geography and Rivers:

- **Adjacent Sanctuaries**: Mhadei Wildlife Sanctuary, Bhagwan Mahaveer Sanctuary, Netravali Wildlife Sanctuary, Dandeli Wildlife Sanctuary.
- **Rivers**: Source of rivers like Mhadei, Malaprabha, and Tillari rivers with perennial streams.

Fauna & Flora:

- **Fauna**: Home to tigers, leopards, gaur, sloth bears, sambar, spotted deer, chitals, wild dogs, king cobras, elephants, and other endangered species.
- **Flora**: Tropical and subtropical moist broadleaf forests and grasslands, rich in medicinal plants.

Special Features:

- **Barapede Caves**: The only known breeding site of the Wroughton's free-tailed bat, a threatened species.

Brahmagiri Wildlife Sanctuary

- **Location**: Western Ghats, Kodagu district, Karnataka.
- **Highest Point**: Brahmagiri Peak (1607 meters).
- **Rivers**: Lakshmana Tirtha River, tributary of the Cauvery River.
- **Flora**: Evergreen, semi-evergreen forests, shoal forest, grasslands, and bamboo groves.
- **Fauna**: Endangered species like lion-tailed macaques, tigers, elephants, and other mammals.

Kolleru Lake

- **Location**: Between the deltas of Krishna and Godavari rivers in Andhra Pradesh.
- **Water Sources**: Budameru and Tammileru rivers, connected to the Krishna and Godavari systems.

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- **Importance**: Largest freshwater lake in India, Ramsar site since 2002, part of the Central Asian Flyway.
- **Biodiversity**: Home to many aquatic and bird species.

Parambikulam Tiger Reserve

- **Context**: A survey conducted at Parambikulam Tiger Reserve (Palakkad) from February 6-9, 2025, added 15 new species to its biodiversity checklist, bringing the total species count to around 600.

Key Findings:

- Survey recorded 206 bird species, 5 butterfly species, and 39 odonate species.
- Large mammals like elephants and leopards were observed, highlighting the reserve's rich biodiversity, even in the dry season.

New Species Added:

- **Bird Species**: 15 new species, total of 302 species.
- Notable additions: Painted Spurfowl, Rufous-bellied Hawk-Eagle, Indian Grey Hornbill, AnamalaiSholakili, Taiga Flycatcher, Plain Prinia, Green Leaf Warbler.
- **Butterfly Species**: 5 new species, total of 273 species.
- Notable additions: Long brand Bushbrown, Shot Silverline, Scarce Shot Silverline, White disc Hedge Blue, Palni Dart.
- **Odonate Species**: 39 species, including 3 new species, total of 69 species.
- New species: Brown Darner (Gynacanthadravida), Parakeet Darner (Gynacanthamillardi), VestalisSubmontana (Montane Forest-Glory).

Other Observations:

- **Notable birds**: Great Indian Hornbill, Ceylon Frogmouth, Lesser Fish Eagle, Shaheen Falcon.
- **Notable butterflies**: Five bar Swordtail, Spot Swordtail, Southern Birdwing, Malabar Banded Swallowtail, Sahyadri Grass Yellow.
- **Mammals**: Elephants, gaurs, spotted deer, sambhar deer, leopards, lion-tailed macaques, Nilgiri langurs, smooth-coated otters.

About Parambikulam Tiger Reserve:

- **Location**: Palakkad & Thrissur districts, Kerala.
- **Established**: Declared a Tiger Reserve in 2009 under Project Tiger.
- **Rivers**: Parambikulam, Sholayar, &Thekkady rivers.
- **Tribes**: Kadar, Malasar, Muduvar, & Mala Malasar in 6 colonies.
- **Flora**: Mixed deciduous, evergreen, & semi-evergreen forests, montane & marshy grasslands (vayals), teak plantations, freshwater ecosystems from 3 dams.
- **Fauna**: 49 mammal species, including Bengal tigers, Asian elephants, Indian leopards, gaur, lion-tailed macaques, Nilgiri marten.
- **Endemic Species**: Parambikulam Frog (Tomopternaparambikulamana), Garro surendranathanii (sucker fish).

Katarniaghat Wildlife Sanctuary (KWS)

- **Location**: Upper Gangetic Plain, Uttar Pradesh, near the Indo-Nepal border.

History & Status:

- **Project Tiger**: KWS included in Project Tiger initiative in 1987 for tiger conservation.
- Forms part of Dudhwa Tiger Reserve, along with Kishanpur Wildlife Sanctuary and Dudhwa National Park.
- KWS is a core zone of Dudhwa Tiger Reserve.

Ecological Importance & Connectivity:

- Provides critical ecological connectivity for tiger habitats between Dudhwa and Kishanpur, extending to Bardia National Park in Nepal.

Flora & Vegetation:

- Part of Terai ecosystem, ecologically significant and fragile.
- Includes sal forests, teak forests, grasslands, swamps, and wetlands.

Fauna & Wildlife:

- Tigers, Rhinos, Swamp Deer, Hispid Hare, Bengal Florican, Gharial, White-backed and Long-billed Vultures, Gangetic Dolphins.

Special Key Points:

- **Gairwa River**: Declared sanctuary for Mugger and Gharial Crocodiles.
- Home to rare turtles, freshwater fish, and Ganges dolphins in their natural habitat.

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Peppara Wildlife Sanctuary

- **Location**: Thiruvananthapuram, Kerala.
- **Established**: 1983.

Major Features:

- Catchments of Peppara Dam on Karamana River.
- Prominent Peaks: Chemmunjimottai (1717m), Athirumalai (1594m).
- Vazhvanthol Waterfall.

Forest Types:

- Tropical Evergreen, Moist Mixed Deciduous, Semi-Evergreen, Myristica Swamp Forests.
- **Biodiversity**:
- **Flora**: Terminalia, Pterocarpus, Mesua, Hopea, Bombax.
- **Mammals**: Tiger, Leopard, Sloth bear, Asian Elephant, Sambar, Lion-tailed macaque.
- **Birds**: 233 species, **Reptiles**: 46 species, **Amphibians**: 13 species, **Fishes**: 27 species.

Periyar National Park & Wildlife Sanctuary

- **Location**: Idukki &Pathanamthitta, Kerala.
- **Largest Sanctuary** in Kerala, also a Tiger Reserve and Elephant Reserve.
- **Flora**: Teak, Mango, Rosewood, Jamun, Bamboos.
- **Fauna**: Elephants, Tigers, Wild pigs, Gaur, Lion-tailed macaque, Nilgiri Langur.

Laokhowa Wildlife Sanctuary

- **Context**: LaokhowaBurhachapori Wildlife Sanctuary is gaining attention due to its growth in aquatic bird population, surpassing Deepor Beel, the state's only Ramsar site.

Water Bird Population:

- **Deepor Beel**: 17,623 birds this year.
- **LaokhowaBurhachapori**: 54,961 water birds.

About Laokhowa Wildlife Sanctuary:

- **Location**: Southern Brahmaputra River, Nagaon District, Assam.
- **Conservation Status**: Buffer zone of Kaziranga Tiger Reserve (since 2007).
- **Ecosystem**: Part of Laokhowa-Burachapori ecosystem.
- **Surrounding Environment**: Human-dominated, except to the north.
- **Flora**: Grasslands, tropical moist deciduous forests, semi-evergreen forests.
- **Fauna**: Great Indian one-horned rhinoceros, Indian Royal Bengal tiger, elephant, wild boar, civet cat, leopard cat, hog deer, Asian water buffalo, around 200 bird species (including Bengal Florican), leopard, Asiatic buffalo.
- **Conservation Efforts**: Habitat restoration, community involvement, government initiatives (e.g., eviction drives).

Mathikettan Shola National Park

- **Location**: Southern region of the Palakkad Gap, within the Western Ghats in Kerala.
- **Vegetation Types**: Evergreen forests, moist deciduous forests, shola grasslands, semi-evergreen forests.
- **Water Sources**: UchillkuthiPuzha, Mathikettan Puzha, Njandar (tributaries of the Panniyar River).
- **Highest Point**: Kattumala (on the park's eastern border, adjacent to Tamil Nadu).
- **Tribal Presence**: Muthavan tribe living near the northeastern border, contributing to the cultural aspect of the park.

National Chambal Gharial Sanctuary

- **Context**: Madhya Pradesh CM released 10 gharials into the Chambal River at the National Chambal Gharial Sanctuary to strengthen conservation.

About the Gharial:

- **Scientific Name**: Gavialis gangeticus.
- **Type**: Critically endangered crocodilian with a long, narrow snout.
- **Diet**: Primarily fish.

Habitat & Distribution:

- **Primary Habitat**: Chambal River (Madhya Pradesh, Uttar Pradesh, Rajasthan).
- **Other rivers**: Ganges, Yamuna, Son.
- **Threats**: Habitat destruction, overfishing, pollution, and historical exploitation.

Chambal River:

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- Known for being one of India's cleanest rivers.
- National Chambal Sanctuary supports gharial recovery through breeding and release programs.

Pallikaranai Marshland

- **Location**: 20 km south of Chennai, Tamil Nadu.
- **Wetland Type**: Freshwater marsh, partly saline.
- **Ecological Role**: Acts as an aquatic buffer protecting Chennai and Chengalpattu districts from flooding.
- **Hydrology**: Contains 65 wetlands, draining into the Bay of Bengal through Okkiyam Madavu and Kovalam Creek.
- **Geography**: Some areas are below mean sea level, qualifying as low-lying basins.
- **Conservation**: Designated as one of India's Ramsar Sites, which are internationally recognized wetlands of importance.

Biligiri Ranganathaswamy Temple Tiger Reserve (BRT)

- **Location**: Chamarajanagar district, Karnataka, between the Western and Eastern Ghats.
- **Area**: 574.82 sq.km.
- **Flora**: Includes dry and moist deciduous forests, as well as semi-evergreen and evergreen forests.
- **Fauna**: Home to tigers, elephants, leopards, wild dogs, bison, sambar, and more.

5.3 CLIMATE AND WEATHER

Budget 2025-26 and Climate Adaptation

- **Context**: Despite being the 7th most vulnerable country to climate impacts, the budget fails to allocate substantial funds for adaptation measures.

Climate Mentions in the Budget 2025:

- **"Climate"**: Mentioned 3 times.
- **"Resilience"**: Mentioned a few times.
- **"Adaptation"**: Not mentioned at all despite its urgency in the face of climate challenges.
- **"Global Warming & Climate Change"**: Neither mentioned, even though India is highly vulnerable to these issues.

Key Focus Areas of the Budget:

- **Clean Energy and Green Transition**:
- **Solar Energy**: Highest allocation of Rs 26,549 crore, focusing on rooftop solar through PM Surya Ghar Yojana.
- **Nuclear Energy**: Proposal for a Nuclear Mission to achieve 100 GW of non-fossil energy by 2047.

Climate Adaptation: A Critical Gap:

- The MoEFCC received Rs 3,412 crore, a mere 2.5% increase.
- Concerns over climate adaptation finance gap, with areas like Sundarbans requiring 3 times their GDP for adaptation.

Key Criticisms: Government's Adaptation Schemes & Budget Allocation Issues:

- Shifted to non-scheme category, No clear budget allocation since 2022-23.

National Adaptation Fund (NAF)
Climate Change Action Plan (CCAP)
National Mission on Himalayan Studies (NMHS)
Challenges in Specific Adaptation Projects:

- **Climate Resilient Dairy Project (Andhra Pradesh)**: Delayed implementation due to issues in land identification and design finalization. Only 1/3 of funds spent.
- **Coastal Mission**: Budget reduced from Rs 8 crore to Rs 2 crore, impacting coastal management and adaptation to sea-level rise.
- **O-SMART Scheme** (Ministry of Earth Sciences): No budget allocation in 2024-25 or 2025-26, despite being essential for climate modeling and tropical cyclone prediction.

Positive Developments:

- **National Mission for Green India (NMGI)**: Increased funding, Focus on afforestation and fire prevention.
- **Mission Mausam**: New initiative aimed at making India 'weather-ready' and 'climate-

smart'. Improved weather infrastructure to strengthen climate resilience.

About Mission Mausam:

- **Launched in September 2024**, approved by the Union Cabinet to enhance weather forecasting and adaptation strategies for climate resilience.
- **Components of Mission Mausam**: Doppler Weather Radars (DWR), Radio Sonde/Radio Wind Stations, Disdrometers, Wind Profilers & Radiometers, Marine Automatic Weather Stations, Ocean Research Station.

Extreme Warming at the North Pole

- **Context**: On February 2, 2025, the temperature at the North Pole was 20°C above average. In Svalbard, Norway, the temperature was 18°C above the 1991-2020 average on February 1, exceeding 20°C by February 2. The Arctic has warmed 4 times faster than the global average since 1979.

Reasons Behind the Unusual Warmth:

- **Low-Pressure System over Iceland**: Pulled warm air from the south into the Arctic region.
- **Warm Sea Surface Temperatures in the North-East Atlantic**: Increased the amount of warm air arriving in the Arctic.
- **Temperature Changes**: Daily average temperature at the North Pole was 20°C above normal on February 2.

Arctic Amplification:

- The Arctic has warmed 3.8 times faster than the global average since the 1970s.
- Global temperatures have risen by about 1.3°C since the late 1800s.
- This is called Arctic amplification, where the Arctic warms much faster than the rest of the world.

Why is the Arctic Warming Faster?:

- **Albedo Effect**: Sea ice reflects sunlight, but when it melts, it exposes land and water, absorbing more heat.
- **Weaker Convection in the Arctic**: Less sunlight leads to weaker convection, trapping heat near the surface.
- **Ocean and Wind Patterns**: Changes in ocean currents and wind patterns bring warm air to the Arctic.

Impact of Arctic Warming:

- **Melting Arctic ice raises sea levels, increasing the risk of flooding.**
- Changes in weather patterns lead to extreme weather events, such as: Colds, Heatwaves, Heavy rainfall.
- **Warming affects global ocean currents**, disrupting weather patterns and food production.

India's Climate Crisis Approach

- **Context**: India has shifted its focus from emphasizing emission reduction (mitigation) to prioritizing adaptation and economic development.

India's Climate Policy:

- **Adaptation Over Mitigation**: Prioritizing adaptation measures such as building resilience against floods, droughts, and heat waves.
- **Economic Growth**: Rapid economic growth is seen as crucial to providing resources needed to build resilience to climate impacts.
- **Coal Usage**: India has rejected calls to phase out coal usage, which remains a major source of energy for the country.
- **Renewable Energy**: India aims to achieve 500 GW of non-fossil fuel energy capacity by 2030.
- **Nuclear Energy**: India aims to have 100 GW of nuclear energy capacity by 2047.
- **Hydrogen Energy**: India aims to produce 5 million tons of green hydrogen annually by 2030.

Statistics:

- **India is the 2nd-largest consumer of coal in the world (after China).**
- Coal accounts for around 70% of India's total electricity generation.
- India's renewable energy capacity is around 170 GW (as of 2023).
- India's total installed electricity capacity was about 400 GW in 2023.

Challenges in Global Mitigation Efforts:

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- **Rising Global Emissions**: Global CO2 emissions reached around 40 billion tons in 2023, an increase of about 2% compared to the previous year.
- **Target Shortfall**: Countries globally are off-track to meet their emissions reduction targets for 2030 and 2035.
- **Developing countries, including India, are frustrated with the lack of significant action from developed nations** on both emission reductions and financial contributions.
- **Failure of Climate Finance**: Developed countries have not made good on their financial obligations to help developing nations adapt to climate change or mitigate its impacts.

India's Unique Trajectory:

- India is focusing on building an indigenous base for solar panels, electric vehicles, batteries, and green hydrogen.
- **National Hydrogen Mission**: India has announced the National Hydrogen Mission to promote green hydrogen production.
- The government has introduced the Production-Linked Incentive (PLI) Scheme to encourage domestic manufacturing in clean energy sectors.

Economic Survey 2024-25:

- **India's Growth Trajectory**: The Economic Survey 2024-25 says that India should strive to achieve the economic standards of developed countries by 2047 before pursuing a net-zero emissions target set for 2070.

Marine Heat Waves

- **Context**: Climate change has made marine heatwaves (MHWs) up to 100 times more likely. In January 2025, over 30,000 fish died off the coast of Western Australia due to MHWs. The frequency of marine heatwaves has more than doubled in the past 40 years due to global warming.
- **What Are Marine Heatwaves (MHWs)?**: A marine heatwave is an extreme event where the sea surface temperature rises by 3-4°C above the average for at least 5 consecutive days.

Why Have Marine Heatwaves Intensified?:

- The primary reason for marine heatwaves is climate change.
- As the Earth's temperature has risen by 1.3°C above pre-industrial levels, the oceans have absorbed most of the excess heat—around 90%.
- The global mean sea surface temperature has increased by nearly 0.9°C since the 1800s, and in the last 40 years, it has risen by approximately 0.6°C.

The Impact of Marine Heatwaves:

- Fish kills, Destruction of kelp forests, Coral bleaching, Economic impact.

Climate Risk Index (CRI) 2025

- **Context**: Germanwatch published CRI 2025. India improved from 6th (1993-2022) to 49th place in 2022 due to enhanced disaster management.
- **What is CRI?**: CRI ranks countries based on the impact of extreme weather events like heatwaves, storms, floods, and droughts. First started in 2006 by Germanwatch.
- **Key Findings (1993-2022)**: 765,000 deaths, 9,400+ extreme events, economic losses of USD 4.2 trillion. Impact Drivers: Storms (35% of deaths, 56% of economic losses), Heatwaves (30% of deaths), Floods (27% of deaths, 50% of affected people, 32% of economic losses).
- **2022 Rankings (Top 10 Most Affected Countries)**: Pakistan (storms, flooding, heatwaves), Belize (storms, flooding), Italy (heatwaves, flooding).
- **Long-Term Impact (1993-2022)**: Dominica (rare but severe events), China (frequent floods, storms), Honduras (storms, flooding), Myanmar, Vanuatu (rare cyclones, flooding), Philippines, India (tropical storms, heatwaves, floods).

Classification of Affected Countries:

- **Rare Extreme Events**: Dominica, Honduras, Myanmar, Vanuatu.
- **Frequent Extreme Events**: China, India, Philippines.

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Global Sea Ice Cover Melting

- **Context**: Global sea ice extent reached 15.76 million sq km in February 2025, surpassing the previous record low of 15.93 million sq km in early 2023.

Key Observations:

- **Arctic**: Currently at its lowest recorded sea ice extent.
- **Antarctic**: Close to a new low, with a trend of declining ice since the late 1970s.
- **Loss Rate**: Since 1979, around 77,800 sq km of sea ice has been lost annually.
- **Historical Trends**:
- **Arctic Sea Ice (1981-2010)**: Decreased by 12.2% per decade during September (the month of minimum ice).
- **Antarctic Sea Ice**: Lost 2 million sq km of sea ice between 2014-2017, and over 2 million sq km below maximum extent in 2023.

Reasons behind the Dip:

- **Warm Temperatures**: Both the Arctic and Antarctic are experiencing warmer-than-normal temperatures, accelerating ice melt.
- **Arctic**: Unusually warm oceans, storms, and thinner sea ice.
- **Antarctic**: Ice-breaking winds, warm air, and ocean temperatures near Southern Hemisphere summer (Dec-Feb).
- **Ocean & Atmospheric Patterns**: Ongoing warming disrupts the stability of sea ice.

Glaciers and Sea Level Rise

- **Context**: A recent study showed that melting glaciers have contributed to 2 cm of sea-level rise this century. Glaciers have lost 273 billion tonnes of ice annually for the past 25 years, equivalent to the water consumption of the global population over 30 years.

Why Sea Levels Are Rising:

- **Thermal Expansion**: Rising ocean temperatures cause seawater to expand, contributing 1/3rd to half of global sea level rise.
- **Melting Ice Sheets**: Global warming is causing glaciers and ice sheets to melt.
- **Albedo Effect**: As ice melts, the Earth's surface absorbs more heat, causing further warming.
- **Methane Release**: Thawing permafrost releases methane, accelerating warming.
- **Ocean Currents**: Changes like a slowing of the AMOC affect regional sea levels.

The Rise in Numbers:

- **Global sea level** has risen 21 cm since 1880.
- The rate of rise has more than doubled since 1993, from 0.18 cm/year to 0.42 cm/year.
- Over 10 cm of sea-level rise occurred between 1993 and 2024.

Concerns:

- **Flooding**, **Coastal Erosion**, **Displacement**, Mangroves, coral reefs, and salt marshes are at risk.
- **Land Loss**: West Bengal lost almost 99 sq km of land between 1990-2016.

Mitigation:

- **Renewable Energy**, **Energy Efficiency**, **Reduce Deforestation**: Protect forests to absorb CO2.

Adaptation:

- **Coastal Defenses**: Build seawalls to protect communities.
- **Natural Barriers**: Restore mangroves to reduce erosion.
- **Early Warning Systems**: Alert communities of extreme weather events.
- **Drought-resistant Crops**: Adapt agriculture to climate change.
- **Global Action**: Agreements like the Paris Agreement are key to reducing emissions and supporting adaptation efforts.

Trump and Climate Cooperation

- **Context**: After re-election, President Trump initiated the process of withdrawing from the Paris Agreement again, which will be completed by 2026 (following the agreement's rules). The US will continue participating in COP30 in Brazil (Nov 2025).

Background:

- **Paris Agreement (2015)**: Aimed to limit global temperature rise to below 2°C and ideally 1.5°C.
- **US Role**: The US, under Obama, played a key role in the agreement's adoption.

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- **Trump's Withdrawal (2017)**: Announced exit from the agreement; formal exit completed in Nov 2020.
- **Biden Rejoins (2021)**: Rejoined the Paris Agreement to commit to climate action.

Key Developments & Global Impact:

- **US Climate Finance**: In 2024, the US was expected to provide $11 billion to developing countries for climate efforts.
- **Impact on Developing Countries**: Vulnerable nations, like small island states, face risks without US climate funding.
- **Global Emission Trends**: After the US's initial exit (2017), global CO2 emissions rose by 1.7% in 2018.
- **China's Role**: China has led in pushing for green energy and met its renewable energy goals ahead of schedule.

Global Challenges:

- **Reduced US Climate Action**: Other nations may follow the US and scale back their own commitments to prioritize economic growth or energy security.

US's Global Influence Beyond Paris:

- **Global Influence**: Despite withdrawal, the US remains a major global player.
- **Economic Power**: The US dollar is central to international trade.
- **Military & Diplomatic Power**: Strongest military, veto power in UN Security Council.
- **Global Organizations**: Major shareholder in the World Bank and IMF; the largest contributor to UN climate funding.

History of US Climate Action:

- **Kyoto Protocol**: The US did not agree to binding emission targets under the Kyoto Protocol (1997), reflecting long-standing resistance to strong climate commitments.
- **Climate Finance Shortcomings**: The US has not met its obligations to provide sufficient financial support to developing countries fighting climate change.

Looking Forward:

Renewable Energy Growth:

- **EU**: Solar power is set to surpass coal in 2024.
- **China**: Met its renewable energy targets 6 years ahead of schedule.
- **Challenges for Developing Countries**: Countries like Indonesia and India face significant obstacles (e.g., coal phase-out, unemployment, debt).
- **Impact on Poorer Countries**: Economic struggles (unemployment, inflation, conflicts) make climate action more difficult for low-income nations.

What is COP?:

- **Conference of the Parties**, the governing body of the UN Framework Convention on Climate Change (UNFCCC), aims to tackle global climate change.

Key Achievements:

- **Kyoto Protocol** (1997, COP3) - Emission reduction targets.
- **Paris Agreement** (2015, COP21) - Limit global warming to 1.5°C.
- **Loss and Damage Fund** (2023, COP28) - Financial support for climate disaster-affected countries.

Recent COPs:

- **COP29**: Baku, Azerbaijan, Nov 2024.
- **Upcoming COP30**: Brazil, Nov 2025.

5.4 ENVIRONMENT AND CONSERVATION

World Wetlands Day 2025

- **Context**: Celebrated on February 2, 2025.
- **Theme**: "Protecting Wetlands for Our Common Future".

4 new Ramsar sites announced in 2025:

- **Udhwa Lake in Jharkhand** (1st Ramsar site in Jharkhand)
- **Theerthangal and Sakkarakottai in Tamil Nadu**
- **Khecheopalri in Sikkim** (1st Ramsar site in Sikkim)

Ramsar Convention and India's Commitment:

- **International treaty signed on February 2, 1971, in Ramsar, Iran.**

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- Dedicated to the conservation and sustainable use of wetlands globally.
- India has been a signatory to the Ramsar Convention since 1982.
- **Home to 89 Ramsar sites**, **Tamil Nadu hosts the most Ramsar sites (20)**, followed by **Uttar Pradesh (10)**.
- **As per (2023-24 bird census)**, Kanjli Wetland had the largest decline: 1,190 birds in 2021-22 → 600 in 2023-24 (-49.49%).

Threats to Wetlands and Conservation Measures:

- **Industrial pollution**: Regulate waste disposal: Enforce stricter regulations on industrial waste.
- **Illegal sand mining**: Regulate mining: Prevent illegal mining and protect riverbed ecosystems.
- **Agricultural runoff**: Minimize agricultural runoff: Protect water quality.
- **Climate change**: Educate local communities about climate impact and wetlands conservation.
- **Amrit Dharohar Initiative**:
- **Launched in June 2023** by the Ministry of Environment, Forest and Climate Change (MoEFCC), aims to promote unique conservation values of Ramsar Sites in India.

NGT Stops Kolleru Wetland Projects over Environmental Concerns

- **Context**: The National Green Tribunal (NGT) has put a stay on 6 infrastructure projects in Kolleru wetland in Andhra Pradesh, citing environmental concerns and the need for necessary clearances.

About Kolleru Lake:

- **Location**: Between the deltas of Krishna and Godavari rivers in Andhra Pradesh.
- **Water Sources**: Budameru and Tammileru rivers, connected to the Krishna and Godavari systems.
- **Importance**: Largest freshwater lake in India, Ramsar site since 2002, part of the Central Asian Flyway.
- **Biodiversity**: Home to many aquatic and bird species.
- **About National Green Tribunal**:
- **Created on**: October 18, 2010.
- **Legal Basis**: National Green Tribunal Act 2010.
- **Main Purpose**: Resolve cases related to environmental protection, forest conservation & natural resources.

Bacteria to Break Down Plastic

- **Context**: Plastic pollution is a growing problem, and scientists are exploring biological solutions such as bacteria and enzymes to break down plastic waste.

Plastic Pollution: A Global Crisis:

- Plastic pollution has become a significant global issue, with 8.3 billion tons of plastic produced in the last 65 years, but less than 10% of it has been recycled, resulting in 4.9 billion tons of plastic waste in the environment.

Biodegradation of Plastics:

- Biodegradation is the process by which living organisms or biological molecules break down plastics into simpler substances. Some bacteria and enzymes have shown the ability to break down plastics like polyethylene terephthalate (PET), which is commonly found in plastic bottles and packaging.

Enzymatic Plastic Breakdown:

- Enzymes have been found to break down PET into reusable products such as terephthalic acid and ethylene glycol. Scientists are currently working on improving these enzymes to speed up the breakdown process, with some success, such as an enzyme that can break down 90% of PET waste in just 17 hours.

Microbes for Plastic Degradation:

- Certain microorganisms have been found to break down various types of plastics, including polyolefins and polyamides. For example, a microorganism called X-32 can decompose these plastics into carbon dioxide, water, and biomass. However, this process can take up to 22 months. Researchers are using genetic

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engineering to modify these microorganisms to speed up the breakdown process.

Bacteria-Infused Plastic:

- Some researchers are working on creating biodegradable plastics by infusing them with heat-resistant bacterial spores. These spores remain dormant until the plastic is placed in moist compost, at which point they become active and start breaking down the material.

International Big Cat Alliance (IBCA) becomes full-fledged Organization

- **Context**: The IBCA officially became a full-fledged, treaty-based inter-governmental international organization on January 23, 2025.
- **IBCA focuses on the conservation of 7 big cat species**: Tiger, Lion, Leopard, Snow Leopard, Cheetah, Jaguar, and Puma.
- **The headquarters of IBCA is located in India**, approved by the Union Cabinet on February 29, 2024.
- The International Big Cat Alliance was launched by Prime Minister Narendra Modi on April 9, 2023, during the Commemoration of 50 years of Project Tiger.
- IBCA was formally established by the Government of India through the National Tiger Conservation Authority (NTCA) under the Ministry of Environment, Forest & Climate Change (MoEFCC) on March 12, 2024.

Founding Countries:

- **5 countries have deposited the instruments of ratification/acceptance/approval**: Republic of Nicaragua, Kingdom of Eswatini, Republic of India, Federal Republic of Somalia, and Republic of Liberia.
- 27 countries, including India, have consented to join IBCA.

Objectives of IBC:

- Stop decline and reverse negative trends, Promote gold standard conservation practices, Promote increased collaboration among countries and organizations.
- The National Tiger Conservation Authority (NTCA) is a statutory body under the Ministry of Environment, Forests and Climate Change. It was constituted under enabling provisions of the Wildlife (Protection) Act, 1972, as amended in 2006, for strengthening tiger conservation, as per powers and functions assigned to it under.

Community Forest Rights

- **Context**: The Forest Rights Act (FRA), 2006, aimed to recognize forest rights and occupation in forest land to forest dwelling Scheduled Tribes. However, many forest dwelling communities are still facing challenges in getting (CFR) rights.

Key Points of CFR Rights:

- **Gram Sabhas**: Own and govern community forests, giving them control and decision-making power over forest resources.
- **Sustainable Use**: Allows communities to collect non-timber forest products without harming the environment.
- **Customary Rights**: Recognizes traditional knowledge of communities in managing and conserving forests.
- **Protection from Eviction**: Ensures that communities cannot be forced to leave without their agreement.

Challenges for CFR Implementation:

- **Lack of Recognition**: Many states have not recognized CFR rights, with some recognizing less than 2% of CFR areas.
- **Conflicting Laws**: Indian Forest Act, 1927, Wildlife Protection Act, 1972, and Forest Conservation Act, 1980 create confusion and delay implementation.
- **Lack of Resources**: Many Gram Sabhas lack resources, skills, and financial support for forest management.

Successful CFR Implementations:

- **Mendha-Lekha, Maharashtra**: First village to get CFR rights, with successful bamboo harvesting and forest conservation programs.
- **Niyamgiri, Odisha**: Dongria Kondh tribe used CFR rights to stop bauxite mining, with Supreme Court support.

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FRA's Role in Carbon Sequestration:

- **India's Plan**: Store 2.5 gigatons of CO_2 through forest conservation.
- **Importance of CFR Rights**: Crucial for global climate goals like REDD+ (reducing emissions from forest degradation and forest degradation).

Protected Areas and Wildlife Conservation

- **30x30 Target**: Under the Kunming-Montreal Global Biodiversity Framework, countries aim to protect 30% of land and sea by 2030.
- **Study Findings**: Increasing the size of protected areas alone is insufficient to protect biodiversity due to human impacts outside these zones.
- **Extinction Filtering Concept**: "Extinction filtering" occurs when species sensitive to human disturbance disappear, leaving only those that can survive in degraded habitats.

Major Threats to Mammals:

- **Forest Loss and Fragmentation**
- **High Human Population Density** near protected areas.

Effective Conservation Efforts:

- **Wildlife Corridors**: Connect isolated forest patches.
- **Sustainable Land Use**: Plan to limit habitat destruction outside protected zones.
- **Community Involvement**: Engage local communities in conservation efforts.
- **Buffer Zones**: Strengthen zones around protected areas to shield species from human activities.

Kunming-Montreal Global Biodiversity Framework (GBF)

- **Adopted**: COP15, December 2022 (Kunming, China; Montreal, Canada).

Main Goals:

- **30x30**: Protect 30% of terrestrial and marine areas by 2030.
- **Species Extinction**: Prevent known species extinction; reduce extinction risk by tenfold by 2050.
- **Pollution**: Reduce pesticide risks and nutrient loss by 50% by 2030.
- **Invasive Species**: Halve the rate of invasive species introduction by 2030.

Convention on Biological Diversity (CBD):

- **Established**: Legally binding since 1993, ratified by 196 nations.
- **Objectives**: Conserve biodiversity, ensure sustainable use, and promote fair benefit-sharing.

Supplementary Agreements:

- Cartagena Protocol (biosafety).
- Nagoya Protocol (genetic resources and benefit-sharing).
- **India's Actions**: Enacted Biological Diversity Act in 2002 to implement CBD provisions.

Launch of Cali Fund at COP 16

- **Context**: On 25th February 2025, the Cali Fund was launched during the resumed session of COP 16 of the Convention on Biological Diversity (CBD) in Rome. This international fund aims to raise money for global biodiversity conservation by receiving contributions from private sector companies that use Digital Sequence Information (DSI) from genetic resources.

What is Digital Sequence Information (DSI)?:

- **DSI** refers to genetic data (DNA, RNA, or protein sequences) stored digitally.
- It's used in fields like genomics, bioinformatics, and biotechnology.

Key Objectives of the Cali Fund:

- **Support Biodiversity Conservation**: Aims to achieve three CBD goals:
- Conservation of biological diversity
- Sustainable use of biodiversity
- Fair and equitable sharing of benefits.
- **Private Sector Contributions**: For the first time, companies in industries like pharmaceuticals, cosmetics, and agriculture that benefit from DSI will contribute a portion of their revenues.
- **Support Indigenous Peoples & Local Communities**: 50% of the fund will be allocated to support these communities, especially focusing on women and youth.

- **Implementation of the Kunming-Montreal Global Biodiversity Framework (KMGBF)**: The fund will help implement the KMGBF, a global strategy to stop and reverse biodiversity loss.

Institutional Arrangements:

- **UNDP & UNEP**: Manage the fund.
- **MPTFO**: Administers the fund.
- **CBD Secretariat**: Hosts the fund's secretariat.

Background:

- The Cali Fund was part of the Multilateral Mechanism adopted at COP 15 (2022).
- It aligns with the Kunming-Montreal Global Biodiversity Framework (KMGBF).

AI's Environmental Problem

- **Context**: AI is growing rapidly, with a market valued at $200 billion. However, it has environmental impacts, especially in energy use and waste.

Environmental Impact:

- **Data Centres**: AI systems consume large amounts of energy, responsible for 1% of global emissions. They also contribute to e-waste.
- **High Energy Use**: AI models like GPT-3 can produce 500-600 tonnes of CO2, equivalent to dozens of cars' annual emissions.
- **Water Consumption**: Data centres could consume 6 times more water than Denmark.

Global Awareness:

- **ITU** has called for green AI practices at COP29. Some countries have proposed laws, but many still lack action.

Key Stats:

- **AI data centres** could use 35% of Ireland's energy by 2026.
- **ChatGPT** uses 10 times more power than a Google search.

The Way Forward:

- **Renewable Energy**: Use clean energy for data centres.
- **Energy Efficiency**: Opt for energy-efficient hardware and smaller models.
- **Adapt Pre-Trained Models**: Reduces energy usage.
- **Accountability**: Companies should disclose environmental impact.

Black Plastic and Toxic Concerns

- **Context**: A study raised concerns about black plastic and BDE-209 releasing toxic flame retardants into food, especially in kitchen utensils and takeout containers.

What is BDE-209?:

- **Chemical Name**: Decabromodiphenyl Ether (DecaBDE).
- **Purpose**: A brominated flame retardant used in electronics, fabrics, and plastics.
- **Environmental Impact**: Bioaccumulation and persistence in the environment; concerns over toxicity and health effects.
- **Regulations**: Restricted or phased out in many countries due to its harmful effects.
- **What is Bioaccumulation?**: The buildup of chemicals in an organism over time.
- **How It Occurs**: Chemicals enter through air, water, soil, or food and accumulate in fatty tissues.

Effects:

- **Biomagnification**: Chemicals increase in concentration as they move up the food chain and harm the health.
- **What is Black Plastic?**:
- **Source**: Made from recycled materials, mainly from electronic waste.
- **Risks**: Contains harmful chemicals (e.g., flame retardants, heavy metals like lead and mercury) that can leach into food or be absorbed by skin.
- **Toxic Chemicals**: Can include bromine (flame retardant), and heavy metals, posing health risks if used in everyday items.

Brine Pools

- **Hypersaline**: Extremely high salt content, much saltier than regular seawater.
- **Anoxic**: Lacks oxygen, making it lethal to most marine life.
- **Formation**: Found in depressions on the seafloor where salt and minerals accumulate.

Key Characteristics:

- **Distinct Appearance**: Brine pools are denser and do not mix with surrounding water, creating a "lake-like" appearance.

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- **Toxicity**: Most marine life can't survive, but chemosynthetic bacteria thrive in these extreme conditions.
- **Deepest Brine Pool**: Orca Basin in the Gulf of Mexico, 2,200 meters below sea level, 8 times saltier than surrounding water.

Forest Fires in India

- **Context**: 36% of India's forest cover is fire-prone (Forest Survey of India). Over the past two decades, forest fire incidents have increased 10 times, while total forest cover grew by just 1.12%. States most affected: Uttarakhand, Himachal Pradesh, Madhya Pradesh, Maharashtra, Odisha, Karnataka.

Causes:

- **Human Activities (90%)**:
- **Land clearing**, **slash-and-burn agriculture**, **unattended campfires**.

Climate Change:

- Rising temperatures, extended dry spells, extreme weather events.

Consequences:

- **Loss of Biodiversity**, Disruption of the water cycle, soil fertility degradation.
- **CO2 Emissions**: 69 million tonnes of CO2 emitted annually by forest fires.
- **Economic Loss**: Forest degradation, including fires, costs India approximately ₹1.74 lakh crore annually.

Government Initiatives:

- **National Action Plan on Forest Fires**: Comprehensive strategy for fire management.

Forest Fire Prevention and Management Scheme (FFPMS):

- **Challenge**: Funding is inconsistent, requiring stable financial support.

Enhancing the Response:

Technology Improvements:

- **Forest Fire Alert System**, **Drones** are used in Tamil Nadu and Odisha with thermal imaging.
- Combine data from Forest Survey of India, IMD, and ISRO for efficient management.

Community Empowerment:

- In Uttarakhand and Himachal Pradesh, self-help groups (mainly women) collect pine needles to reduce fire risks.
- Programs like Nepal's Community Forest User Groups and Indonesia's Fire-Free Village Program can serve as models for India.

5.5 PLANTS AND BOTANY

Rhododendron wattii in Nagaland

- **Context**: A study highlights the endangered Rhododendron wattii in Nagaland, while a new orchid species has been recorded for the first time in Manipur.

About Rhododendron wattii:

- **Species Name**: Rhododendron wattii.
- **Family**: Ericaceae.
- **Endemic Regions**: Native to the northeastern states of India, specifically Nagaland and Manipur.
- **Habitat**: Specific Location: Found in the Dzukou Valley, which extends into Manipur.

Conservation Status:

- **IUCN Red List Status**: Vulnerable.
- **Critically Endangered**: According to AshihoAsosü Mao from the Botanical Survey of India.

Related New Botanical Discovery in Manipur:

- **New Orchid Species**: Phalaenopsis wilsonii.
- **Location**: Found in Chakumei village in Senapati district, Manipur.
- **Significance**: This is the 9th species of the Phalaenopsis genus found in Manipur.

Shatavari Campaign

- **Context**: Ministry of Ayush launched a nationwide campaign titled "Shatavari – For Better Health".

About the Campaign:

- **Objective**: To promote the health benefits of Shatavari and encourage its adoption.
- **Target Audience**: Women, farmers, and organizations promoting Shatavari.

What is Shatavari?:

- **Scientific Name**: Asparagus racemosus (family Asparagaceae).
- **Plant Family**: Liliaceae.

- **Habitat and Distribution**: Found in shaded, low-altitude areas of tropical climates across Asia, Australia, and Africa.

Cultural and Medicinal Significance:

- **Cultural Significance**: Referred to as the "Queen of herbs" in Ayurveda, believed to promote love and devotion.
- **Medicinal Importance**: Known for its tonic, diuretic, and galactagogue effects, and for its ability to aid in ulcer healing.
- **Historical References**: Included in Charak Samhita and AshtangHridyam for treating women's health issues.

5.6 POLLUTION AND WASTE MANAGEMENT

Sangam Water Unsafe

- **Context**: The Central Pollution Control Board (CPCB) submitted a report to the National Green Tribunal (NGT). The report mentioned high levels of fecal coliform bacteria and biochemical oxygen demand (BOD).

What is Faecal Coliform?:

- **Faecal coliform bacteria** are microorganisms found in the excreta of warm-blooded animals and humans, indicating contamination by sewage.

What are BOD and COD?:

- **Biochemical Oxygen Demand (BOD)**: Measures oxygen consumed by microorganisms breaking down organic matter in water.
- **Chemical Oxygen Demand (COD)**: Measures total oxygen needed to chemically oxidize all organic matter in water.

About CPCB:

- **Established**: September 1974 under the Water (Prevention and Control of Pollution) Act.
- **Functions**: Controls air and water pollution, provides technical support, and sets environmental standards.
- Formulation of Minimal National Standards (MINAS) for industrial discharge.

IFC withdraws Funding for Waste Incineration Projects in Gujarat

- **Context**: The International Finance Corporation (IFC), the private lending arm of the World Bank, withdrew a loan for waste-to-energy (WTE) incineration projects in Gujarat.

Key Issues:

Environmental and Public Health Concerns:

- Local communities raised concerns about air and water pollution due to the incineration of un-segregated municipal solid waste.
- The emissions could worsen respiratory diseases, contribute to climate change, and harm public health.
- Activists argued that the projects would undermine sustainable practices like waste segregation and recycling.

Financial Viability:

- The company behind the projects posted a net loss of Rs 19 crore in 2023 and struggled with loan interest payments, questioning the project's financial sustainability.

Policy Implications:

- Activists called on other financial institutions, like Power Finance Corporation (PFC) and Indian Renewable Energy Development Agency (IREDA), to reconsider loans for the project and focus on sustainable waste management policies.

Solid Waste Management (SWM) in India:

- **SWM Rules 2024**: Amending 2016 rules, these will take effect by October 1, 2025. Aimed at improving waste management across India.

Challenges:

- India generates 62 million tons of waste annually, with only 43 million tons collected and 12 million tons treated.
- Issues like ineffective waste segregation, lack of trained personnel, and limited resources complicate the situation.

Regulatory Issues:

- Overlapping responsibilities between the Ministry of Environment, Forest and Climate Change (MoEFCC) and the Ministry of

Housing and Urban Affairs (MoHUA) hinder coordination and implementation.

Key Challenges and Initiatives:

- **Challenges**:
- Financial constraints limit local governments' ability to adopt modern waste management practices.
- Outdated disposal methods persist, and high costs limit the adoption of advanced technologies like blockchain, IoT, and AI.

Initiatives:

- **Smart Cities Mission**: 60 cities use technology for better waste management, improving collection and route efficiency.
- **Swachh Bharat Mission**: Aiming for Garbage Free status in urban areas by 2026.
- **Global Support**: UNEP's International Environmental Technology Centre (IETC) helps treat special wastes in developing countries.

Way Forward:

Focus on:

- Reducing single-use plastics.
- Waste segregation at source.
- Decentralized waste processing to reduce waste generation.
- **Circular Economy**: Promote recycling and reuse over incineration.
- **Sustainable Development Goals (SDG 12)**: Link waste management strategies with SDG 12, focusing on responsible consumption, production, and environmental protection.

5.7 CULTURE AND SOCIETY

Bathouism in Assam

- **Context**: On February 22, 2025, Bathouism was made an official religion option in application forms in the Bodoland Territorial Region (BTR).

What is Bathouism?:

- **Religion of Bodos:** The traditional faith of the Bodo people in Assam, focusing on nature worship.
- **Name Meaning:** "Ba" (five) + "Thou" (deep thought).
- **Key Elements:** Air, Sun, Earth, Fire, Sky.

Beliefs:

- **Supreme God:** BwraiBathou, meaning "eldest" in Bodo, symbolizing power and wisdom.
- **Symbol:** The Sijou plant (Euphorbia splendens), surrounded by bamboo posts representing life stages: Birth, Marriage, Sorrow, Happiness, Death.

Bodos in Assam:

- **Largest Tribe:** 5-6% of Assam's population, part of the Bodo-Kachari community.
- **Historical Demands:** Started seeking a separate state in 1967-68, leading to the Bodoland Autonomous Council in 1993 and the Bodoland Territorial Council in 2003.

5.8 ANIMAL BEHAVIOR AND RESEARCH

New Fishing Grounds

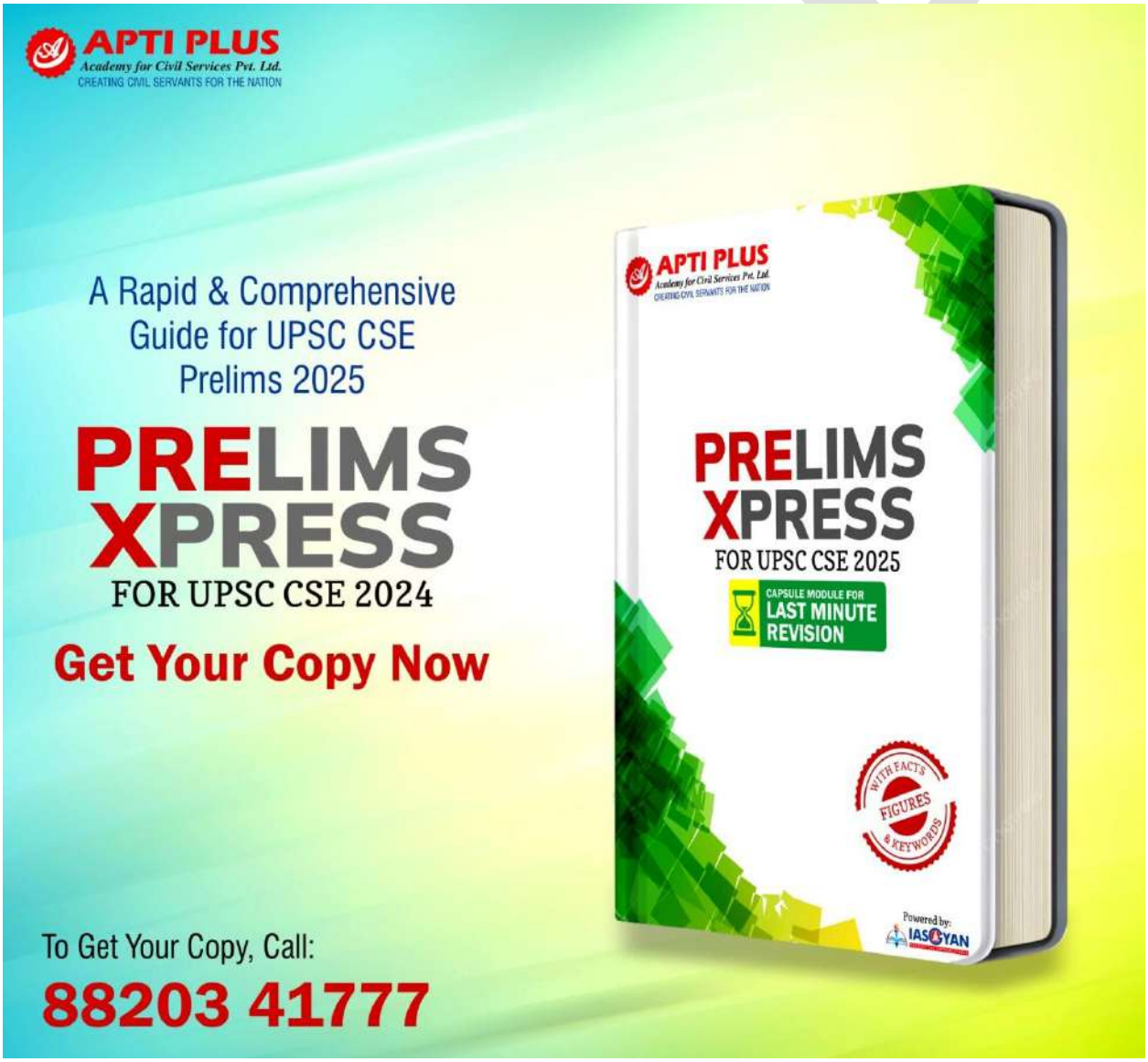
- **Context**: A recent deep-sea fishing survey conducted by the Fisheries Survey of India has discovered new and abundant fishing grounds in the Arabian Sea.
- **About the Survey**:
  - **Conducted by**: Fisheries Survey of India (FSI).
  - **Funded by**: Pradhan Mantri Matsya Sampada Yojana (PMMSY) scheme.
  - **Area Covered**: Kollam in Kerala to Goa.
  - **Discoveries**: Abundant fish and crustaceans such as shrimp, prawns, and various fish species.
- **About Fisheries Survey of India (FSI)**:
  - **Established**: 1946 (as Deep Sea Fishing Station).

- **Primary Responsibility**: Surveys of fishery resources in India's exclusive economic zone (EEZ).
- **Headquarters**: Mumbai, Maharashtra.

- **About Pradhan Mantri Matsya Sampada Yojana (PMMSY)**:
  - **Launched in 2020 with an investment of ₹20,050 crores**, the initiative is set to run from FY 2020-21 to FY 2024-25.
  - Its primary objectives are to increase fish production and productivity, generate employment opportunities, and enhance the income of fishers and fish farmers.

Dragonfly Species Extinction

- **Context**: 8 dragonfly species extinct in Pune. 27 new species discovered, bringing total to 98 known species in the district. Western Ghats: 203 odonate species, 84 endemics.
- **Deccan Peninsula Zone**: Semi-arid, rain shadow of Western Ghats, tropical forests (teak, sal). Covers Maharashtra, Madhya Pradesh, Karnataka, Central Highlands, Chotanagpur Plateau, Eastern Ghats.
- **Reasons for Extinction**: Land use changes, water pollution, changing weather patterns, urbanization.



6. SCIENCE & TECHNOLOGY AND HEALTH

6.1 SHORT ARTICLES

Ultra Processed Foods

Context

- The Economic Survey 2024-25 has suggested implementing strict regulations on ultra-processed foods (UPFs).

Ultra-Processed Foods (UPFs)

- They are **food products that undergo industrial alterations**, using multiple processes and additives to create products that are shelf-stable, hyper-palatable, and convenient.
- They are **intentionally formulated with excessive amounts of sugar, unhealthy fats** (like trans or saturated fats), and salt.
- They **lack essential nutrients** such as vitamins, minerals, fiber, and antioxidants.
- Their ready-to-eat or quick-prep formats (e.g., instant noodles, microwave meals) cater to fast-paced lifestyles, **encouraging overconsumption.**

Health Risks Associated with UPFs

- **Cardiovascular Disease:** Excess salt and unhealthy fats raise blood pressure and cholesterol.
- **Obesity:** High calorie density and addictive flavors promote overeating.
- **Colorectal Cancer:** Additives like nitrites in processed meats (e.g., sausages) are carcinogenic.
- **Diabetes:** Refined carbohydrates and sugars spike blood glucose levels.
- **Gut Health Issues:** Low fiber and synthetic additives disrupt microbiome balance.

The survey suggests measures like higher taxes on UPFs, stricter marketing restrictions, and educating the public about the health risks of these foods.

Sudan Virus

Context

- The Ugandan government and the World Health Organization (WHO) confirmed a Sudan virus disease (SVD) outbreak.

Sudan Virus Disease (SVD)

- It is a deadly pathogen that causes a severe hemorrhagic fever.
- The virus belongs to the Orthoebolavirus family, the **same family as the Ebola virus.**
- First identified in 1976 in southern Sudan (now South Sudan), the virus has periodically re-emerged in various regions.
- Past outbreaks have shown case **fatality rates ranging from 41% to 70%.**

Similarities with Ebola

- **Symptoms:** Both viruses present with fever, fatigue, muscle aches, vomiting, diarrhea, and unexplained bleeding. These symptoms typically appear 2–21 days after exposure.
- **Transmission:** The viruses spread through direct contact with infected bodily fluids (such as blood and saliva) or contaminated surfaces.
- **Severity:** Both have high fatality rates. While Sudan virus has historically shown fatality rates of 41–70%, the 2014–2016 Ebola outbreak in West Africa had a 40% fatality rate.

Differences from Ebola

- **Genetics:** Sudan virus and Ebola virus have distinct proteins and genetic makeup. This means that vaccines and therapies developed for Ebola are ineffective against Sudan virus.
- **Outbreak Frequency:** Sudan virus outbreaks are less common. The current outbreak marks the ninth since 1976.
- **Treatments:** No approved vaccines or drugs exist specifically for Sudan virus disease. While experimental monoclonal antibodies (used for Ebola) are being researched, their efficacy against Sudan virus remains uncertain.

LLM Foundational Model

Context

- Government has announced plans to develop a domestic large language model (LLM) as part of the ₹10,370 crore IndiaAI Mission.

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What is a Large Language Model (LLM)?

- A large language model is an **artificial intelligence system trained on massive text datasets** to understand, generate, and manipulate human language.
- These models **use deep learning architectures,** such as transformers, to predict text sequences and perform tasks like translation, summarization, and conversation.
- Developers train LLMs on diverse datasets—including books, articles, websites, and code—which enables the models to identify statistical relationships between words, phrases, and contexts.
- The **training process involves adjusting billions of parameters** to refine the model's ability to mimic human-like text.
- LLMs have a wide range of applications across various industries:
  - **Content generation**: Writing articles, marketing copy, or code
  - **Customer support**: Powering chatbots and virtual assistants
  - **Education:** Tutoring systems and language learning tools
  - **Research:** Summarizing papers or extracting insights from data

Challenges Faced by LLMs

- **Bias:** They can reflect biases present in their training data
- **Factual accuracy**: They may generate plausible but incorrect information ("hallucinations")
- **Context limits:** They can struggle with long conversations or highly specialized topics
- **Resource intensity:** They require significant computational power and energy

IndiaAI Mission

- **Launched in March 2024 under the Ministry of Electronics and Information Technology (MeitY)**, the IndiaAI Mission has a budget of ₹10,371.92 crore.
- The mission's objectives include democratizing computing access, improving data quality, promoting indigenous AI solutions, attracting top talent, funding startups, ensuring socially impactful AI projects, and promoting ethical AI development.

F11 Bacteria

Context

- A research team led by the University at Buffalo has discovered Labrys portucalensis F11, a bacterium, capable of breaking down and transforming PFAS (per- and polyfluoroalkyl substances).

Why Are PFAS Problematic?

- PFAS are **known as "forever chemicals" due to their ultra-stable carbon-fluorine bonds,** which resist natural degradation processes.
- These synthetic chemicals have **accumulated in water supplies, soil, and even in human and animal bodies,** leading to numerous health concerns including cancer, liver damage, and endocrine disruption.

How the Bacterium Works

- Labrys portucalensis F11 breaks down the strong carbon-fluorine bonds in PFAS through a process of defluorination and chain shortening.
- The bacteria essentially "eat" the carbon from PFAS molecules while removing the fluorine, transforming the persistent pollutants into less harmful substances.

Advantages Over Traditional Methods

- Most current PFAS remediation methods, such as filtration or incineration, either capture PFAS physically or destroy them chemically without addressing their toxic metabolites.
- The biological approach offered by this bacterium transforms PFAS into harmless components while simultaneously breaking down these toxic byproducts.

Potential applications of this bacterial solution include

- **Wastewater treatment**: Incorporating the bacteria into activated sludge systems to degrade PFAS during water purification.
- **Bioaugmentation:** Directly injecting the bacteria into contaminated soil or groundwater at industrial sites.
- **Landfill remediation**: Using the bacteria to treat PFAS leaching from waste disposal sites.

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Silicon Carbide

Context

- Researchers at the Indian Institute of Technology Madras (IIT-Madras) have successfully extracted silicon carbide (SiC) from simulated lunar soil (regolith).

About Silicon Carbide

Silicon carbide, also known as carborundum, is a compound of silicon and carbon with properties:

- **Hardness:** As the third hardest material after diamond and boron nitride, SiC exhibits remarkable abrasion resistance.
- **Thermal shock resistance:** With a high decomposition temperature of approximately 2700°C, it maintains structural integrity under extreme temperature fluctuations.
- **Electrical properties:** As a semiconductor with a wide bandgap, it enables efficient electronic devices.
- **Insolubility:** Resistant to dissolution in water, alcohol, and most acids, making it chemically stable.

Applications of Silicon Carbide

- **Abrasive applications**: Used for cutting and polishing glass, stone, and ceramics.
- **Electronics:** Utilized in high-power devices, LEDs, and detectors due to its semiconductor properties.
- **Mechanical applications:** Found in bearings, furnace elements, and protective vests.
- **Coatings:** Provides wear resistance for brake linings and electrical contacts.
- **Mechanical seals:** Essential components in pumps, compressors, and agitators.

Lunar Colonization Potential

- Its lightweight yet ultra-strong nature makes it ideal for construction materials.
- Radiation-shielding properties protect habitats from cosmic radiation.
- Heat resistance withstands the moon's extreme temperature variations.
- Reduces reliance on Earth-sourced materials, lowering mission costs.

International Classification Of Diseases (ICD)

Context

- The World Health Organization (WHO) has officially launched the 2025 edition of the International Classification of Diseases, 11th Revision (ICD-11).

About the International Classification of Diseases (ICD)

- The **WHO develops and maintains the ICD as a standardized tool for health professionals** worldwide.
- It **provides a uniform language for diagnosing, reporting, and monitoring diseases**, injuries, and causes of death across different countries and healthcare settings.
- **The ICD serves multiple critical functions in global health:**
  - Healthcare providers use ICD codes to **record diagnoses in electronic health records**, on death certificates, and throughout primary, secondary, and tertiary care settings.
  - Public health officials rely on ICD data to track disease prevalence, identify outbreaks, and understand the global burden of various conditions.
  - **Governments and health organizations use ICD statistics to shape health policies,** allocate resources, and evaluate the effectiveness of healthcare interventions.

Central Bureau of Health Intelligence (CBHI), operating under India's Union Ministry of Health and Family Welfare, serves as the WHO Collaboration Centre for ICD-related activities in the country.

ICD-11 Updates (2025 Edition)

The 2025 edition of ICD-11 introduces several important innovations:

- **Digital Innovation:** Advanced natural language processing (NLP) and API-based coding systems improve data interoperability between healthcare systems and reduce data-entry errors.
- **FHIR API Integration:** The inclusion of FHIR (Fast Healthcare Interoperability Resources)

API enables real-time data exchange between electronic health records and coding systems, making the coding process faster and less disruptive to patient care.

- **Multilingual Access:** The 2025 edition is available in 14 languages, with ongoing expansion efforts to further enhance global accessibility.
- **Traditional Medicine Module:** For the first time, the ICD includes conditions from traditional medical systems such as Ayurveda, Siddha, and Unani, enabling systematic tracking of these practices for research and policymaking purposes.

Bacterial Cellulose

Context

- Researchers at the Centre for Research in Agricultural Genomics (CRAG) in Barcelona have discovered that bacterial cellulose patches significantly accelerate wound healing and tissue regeneration in plants.

Study Design and Results

- Botanists initially tested bacterial cellulose patches on wounded plants to prevent infections.
- The research team made small cuts on leaves of two lab plants: Nicotiana benthamiana and Arabidopsis thaliana.
    - Patches were applied to half of the wounds, while the other half remained untreated.
- After one week, 80% of patched wounds healed completely.
- Microscopic analysis revealed that **tissues in treated wounds appeared healthy**, while untreated wounds exhibited signs of dehydration and stress.

How Bacterial Cellulose Works

- Bacterial cellulose is a **natural polymer produced by certain bacteria.** It has been widely used in human medicine for wound healing due to its:
    - Biocompatibility
    - Biodegradability
    - High water retention
- The **patches contain plant hormones**, produced by the bacteria during synthesis. These hormones remain bioactive even after sterilization procedures. Researchers believe the dense cellulose matrix preserves these hormones.
- Genetically, bacterial cellulose triggers a unique healing response in plants:
    - It activates infection-defense genes.
    - It suppresses wound-repair genes.
    - This suggests plants recognize cellulose as a foreign body, triggering a protective mechanism.

Majorana 1

Context

- Microsoft has unveiled Majorana 1, the world's first quantum computing chip powered by a topological core.

Technology Behind Majorana 1

- **Topoconductor Material:** Majorana 1 is built using a custom material called a "topoconductor," which is a hybrid of indium arsenide (a semiconductor) and aluminum (a superconductor).
    - These materials are **atomically engineered to form nanowires.** When cooled to near absolute zero temperatures, these nanowires generate Majorana zero modes (MZMs) at their endpoints, which allow stable qubit operations.
- **Topological Qubits:** Unlike traditional superconducting qubits used by companies like Google and IBM, **Majorana 1 utilizes topological qubits, that encode data in the topological state of electrons**, making them inherently resistant to minor environmental disturbances such as temperature fluctuations and vibrations, which reduces errors, as compared to conventional qubits.

Potential Applications

- **Medicine:** Majorana 1 could revolutionize drug discovery by enabling the simulation of molecular interactions at quantum scales.
- **Material Science:** It could support the development of advanced materials with

properties such as self-repair capabilities or ultra-efficient energy storage.

- **Climate Modeling:** Its computational power could optimize renewable energy systems and reduce pollution by enabling more accurate climate models and simulations of complex environmental systems.
- **Artificial Intelligence:** Quantum computing could significantly accelerate machine learning algorithms and solve complex optimization problems that are currently intractable for classical computers.

Henipavirus

Context

- Researchers discovered the Camp Hill virus in Alabama, USA, marking the first documented presence of a henipavirus in North America.

About Henipaviruses

- It **belongs to the Paramyxoviridae family of RNA viruses and are zoonotic**, meaning they originate in animals but can cross into humans.
- These viruses include Hendra (first detected in Australia in 1994), Nipah (emerging in Malaysia in 1999 and later in Bangladesh and India), and the recently identified Langya virus in China.
- **Classified as biosafety level 4 pathogens**, henipaviruses pose extreme risks due to their high fatality rates (up to 70% or higher) and lack of targeted treatments.

Why are Henipaviruses dangerous?

- Henipaviruses are **lethal because they attack multiple organ systems.** They trigger severe respiratory distress, encephalitis (brain inflammation), and systemic organ failure.
- Their zoonotic nature allows them to jump from animals like bats, pigs, horses, or shrews to humans, often via direct contact, contaminated food, or bodily fluids.
- **Currently, no antiviral drugs or vaccines** specifically target henipaviruses. Treatment focuses on supportive care.

Garbhini-Drishti

Context

- India has launched the GARBH-INi-DRISHTI data repository to advance biomedical research, particularly in the field of maternal and child health.

About GARBH-INi

- GARBH-INi stands for the Interdisciplinary Group for Advanced Research on Birth Outcomes – DBT India Initiative.
- **Launched under the Department of Biotechnology (DBT),** this collaborative research program brings together scientists, clinicians, and public health experts from across India.
- The program focuses on:
  - Understanding the biological and environmental factors contributing to pregnancy complications
  - Developing prediction tools for preterm birth
  - Creating better diagnostic methods for maternal and fetal health issues
  - Identifying biomarkers associated with adverse pregnancy outcomes
- The Translational Health Science and Technology Institute (THSTI), located in Faridabad, Haryana, leads this initiative.

About GARBHINI-DRISHTI

- GARBHINI-DRISHTI **serves as the data repository** and information-sharing platform developed under the GARBH-INi program.
- As one of South Asia's largest pregnancy affiliate datasets, GARBHINI-DRISHTI provides researchers with unprecedented access to high-quality, standardized data.
- The platform includes clear guidelines for data access, ensuring security, ethical use, and meaningful research outcomes.

Onchocerciasis

Context

- The World Health Organization (WHO) verified Niger as the first country in Africa to eliminate onchocerciasis transmission.

About Onchocerciasis

- **Onchocerciasis, commonly known as "river blindness," is a neglected tropical disease**

(NTD) caused by the parasitic worm Onchocerca volvulus.
- The **disease shows several severe symptoms** including intense itching, disfiguring skin conditions, and visual impairment that can lead to permanent blindness.
- **Transmission occurs when humans are bitten by infected blackflies of the Simulium genus**, which breed in fast-flowing rivers and streams.
    - These **blackflies release the parasite into the human bloodstream during feeding**, where it develops into adult worms that produce larvae migrating to the skin and eyes, causing the characteristic symptoms.
- The disease affects rural populations in sub-Saharan Africa and Yemen, with smaller endemic areas in parts of Latin America.

Treatment Strategy
- The core strategy for eliminating onchocerciasis involves population-based **treatment with ivermectin** through mass drug administration (MDA).
- **Ivermectin works by killing the larval stages of the parasite in the human body**, preventing both disease progression and further transmission through blackfly bites .

Neglected Tropical Diseases
- Neglected tropical diseases represent a diverse group of tropical infections predominantly affecting low-income populations in developing regions of Africa, Asia, and the Americas.
- These diseases are **caused by various pathogens including viruses, bacteria, protozoa, and parasitic worms (helminths).**
- The 20 recognized NTDs collectively impact over 1 billion people living in impoverished communities, causing significant morbidity, mortality, and socioeconomic burden.

Science and Innovation in Budget

Context
- The Union Budget 2025-26 has allocated significant funds to boost private sector-driven research and development initiatives.

Key Allocations and Initiatives
- The **Department of Science & Technology (DST) receives ₹20,000 crore** to support R&D activities in the private sector, including startups and established corporations.
    - This allocation is part of a larger ₹1 lakh crore corpus fund announced in July 2024, specifically designed to stimulate R&D in deeptech and sunrise sectors.
- The Department of Biotechnology (DBT) witnessed an increase in funding, with ₹3,446.64 crore allocated, representing a 51.45% increase from the previous year.
- The budget aims to accelerate innovation in biotechnology through public-private partnerships and industry collaborations, particularly in manufacturing, healthcare, and sustainability sectors.

Several mission-mode programs receive dedicated funding
- The **National Geospatial Mission receives ₹100 crore** to develop foundational geospatial infrastructure.
- The **Nuclear Energy Mission** aims to increase India's nuclear power capacity to 100 GWe by 2047.
- The **National Mission on High Yielding Seeds** focuses on developing climate-resilient and pest-resistant seeds.
- Atal Tinkering Labs promotes STEM education and innovation among youth, with plans to establish 50,000 new labs in government schools over the next five years.

Concerns and Challenges
- Curiosity-driven research receives relatively little funding, with most resources directed toward mission-mode programs.
- **Education and basic research funding remains at 2.54% of GDP,** falling short of the National Education Policy 2020 target of 6%.
- Bureaucratic hurdles continue to hinder scientific progress, with rigid funding processes slowing down research activities.
- The budget provides an 8.4% increase for Indian Institutes of Technology (IITs), while Central universities receive only a 4.3% increase.

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6.2 SNIPPETS

Topics	Details
Shiv Shakti Point	• **Context:** Scientists at the Indian Space Research Organisation (ISRO) have estimated that the Shiv Shakti point is 3.7 billion years old. • The Shiv Shakti point is the **Chandrayaan-3 landing site on the Moon's south pole,** where India successfully achieved a soft landing on August 23, 2023. • Scientists utilized advanced imaging techniques like the Lunar Reconnaissance Orbiter to analyze 25 craters in the low-relief plains near the landing site, estimating their age based on their diameters.
Suzetrigne	• **Context:** The United States Food and Drug Administration (FDA) has approved suzetrigine, a new non-opioid painkiller. • Suzetrigine is a **non-opioid analgesic** developed by Vertex Pharmaceuticals. • Unlike opioids, which bind to receptors in the brain and can produce feelings of euphoria that lead to psychological dependence and addiction, **suzetrigine works entirely outside the central nervous system.** • Its mechanism of action focuses on **blocking pain signals before they reach the brain**, eliminating the potential for the pleasurable effects that contribute to opioid addiction.
Ovoid Cells	• **Context:** Scientists at the University of British Columbia (UBC) have identified a new type of neuron called ovoid cells within the hippocampus of mice, humans, and other mammals. • Ovoid cells are distinguished by their unique egg-like shape, which gives them their name. • They **play an essential role in object recognition memory.** They activate when facing new objects, prompting a process that stores information about these objects for long-term recognition. • They are essential for daily functioning, as it allows organisms to distinguish between familiar and novel objects.
Spherex	• **Context:** NASA's Spectro-Photometer for the History of the Universe, Epoch of Reionization and Ices Explorer (SPHEREx) launched from Vandenberg Space Force Base in California aboard a SpaceX Falcon 9 rocket. • It is a **space telescope designed to create a detailed 3D map of the entire sky in multiple infrared wavelengths.** • It allows scientists to study the origins of the universe, the formation of galaxies, and the potential building blocks of life by searching for water and other molecules in the Milky Way galaxy. • It will conduct a two-year, all-sky survey in optical and infrared light, mapping the universe in 102 infrared colors—a first in human history.
Selenium	• **Context:** Sudden Hair Loss Cases in Buldhana District Linked to High Selenium Wheat. • A health crisis has emerged in Maharashtra's Buldhana district, where over 300 residents across 18 villages experienced sudden and severe hair loss between December 2024 and January 2025. ○ This condition, **known as acute onset alopecia totalis, has been linked to wheat** supplied through local ration shops containing excessively high levels of

	selenium. • The outbreak was traced to wheat imported from Punjab and Haryana, which contained 600 times more selenium than locally grown wheat in Buldhana. This wheat was distributed through the Public Distribution System (PDS) ration shops.
Punch Mission	• **Context:** NASA launched the PUNCH (Polarimeter to Unify the Corona and Heliosphere) mission from Vandenberg Space Force Base in California. • **NASA's PUNCH mission, a constellation of four suitcase-sized satellites, aims to study the Sun's corona and solar wind,** providing a 3D view of solar storms and their impact on Earth. • It will employ polarization of light—a technique that leverages sunlight scattered by electrons in the corona. • Data collected by PUNCH will improve forecasts of space weather events, which can significantly impact satellites, power grids, and GPS systems on Earth.
Ranikhet Disease	• **Context:** Recent outbreaks of Ranikhet disease have caused significant concern in India's poultry industry. • Ranikhet disease, also **known as Newcastle disease, is a highly contagious viral infection affecting birds,** especially poultry like chickens, turkeys, and ducks. • The disease is caused by the Newcastle disease virus (NDV), which attacks the respiratory, nervous, and digestive systems of birds. • **High morbidity and mortality rates,** often reaching 100% in severe cases. • Cause production drops and fertility problems in poultry.
Einstein Ring	• **Context:** The European Space Agency's (ESA) Euclid space telescope has captured an Einstein ring. • An Einstein ring is a **circular pattern of light that forms around a massive object,** such as a galaxy or cluster of galaxies, due to gravitational lensing. ○ This phenomenon occurs when the gravitational field of the massive object bends and amplifies light from a more distant object positioned directly behind it. • The **perfect alignment between the observer, the massive object (acting as a lens),** and the distant light source creates the distinctive ring-like shape. • It is named after Albert Einstein, whose theory of general relativity predicted that massive objects could bend light.
J. C. Bose Grant	• **Context:** The Anusandhan National Research Foundation (ANRF) has announced the launch of the new scheme J. C. Bose Grant (JBG). • The J. C. Bose Grant (JBG) recognizes and supports senior scientists and engineers for their contributions to research. • **Grants:** Annual research funding of Rs. 25 lakhs for a duration of five years • The grant can be availed until the age of 68 years. • ANRF is an apex body established through the ANRF Act, 2023, to provide high-level strategic direction for scientific research in India.
Shenhai Yongshi	• **Context:** Chinese scientists have installed specialized detectors deep in the South China Sea to hunt for neutrinos, often called "ghost particles" because of their extremely weak interaction with matter. • The **deep-sea submersible Shenhai Yongshi (Deep-Sea Warrior) researchers** placed the equipment at a depth of 5,250 feet. • Neutrinos **travel in straight lines from their cosmic sources** without being deflected by magnetic fields.

	• It can help scientists to trace back cosmic rays to their origins in extreme cosmic events such as supernovae, gamma-ray bursts, active galactic nuclei, and neutron star mergers.
Bombay Blood Group	• **Context:** Chennai doctors performed a kidney transplant for a patient with the rare Bombay blood group (HH phenotype) by overcoming critical blood compatibility challenges. • The Bombay blood group, also known as the HH blood group, is an extremely rare blood type first discovered in Mumbai in 1952. • Individuals with this blood group **lack the H antigen, as a result, their red blood cells cannot form A or B antigens**, even if they have the genes for them. • They can only accept blood from another person with the Bombay blood group. • It is exceptionally rare, occurring in about one in 10,000 Indians and only one in a million people globally.
Gaia Projects	• **Context:** Astronomers discovered Gaia BH3, a massive black hole near Earth, the third found by ESA's Gaia telescope since 2013. • The **Gaia Project, operated by the European Space Agency (ESA),** is a space mission dedicated to creating the most accurate and comprehensive three-dimensional map of our Milky Way galaxy. • It was launched in 2013, from the European Spaceport in Kourou, French Guiana. • The spacecraft contains two optical telescopes, to determine star locations, velocities, and spectral characteristics.
PARAS-2 Spectrograph	• **Context:** Scientists discovered a new dense sub-Saturn exoplanet named TOI-6038A b using the PARAS-2 Spectrograph at the Mt Abu Telescope. • PARAS-2 (PRL Advanced Radial-velocity All-sky Search-2) is a high-resolution fiber-fed spectrograph, designed for exoplanet detection using the radial velocity method. • As the highest-resolution spectrograph in Asia, it is **aimed to unveil the super-Earth-like worlds.** • Exoplanets are planets that orbit other stars and are beyond our solar system.

6.3 ADDITIONAL TOPICS FOR READING FROM IASGYAN WEBSITE

Topic Name	Upload Date
Composite Materials	6th February, 2025
National Policy For Rare Diseases (NPRD) 2021	8th February, 2025
India's Climb To Top: Paving The Way For Space Industrialisation	10th February, 2025
Lab Grown Babies	12th February, 2025

7. CULTURE & HISTORY

7.1 IMPORTANT SCHEMES / PROJECTS IN NEWS

National Mission on Manuscripts

Details

- It was **established in February 2003**, by the **Ministry of Tourism and Culture**, Government of India.
- **Mandate:** Documenting, conserving and disseminating the knowledge preserved in the manuscripts.
- **Motto:** 'Conserving the past for the future'

Objectives

- The mission restores and conserves manuscripts that are old or damaged.
- It makes it easier for people to access these texts online through digitization.
- The digital archive is known as **Kritisampada**, which serves as the **National Database of Manuscripts.**

Achievements

- **52 lakh** manuscripts have been prepared
- About **3 lakh** titles have been digitized.
- Published more than **100 books** since its inception.
- Established over **100 Manuscripts Resource Centres & Manuscripts Conservation Centres**

Gyan Bharatam Mission

Aim:

- To survey, document, and conserve India's vast manuscript heritage.

Objective:

- To cover over one crore manuscripts, guaranteeing their long-term preservation and accessibility for future generations.

Budget Allocation:

- The financial allocation for the **National Mission for Manuscripts** (NMM) has seen a significant increase **from ₹3.5 crore to ₹60 crore** in the **Union Budget 2025-26** to accommodate the Gyan Bharatam Mission.

PRASHAD Scheme and Spiritual Tourism Circuits

Details

- The Pilgrimage Rejuvenation and Spiritual Augmentation Drive (PRASHAD) was launched by the **Ministry of Tourism in 2014** to develop and improve pilgrimage sites across India.

Key Objectives:

- Strengthen **infrastructure** (roads, sanitation, water supply).
- Improve **connectivity** (road, rail, air).
- Conserve culturally and spiritually significant sites.
- Promote **eco-friendly** and sustainable tourism.
- Create **livelihood opportunities** for local communities.

7.2 IMPORTANT PERSONALITIES / DYNASTIES IN NEWS

Aga Khan IV

Description

- **Prince Karim al-Hussaini, known as Aga Khan IV**, recently died in Lisbon at the age of 88.
- The **Nizari Ismailis** are the **largest branch of Ismaili Shia Islam** and trace their spiritual leadership through a direct line of Imams, with Aga Khan IV as their **49th leader.**
- The title Aga Khan was first granted to Hasan Ali Shah, the 46th Imam, by Fath-Ali Shah Qajar, the king of Iran, in the 19th century. Since then, the Aga Khans have led the Ismaili community as both spiritual leaders and modern reformers.
- In 2015, Aga Khan IV declared **Lisbon as the global headquarters** of the Nizari Imamate strengthening the Ismaili presence worldwide.

Sarojini Naidu

Description

APTI PLUS

- **National Women's Day** is dedicated to Sarojini Naidu, also known as the **Nightingale of India**, who was born on **February 13**, 1879.
- **Significant Literary Works** of Sarojini Naidu include the following:
  - The Bird of Time
  - The Broken Wing
  - The Sceptred Flute Songs of India
  - The Feather of the Dawn

Role in freedom struggle

- She joined the national movements in the wake of **partition of Bengal in 1905**.
- She participated in the Gandhian movements like **non-cooperation movement, civil disobedience movement, quit India movement.**
- She was the **representative of 'Indian women'** in the round table conference.
- She became the second woman after Annie Besant and **first Indian woman** as president of INC when she **presided over the 1925 Kanpur session of INC**
- She was appointed as the **first woman Governor of Uttar Pradesh.**

Mujibur Rahman

Description

- Regarded as the **founding father of Bangladesh**, Mujibur Rahman was born on 17th March 1920 in Tungipara, India (now in Bangladesh).
- At the initial stage of his political career, he was associated with **All-India Muslim League**.
- Later he **founded Awami League** advocating for Bengali nationalism.
- He led the **liberation war of Bangladesh** and declared Bangladesh's independence.
- Following this, he became the **first prime minister of Bangladesh** (1972–75)
- However, in 1975, he was assassinated during a coup.

VD Savarkar

Description

- VD Savarkar is regarded as a freedom fighter, politician, lawyer, social reformer, and the founder of the Hindutva philosophy.
- He propagated the idea of armed revolt against British **opposed to non-violence of Gandhi.**
- He was arrested and sentenced to two life sentences (50 years) in the **Kala Pani jail** of Andaman.
- He was associated with **India House, Abhinav Bharat Society, Free India Society, Mitra Mela** to bring in national & revolutionary ideas.
- He built the **Patit Pavan Mandir** to fight against untouchability.
- He called **1857 revolt as the first war of independence.**
- The **airport at Port Blair**, Andaman and Nicobar's capital has been named Veer Savarkar International Airport.

Ajit Singh

Description

- Ajit was the elder brother of Kishan Singh, Bhagat Singh's father.
- Recently, farmers protesting at the Punjab and Haryana borders are observing February 23 as **Pagri Sambhal Diwas**, in honour of Ajit Singh's birth anniversary.
- In 1905, Ajit Singh and his brother Kishan Singh worked among the people in famine-stricken areas like Barar, Ahmedabad.
- He worked in flood and earthquake-affected areas like Srinagar and Kangra.
- Ajit Singh played a key role in peasant agitation **Pagri Sambhal Jatta Movement** (1907) which was against the oppressive Colonisation and **Doab Bari Acts,** which denied land ownership to farmers.
- He established the **Indian Revolutionary Association, Bharat Mata Book Agency**, which published anti-British literature.
- In 1913, he collaborated with the **Ghadar Party.**
- In 1932, he contributed to the **Azad Hind Fauj** in Italy.

Wadiyar dynasty

Description

- The Wodiyar dynasty (also spelt Wadiyar by the British) was an Indian royal dynasty that

ruled the **Kingdom of Mysuru (Mysore)** from 1399 to 1947.
- The Wadiyar dynasty was established by **Yaduraya Wadiyar**, marking the beginning of the Mysore kingdom.
- From 1399 to 1565, they reigned as vassals of the **Vijayanagara Empire**.
- From 1565 to 1761, they reigned as separate kings.
- From 1761 to 1796, the dynasty's rulers only had nominal power because the real power was held by the commanders-in-chief, **Hyder Ali and his son Tipu Sultan**.
- Following Tipu Sultan's death at the hands of British overlords in 1799, the dynasty reigned as British allies from 1799 until 1947.
- The Wadiyars promoted **Carnatic music, literature, and temple architecture**, making Mysore a cultural hub.

Chalukya dynasty

Description

- Ruled over the **Deccan area** between **6th to 12th Century**.
- Consisted of three closely related yet distinct dynasties:
  - **Chalukyas of Badami**
  - **Chalukyas of Kalyani**
  - **Chalukyas of vengi**

About Chalukyas of Kalyani

- They were known after their **capital city, Kalyani.** It is present in the modern-day Karnataka. Originally a feudatory of the **Rashtrakuta empire.**
- The empire was established by **Tailapa II.** The most important ruler of this dynasty was Vikramayaditya VI.
- The finest examples of later Chalukya architecture - **Mallikarjuna temple of Bellary, Siddeshvara temple in Haveri, Kallesvara temple** in Davangere district
- Their architectural Contributions lie in the development of a transitional architectural style, influencing later empires like the Hoysala. Examples: **Kasi Vishveshvara Temple, Mallikarjuna Temple.**

7.3 IMPORTANT ART FORMS / DANCE IN NEWS

Dhimsa dance

Details

- **Origin:** Koraput district, Odisha; later popularized in Andhra Pradesh.
- **Performed By:** Traditionally by Porja caste women, now performed by multiple tribal communities like Bagata, Valmiki, Poraja, Khond, Gadaba, Kondadora, Mukadora, and Kotia.
- **Meaning of "Dhimsa":** The word "Dhimsa" means "**sound of footsteps**", emphasizing rhythmic movements.
- **Occasions:** Performed during festivals, weddings, religious gatherings, and especially during **Chaitra Purab** (EetelaPanduga).
- **Formation & Style**: 15-20 women form a chain by holding hands or clothes and perform synchronized steps, moving in circular patterns.
- **Themes:** Revolve around tribal mythology, folktales, economic life, kinship, and marriage traditions.
- **Cultural Significance:** It is a symbol of tribal unity, heritage, and social bonding. It was traditionally performed to seek blessings for family well-being.

Jhumoir Binandini dance

Details

- It is a **traditional folk dance** performed by the **Adivasi tea tribes of Assam**.
- Their **origin** is traced to the **Chotanagpur region** of Jharkhand
- Another name is Jhumur.
- Traditional instruments like the Madal, Dhol, Taal, Flute are used along with the dance.
- The dance is performed to celebrate various occasions like
  - **harvest festivals**

  - **weddings**
  - **community gatherings**
- Both men and women perform the dance.
- The traditional **attire** for Jhumur dance includes
  - colorful sarees for women
  - dhotis and kurtas for men
- **Themes** of Jhumur songs include
  - lively and rhythmic theme
  - many of them depict the hardships faced by tea plantation workers

Dashavatar Art

Details

- It is a traditional theatre form with an **800-year history**.
- It is a popular form of drama by the **farmers of Konkan region**.
- It is to honour **the ten incarnations of Lord Vishnu:** Matsya, Kurma, Varaha, Narasimha, Vaman, Parashuram, Ram, Krishna, Buddha, and Kalki.
- It has two parts: 'poorva-ranga'(initial part) and 'uttararanga'(second part).
- Performers use bright makeup and costumes, accompanied by a paddle harmonium, tabla, and zanj (cymbals).

Dokra Art

Details

- **Origin:** Originated in India over 4,000 years ago, dating back to Indus valley civilization.
- The name 'Dokra' is derived from **Dhokra Damar tribes** (of Odisha & West Bengal)
- **Regions:** Jharkhand, Chhattisgarh, Odisha, West Bengal, Telengana, Madhya Pradesh, Rajasthan, Tamil Nadu
- **Casting Technique:** Lost wax technique or Cire Perdue
- **Features:** Handcrafted metalwork, Intricate designs
- Other Name: **Bell metal craft**

Kashmir Hand knotted carpets

Details

- **Origin:** Dates back to **15th century.**
- Locally known as "**Kal baffi"**
- It is said that **Sultan Zain-ul-Abidin** brought carpet weavers from Persia and central Asia in toKashmir to train the local inhabitants.

Illustrations in constitution

- The Constitution of India, came into force on **January 26, 1950, features 22 unique illustrations** that provide a visual narrative of India's history.
- The illustrations were conceptualized and executed by renowned artist **Nandalal Bose and his team at Santiniketan.**
- Nandalal Bose was commissioned to create the illustrations in **October 1949**, just before the Constitution's signing.
- The illustrations span various periods of Indian history. They depict scenes from the **Indus Valley Civilization to the freedom struggle.** The artwork includes images from Hindu epics like the **Ramayana and Mahabharata**. This narrative approach reflects Bose's vision of India's historical journey.

7.4 NEWS IN SHORTS

Battle of Karnal

Details

- The Battle of Karnal was fought on February 24, 1739 which marked decline of the Mughal Empire.
- Mughal Emperor Muhammad Shah 'Rangila' was decisively defeated in a matter of hours by the Iranian ruler Nadir Shah.
- Following the battle, Nadir Shah marched into Delhi and completely plundered the city.
- The wealth taken from the Mughal treasury included
  - Peacock Throne
  - Koh-i-noor diamond

Diamond Triangle

- Deep in Odisha's Jajpur and Cuttack districts, the **Diamond Triangle—Ratnagiri, Lalitgiri, and Udayagiri**—holds the remnants of a once-

thriving Buddhist civilization. These sites, flourishing between the **5th and 13th centuries** CE, saw their peak under the **Bhaumakara dynasty (8th–10th century CE),** known for patronizing Mahayana and Vajrayana Buddhism.

Tea Horse Road

Details

- It is an ancient trade network which acts as a **connector among India, Tibet, and China**, played an instrumental role in commerce and cultural exchange for centuries.
- It is useful for the movement of valuable commodities like **tea, horses.**
- The Tea Horse Road traces its origins to the **Tang Dynasty (618-907 CE).**
- **Buddhist monk Yijing (635-713 CE)** documented early trade exchanges.
- The length spans **over 2,000 km.** Passed through **Dali, Lijiang of Yunnan Province, Lhasa of Tibet**. Elevation up to **10,000 feet in the Himalayas.**
- Few remnants of this route still remain intact, in regions like Lijiang, which became a **UNESCO World Heritage Site in 1997** due to its historical significance in trade.

8. GEOGRAPHY & DISASTER MANAGEMENT

8.1 WHY IRAQ IS SINKING INTO EARTH

Context

- A research team has observed a sinking oceanic slab beneath the Earth's surface that is responsible for gradually pulling this area downwards. This phenomenon is a result of complex tectonic processes occurring over millions of years.

Why is Iraqi territory sinking?

- This phenomenon is happening mainly due to the dynamics between the Arabian and Eurasian continental plates.
- When the Arabian and Eurasian plates collide, a huge crack is formed, called the "Neotethys oceanic slab".
- This slab originated from the bottom of an ancient ocean that existed 66 million years ago.
- Now this slab is slowly sinking into the Earth's mantle (deep layer).
- This process is pulling Iraq's Zagros region down with it, causing this area of Iraq to slowly sink.

Movement of Tectonic Plates

Convergent boundaries

- In this kind of interaction, two lithospheric plates collide against each other.
- The zone of collision may undergo crumpling and folding, and fold mountains may emerge (orogenic collision**). Himalayan Boundary Fault is one such example.**

Diverging Boundaries

- In this kind of interaction, the plates diverge (move away from each other).
- Mid-ocean ridges are formed due to this kind of interaction. **The Mid-Atlantic Ridge is one such example.**

Side-sliding boundaries

- When two plates slide past each other, this process can cause earthquakes.

Example: The San Andreas Fault

Structure and Types of Tectonic Plates

- The Earth has a total of seven major tectonic plates, some of which cover entire continents, while some only cover oceanic areas.

1. Antarctica and the surrounding oceanic plate.
2. North American plate.
3. South American plate.
4. Pacific plate.
5. India-Australia-New Zealand plate
6. Africa with the eastern Atlantic floor plate.
7. Eurasia and the adjacent oceanic plate

Some important minor plates are

1. **Cocos plate:** Between Central America and the Pacific plate.
2. **Nazca plate:** Between South America and the Pacific plate.
3. **Arabian plate:** Mostly the Saudi Arabian landmass.
4. **Philippine plate:** Between the Asiatic and Pacific plates.
5. **Caroline plate:** Between the Philippine and India nplate (North of New Guinea).
6. **Fuji plate:** North-east of Australia

8.2 PLACES IN NEWS

Places in news	Details
Congo	• The DRC is the **second-largest country in Africa**, after Algeria. • It is located in Central Africa. • The **capital, Kinshasa**, is located along the Congo River, which is the only river in Africa that crosses the equator twice. • Goma is a strategic city in eastern Congo. It is a hub for the region's vast and largely untapped mineral wealth.
Rwanda	• It is a **landlocked country** located south of the Equator in east-central Africa. • It is located in the African Great Lakes region with the capital at Kigali. • Rwanda is bordered by Uganda to the north, Tanzania to the east, Burundi to the south and the Democratic Republic of Congo to the west.
Guantanamo Bay	• It is a large, well-sheltered inlet of the **Caribbean Sea** on the southeastern coast of Cuba. • It's the **largest harbour** on the south side of the island. • The strategic importance of the bay is that it is close to the Windward Passage between Cuba and Haiti that links the Atlantic Ocean to the Caribbean Sea and Panama. • Guantanamo Bay, widely known as **"Gitmo,"** has been used to house terrorism suspects since the September 11, 2001, attacks, but it also has a small, separate facility known as the Migrant Operations Centre.
North Sea	• It is a relatively shallow and **enclosed sea** located in Northwestern Europe. • It is considered to be a marginal sea of the **Atlantic Ocean.** • It connects to the Atlantic Ocean via the Norwegian Sea in the north and the English Channel in the south. • **Bordering Countries**: United Kingdom, Norway, Denmark, Germany, the Netherlands, Belgium and France. • It covers an area of approximately **570,000 sq.km.** • It also hosts two of the **world's largest ports (Hamburg and Rotterdam).** • It is one of the most important fishing grounds globally. • Major rivers that drain into the North Sea include**Elbe, Weser, Rhine, Meuse, Scheldt, Thames.**
Australia	• Australia (**smallest continent**) • Total Area: ~7.69 million km² (**6th largest country**) • Coastline: ~25,760 km • **Highest Point:** Mount Kosciuszko (2,228 m) • **Lowest Point;** Lake Eyre (-15 m) • Major Deserts: Great Victoria Desert, Simpson Desert, Great Sandy Desert • **Longest River:** Murray River (~2,508 km) • **Largest Lake:** Lake Eyre (seasonal) • Major Mountain Ranges: Great Dividing Range, MacDonnell Ranges, Flinders Ranges • Natural Wonders: Great Barrier Reef, Uluru, Blue Mountains • Major Islands: Tasmania, Fraser Island, Kangaroo Islan
South Africa	• **Capital Cities:** Pretoria (Administrative), Cape Town (Legislative),

	Bloemfontein (Judicial) • President: Cyril Ramaphosa (as of 2025) • Official Languages: 11 official languages (including English, Zulu, Xhosa, Afrikaans) • Currency: South African Rand (ZAR) • Borders: Namibia, Botswana, Zimbabwe, Mozambique, Eswatini, and Lesotho (enclave within South Africa) • **Major Rivers**: Orange River, Limpopo River, Vaal River • **Natural Resources**: Gold, diamonds, platinum, coal, uranium, iron ore • Major Industries: Mining, agriculture, manufacturing, tourism • **Historical Significance**: Anti-apartheid struggle, Nelson Mandela's leadership
Argentina	• South American country • **8th largest in the world** by land area • **Bordering countries**: Chile to the west, Bolivia to the north, Paraguay to the north-east, Brazil to the east, Uruguay to the north-east & south Atlantic ocean to the east. • **Capital:** Buenos Aires (largest city) – it is famous for its rich cultural heritage, architecture etc. • **Official language:** Spanish • **Physiography:** Andes mountain, Patagonia glaciers, Iguazu falls, Pampas grassland • High quality wines of Mendoza are famous worldwide. • **Culture:** Tango music & dance originated in Argentina.
Mount Etna	• It is an **active stratovolcano** situated on the eastern coast of the Italian island of Sicily, an island in the Mediterranean Sea, highest Mediterranean island mountain. • It is located above the **convergent plate margins** between the **African plate & Eurasian plate**. • It is **one of Europe's tallest active volcanoes and Italy's highest peak**, located south of the Alps. • Etna covers an area of 1,190 sq.km. with a basal circumference of 140 km. • It is a **UNSECO world heritage site.s** • UN designated it as a decade volcano since it is close to densely populated area.
Qatar	• It is located on the north-eastern coast of the **Arabian Peninsula.** • It is a **small peninsular nation**. It shares a land border with Saudi Arabia to the south and by Persian Gulf on all other side. • **Gulf region** refers to the countries surrounding the Persian Gulf in the middle east. Nations like Saudi Arabia, Kuwait, Bahrain, Qatar, Oman, and UAE are part of it. It has rich oil reserves which drives their economy. • **Capital** – Doha • Physiography – largely flat, barren desert. Southern part is composed of Sand dunes. Northern part is rockier, composed of limestone.
Mount Dokono	• Mount Dukono is located in **Indonesia's North Maluku province.** • It is an **active volcano** situated on Halmahera Island in North Maluku, Indonesia, erupted for the first time in 1933. • **Indonesia's Volcanoes**

	• Indonesia has around 130 active volcanoes, the **most in any country of the world**. • The most active volcanoes in Indonesia are Mount Merapi and Kelut, both are located on Java Island.It is part of the **Pacific Ring of Fire,** a region prone to volcanic eruptions and earthquakes.
Nauru	• It is a **small island nation located in Oceania**, on the south-western Pacific Ocean, 45km south of Equator. • It was formerly known as **Pleasant Island, microstate in Micronesia**, part of Oceania in the central pacific. • Area is of around 20 square km, oval shaped nation, **one of the smallest countries** in the world.It is also **one of thesmallest in terms of population.** • It is largely composed of rock phosphates. • It is around 1300km northeast of the **Solomon Islands**; closest neighbour is island of Banaba. • It is a **fossilized coral atoll**. • It has no official capital city; however **de facto capital city is Yaren**. • It got its independence in 1967. In 1999 it became a full member of both United Nations and commonwealth. • It is within the Australian monetary system. Legal tender of this country is Australian currency.Most of the residents are indigenous Nauruans. • **Nauruan** is the national language.
Gulf of Tonkin	• It is a **shallow, crescent-shaped semi-enclosed water body** situated off South China and Northern Vietnam coasts in the South China Sea's northwestern portion. • It is known as**Beibu Gulf in Chinese, Bac Bo Gulf in Vietnamese.** • It is connected with the South China Sea via the gulf's mouth in the south and the **Hainan Strait (Qiongzhou Strait)** in the northeast • The Gulf of Tonkin receives water from multiple riversprimarily the **Red River** • Note: Red river is referred to as the Yuan River in China
Lake Kivu	• It is one of the great lakes of East Africa. It is in the Albertine Rift, the western branch of the East African Rift.It is located between Rwanda to the east and the Democratic Republic of Congo (DRC) to the west. • It is **Rwanda's largest lake** and the sixth largest in Africa.It is lying at 1,460 metres above sea level, it is a fresh water lake.It covers an area of 1,040 square miles (2,700 sq.km). • Most of its waters are lying in the DRC; the rest are situated in Rwanda. • Lake Kivu empties into **the Rusizi River**, which flows southwards into Lake Tanganyika. • **Idjwi Island**, the tenth largest inland island on the planet, is located on Kivu Lake. • Lake Kivu is the **largest local source of fish** in Rwanda. • There are three exploding lakes in the world - **Lake Kivu, Lake Nyos and Lake Monoun**. • Both Lake Monoun and Lake Nyos are located in Cameroon. These lakes are called exploding lakes for their volcanic activities.
Darien Gap	• It is considered as one of the world's most dangerous and fastest-growing

	border crossings. • This route spans parts of **Central and South America.** It is a geographic region in the Isthmus of Darién or **Isthmus of Panama (connects the American continents within Central America).** It is on the **border between Colombia and Panama.** • It is a stretch of mountainous jungle **160km long and 50km wide** • Darien Gap is a part of the **Donkey Route to the USA**. (**The donkey route to the US involves migrants travelling through Latin American countries to reach the US border)**
Caspian Sea	• It is an enclosed water body without any direct outlet to the ocean, so it **is not sea but a lake.Earth's largest inland body of water**, when measured by surface area. • **Bordered by** five countries: **Kazakhstan, Turkmenistan, Iran, Azerbaijan, and Russia.** • The sea is also known for its **abundance of energy resources** (oil and natural gas reserves in offshore fields and onshore on the coast of the sea). • It is the source of most of the **world's caviar.**
Manikaran	• It is situated in **Parvati Valley along the Parvati River** in the district of kullu of the state **Himachal Pradesh**. It is famous for its **hot springs and geothermal activity.** These hot springs, believed to have healing properties. The water of the springs is said to be **radioactive** which is beneficial to sufferers from rheumatism. • It is surrounded by **Himalayan mountains**, providing **a picturesque landscape** thereby increasing its tourism potential. • It is also famous for its **Shiva temple, Manikaran Sahib** Gurudwara, and a Rama temple. • **Guru Nanak** visited Manikaran during his third Udasi (spiritual journey) in 1574 Bikrami, making it sacred for Sikhs. • Connected via important mountain passes, including: ○ **Pin Parvati Pass (to Spiti Valley),** ○ **Sara Umga La Pass (to Lahaul),** ○ **Debsa Pass (discovered in 1995).**
Aravalli	• It is located in the **North-Western part** of India. • It stretches over from **Raisina Hills** in New Delhi to Khedbrahma and Palanpur in Gujarat,in a south-west direction, passing through southern Haryana and Rajasthan, and ending in Gujarat. Overall, it stretches **over Delhi, Rajasthan, Gujrat, Haryana.** • It is characterized by **rugged topography with rocky & hilly landscape.** • Two, main ranges – the Sambhar Sirohi Range and the Sambhar Khetri Range in Rajasthan, • It is one of the **world's oldest fold mountain** of the world. • Length is around 670 km. Average elevation is 600-900 meters. • Major rivers such as Banas, Sahibi, Luni, Chambal, Sabarmati etc flowing from Aravalli. • Highest peak is **Guru Shikhar peak** on **Mount Abu.** • Rich in minerals such as copper, zinc.
Cook Island	• **Region**:The Cook Islands are in **Polynesia in the South Pacific Ocean**

	between Tonga to the west and French Polynesia to the east. • They have 15 islands spread over a large area. • **Terrain:** The islands are a mix of volcanic islands and coral atolls, with lush landscapes, lagoons, and coral reefs. • **Capital:** Avarua, situated on Rarotonga Island, serves as the political and economic hub of the Cook Islands. • **Highest Point:**Te Manga (652m) is the tallest peak, located on Rarotonga, featuring steep volcanic slopes and dense vegetation. • Political Status: The Cook Islands is a self-governing territory. It is in free association with New Zealand. This means it governs itself but keeps strong ties with Wellington. • **Citizenship: All Cook Islanders hold New Zealand citizenship**, allowing them to live, work, and travel freely in New Zealand.
Honduras	• Location: **Central America** • **Bordering countries and oceans:**Guatemala to the west; El Salvador to the southwest; Nicaragua to the southeast; Pacific Ocean at the Gulf of Fonseca to the south; Caribbean Sea at the Gulf of Honduras to the north. • **Capital:**Tegucigalpa • Natural Resource: Timber, gold, silver, copper, lead, zinc, iron ore, antimony, coal, fish, hydropower. • **Highest Peak:**Mount Las Minas • **Terrain:**More than three-fourths of the land area of Honduras is mountainous, limiting arable land. **Major River sand water bodies** • The Coco River forms the border with Nicaragua and other important rivers are Patuca&Ulúa. Lake Yojoa, which is the only significant lake in the entire nation, and the Caratasca Lagoon in the northeast. • **Major Valleys:**Sula Valley (Northwest), Highly populated and fertile.
Cascade Range	• Cascade Range is a prominent collection of mountains found in the **Pacific Northwest area of the northwestern United States and southwestern Canada.** • The range was formed by the **subduction of the Juan de Fuca Plate beneath the North American Plate,** which continues to drive volcanic activity. • It is known for its **snow-capped peaks, massive glaciers, steep scree slopes, and lush forests**. • The range is home to 4375 named mountains, the highest and most visible of which is **Mount Rainier** 4,392 m. • The Cascades are part of the **Pacific Ring of Fire,** the ring of volcanoes and associated mountains around the Pacific Ocean.
Amsterdam island	• Situated in southern Indian ocean, it is a small **French island territory.** • Located roughly midway **between Australia, Antarctica, Madagascar.** • The island is **about 3,200 km** away from neighboring territories. • Also called **Nouvelle Amsterdam.** • **Volcanic in nature.** Elliptical-shaped Island. • Area of around **55 sq. km, length of 10 km, width of 7 km**.Formed between 400000 and 200000 years ago. • There is no permanent human population living here. However, there is a

	small scientific research station. • The endemic Amsterdam albatross is **one of the world's rarest species of avifauna**, found only on Amsterdam Island. • Amsterdam Island is the only French sub-Antarctic isle that supports **a native tree, Phylicanitida.**
Mount Taranaki	• Alternative Name: Also known as **Mount Egmont**, located in Egmont National Park, North Island, New Zealand. • Legal Status: Recognized as TeKāhui Tupua, a living entity with **legal rights** and responsibilities. • **Geographical Features: A stratovolcano**, standing 2,518 meters (8,261 feet) tall, with a symmetrical volcanic cone, formed by the subduction of the Pacific Plate under the Australian Plate. • **Cultural Significance:** Considered a sacred ancestor by the Māori people playing a central role in their identity and traditions. • **Historical Context** • Māori lands including Mount Taranaki were confiscated during British colonization. The **Treaty of Waitangi (1840),** intended to protect Māori rights, was often breached. • **Environmental Impact: Legal status ensures protection from land sales**, exploitation and environmental degradation. Focuses on traditional Māori conservation practices and preservation of native flora and fauna.

8.3 INITIATIVES RIVERS IN NEWS

River	Description
Parvati	• Located in the **Parvati Valley of Himachal Pradesh**.It **originates from the Man Talai Glacier,** below the Pin Parvati Pass in Himachal Pradesh. • A tributary of the **Beas River, joining it at Bhuntar.**It flows entirely through Himachal Pradesh.
Daya	• **State**: Odisha • **Origin**: It originates from the Kusabhadra River and flows through the Khurda and Puri districts before emptying into the **Chilika Lake, the largest coastal lagoon in India.** • **Length**: About 37 km • **Tributaries: Malaguni river** • **Historical Significance:** The Daya River is historically important because of its connection to **the Kalinga War (261 BCE)** fought between Emperor Ashoka and the Kalinga kingdom. It is believed that after the battle, the river turned red with the blood of slain soldiers. This sight deeply moved Ashoka leading him to embrace Buddhism and adopt a path of non-violence.
Vishwamitri	• It is a seasonal river that flows through Vadodara, Gujarat, and is known for its unique urban ecosystem, particularly its large population of **mugger crocodiles (Crocodylus palustris).** • **Origin and Course:** The river originates from Pavagadh Hill in Gujarat and flows through Vadodara city, eventually merging into the Dhadhar River, which drains into the Arabian Sea. Its total length is approximately 80 km.

Teesta	• **Originates** from the **Tso Lhamo (lake) in North Sikkim.** Flows through Sikkim and West Bengal in India then enters Bangladesh & merges with **Brahmaputra river (known as Jamuna in Bangladesh).**The **total length is 414 km.** • **Tributaries are Ranget, Lachung, Lachen and Dikchu rivers.** • **Hydropower project**: Teesta-III, Teesta-IV and Teesta-V dams in Sikkim.
Silandhi	• Silandhi river, is a **tributary of the Amaravathy River** which in turn feeds **the Cauvery River.** In this context, **Anamudi Shola National Park** is in the news due to the Kerala Water Authority's (KWA) plan to construct a check dam across the Silandhi River.
Hindon	• **Origin:** Saharanpur district of Uttar Pradesh, in the Siwalik Hills • **Course:** Flows across the industrial belt of Western Uttar Pradesh for 400 kilometres before discharging into the Yamuna River in Noida. • **Tributory Of YAMUNA** • **Tributories Of Hindon River:** KALI (WEST) & KRISHNI River • Issue Of Pollution: In 2015, the Central Pollution Control Board (CPCB) assessed the pollution levels of the Hindon River and declared it a **'dead river'**. It was found to be 'unfit' for bathing in several sections due to extreme pollution levels.
Sowparnika	• **Location:** It is a west flowing river in the state of Karnataka. The Sowparnika River, also known as the **Souparnika River,** is a significant waterway in the Udupi district of Karnataka, India. • **Flow:** It is around dense green forest of Western Ghat. • **Origin:** it originates from the kodachadri hills in the western ghat • **Course:** It flows through Byndoor taluk passing near the famous Mookambika temple in Kollur. Ultimately it drains into Arabian sea. • This river has **mythological significance.** As per legend, garuda (lord Vishnu's divine bird and vehicle of Lord Vishnu) performed penance on the riverbanks, which is how it got its name "Souparnika" (named after "Suparna," another name for Garuda). • A unique feature of the Souparnika River is observed near near**Maravanthe Beach**, the river runs parallel to the Arabian Sea, separated by a narrow strip of land. • This rare geographical phenomenon offers a **picturesque landscape**, making it a popular spot for tourists and photographers.
Bhavani	• It originates in the upper regions of the **Nilgiris of Western Ghats.** It flows across three districts of Tamil Nadu - Nilgiris, Coimbatore, and Erode districts • It is a **major tributary of the Cauvery River** It is the **second largest river in Tamil Nadu**. • **Tributaries of Bhavani River:** West and East Varagar are the largest tributaries of the Bhavani River which come from the Nilgiris. • **Bhavani Sangameshwarar Temple**, is a prominent pilgrim center, situated at the meeting point of both the rivers - Bhavani and the Cauvery Rivers. The Bhavanisagar dam is constructed on this river. • It is **one of the world's largest earthen dams** playing a crucial role in irrigation and water supply. • The Bhavani River pass through **Silent Valley National Park** in Kerala before flowing into Tamil Nadu.Silent Valley national park is located in the

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	Southwestern corner of Nilgiris. • It is known for many highly endangered species such aslion-tailed macaque, tiger, gaur, leopard, wild boar, panther, Indian Cive.
Indrayani	• **Location:** Maharashtra, India • Tributary Of**Bhima River** (which is a tributary of Krishna River) • **Origin:** Kurvande village, near Lonavala, in the Sahyadri Mountains • Flow Direction: Eastward, mostly north of Pune • **Religious Significance**: Flows through Alandi (Samadhi of Sant Dnyaneshwar) and Dehu (Birthplace of Sant Tukaram) • **Key Hydroelectric Project: Valvan Dam at Kamshet**
Thames	• **Origin:** Thames Head, near Kemble in the Cotswold Hills, Gloucestershire County • **Flows into:** North Sea through the Thames Estuary. The Nore is the sandbank that marks the mouth of the Thames Estuary. It is the confluence point of the Thames and the North Sea. • **Area & length:** 346-km river that flows through southern England. • It is the **longest river in England.** It is also the second longest in the United Kingdom, right after the River Severn. Its basin covers an area of about 16,130 sq.km. • Cities: River passes numerous popular cities like London, Windsor, and Oxford (where it is also called the Isis River), Reading, Hendley-on-Thomas. • **Main Tributaries:** Churn, Coln Lea, Leach, Windrush, Kennet, Evenlode, Ock, Loddon.

8.4 IMPORTANT SPECIES / OBJECTS IN NEWS

Species/Object	Details
Green Cardamom	• It is popularly known as **"Queen of Spices",** belongs to the **Zingiberaceae family.** • It is one of the **world's most valuable spices,** ranking just after saffron and vanilla. • It is used as a flavouring agent and drug in traditional medicine. Native to the **evergreen rain forests of Western Ghatin South India** specifically within the states of Kerala, Karnataka, and Tamil Nadu. Kerala leads production, accounting for 60% of the total output, followed by Karnataka and Tamil Nadu. • **Top Producers: Guatemala** leads global production. India is the second largest producer. • **New discoveries of Green Cardamom:** The International research team has now identified six closely related species of cardamom, expanding the genus Elettaria from one to seven species. Earlier, four species (previously classified under the genus Alpinia) were reclassified under Elettaria. These species are ensal, floribunda, involucrate, rufescens. • **Newly Identified Species:** Two entirely new species of cardamom were identified and described from the Western Ghats in Kerala: • Elettaria facifera: Found in Periyar Tiger Reserve, Idukki district.

	• Elettaria tulipifera: Found in the Agasthyamalai Hills (Thiruvananthapuram and Munnar).
Asteroid 2024 YR4	• NASA and the European Space Agency are tracking asteroid 2024 YR4, which has a 1.6% chance of impacting Earth on December 22, 2032, highlighting the need for planetary defence monitoring. **About Asteroids** • Asteroids are remnants of planetary formation that failed to coalesce because of the gravitational interference of Jupiter. They circle the Sun in a zone **lying between Mars and Jupiter**. The circular chain of asteroids is called the asteroid belt. **Potential Destruction from 2024 YR4** • **Torino scale** is a rating system that helps astronomers and the public understand the risk of a near-Earth object (NEO) colliding with Earth.The scale is named after Turin, Italy, where it was first presented at an international conference in 1999.The scale uses a number from 0 to 10, with higher numbers indicating a greater risk. • The NASA JPL Center for Near-Earth Object Studies (CNEOS) has currently rated the 2024 YR4 a 3 on a scale from 0 to 10.If 2024 YR4 crashes into Earth, it is expected to release 8 to 10 megatons of energy.The scale is color-coded to help convey the level of risk. **Strategies to Prevent Potential Collisions** • Space agencies like NASA are developing planetary defence strategies to prevent catastrophic asteroid collisions with Earth. • **The DART Mission:** NASA's Double Asteroid Redirection Test (DART), in collaboration with the Johns Hopkins Applied Physics Laboratory, was the first planetary defence mission.
Ongole breed	• **Origin**: It is an **indigenous Bos Indicus breed** of cattle of India, native to Andhra Pradesh. • The name 'Ongole' is derived from town of Ongole. • **Used for:** Agriculture, Dairy, Breeding purpose • **Features:** High strength, Disease resistance, Heat tolerance, Strong immune system • **Physical traits:** Large muscular build with long limbs, short necks, White/Gray coat colour, Short stumpy horn, Distinct hump in males • **Other name:** 'Nellore' (Since the Ongole area was earlier in Nellore district)
Dwarf blackholes	• **Blackholes** • These are extremely dense, the gravitational attraction is so high that even light cannot escape. Albert Einstein first predicted the existence of black holes in 1916. • The first image ever recorded of a black hole was released in 2019. Black holes do not die. • **Dwarf blackholes** are small galaxies which typically contain just a few billion stars different from larger ones which can hold hundreds of billions. • They are the most abundant but difficult to detect type of galaxy in the universe.

	• They are difficult to detect because of
	  ○ low luminosity
	  ○ low mass
	  ○ smaller size
	• They are most commonly found in galaxy clusters. Our Milky Way galaxy is orbited by more than 20 dwarf galaxies.

Quipu	• This superstructure has mass of 200 quadrillion solar masses and stretches over 1.3 billion light-years. • **Superstructures**: Extremely large structures containing groups of galaxy clusters and superclusters. • It is a recently discovered superstructure in which galaxies group together in clusters and clusters of clusters (superclusters). • It contains nearly 70 galactic superclusters. • It is the **largest known structure in the universe in terms of length**. • It is over 13,000 times the length of the Milky Way. • Studying Quipu may help refine cosmological models. • It could offer new insights into galaxy evolution and large-scale cosmic dynamics.

8.5 IMPORTANT TRIBES / COMMUNITIES IN NEWS

Tribe / Community	Details
Fulani	• The Fulani are **one of Africa's largest ethnic groups**, known for their nomadic pastoralism. • **Origin:** Traced back to Green Sahara period (12000-5000 years ago). • **Geographical Spread**: Found across a vast region from Atlantic Africa to Lake Chad. • **Language:** Fula, a language classified under Atlantic branch of the Niger-Congo family. • **Role of women:** Known for their weaving, craftsmanship, and elaborate hairstyles adorned with beads and cowrie shells.
Kanjar	• The Kanjar tribe is a nomadic and semi-nomadic community primarily found in North India, including Bihar, Uttar Pradesh, Rajasthan, Madhya Pradesh, and Haryana. Historically, they have been known for their itinerant lifestyle and association with occupations such as hunting, fishing, and crafting.
Missing tribe	• They are an indigenous tribe from Northeast India. They live in parts of Assam and Arunachal Pradesh in India and Tibet in China. They are **one of the largest tribal groups in Assam.** They speak **Tibeto-Burmese languages.** • Tibetans call them "**Lhobhas,"** which means "southerners' ' because they live in South Tibet and areas now in Arunachal Pradesh. • They can be described as the **only riparian tribe of Northeast India** since their lives are closely associated with rivers. • The main festival of the Missing people is **'Ali-Aye-Ligang'**, its origin lies in jhum cultivation. The Missing people practice the **cult of 'Do-nyi – Polo'** which literally translates into worshiping the Sun and the Moon.
Bhil	• The Bhil are one of the largest tribal groups, living in **Chhattisgarh, Gujarat,**

	Karnataka, Madhya Pradesh, Maharashtra, Andhra Pradesh and Rajasthan. • The name is derived from the word 'billu', which means bow.Traditionally, experts in **guerrilla warfare,** most of them today are farmers and agricultural labourers. • They are also skilled sculptors.Bhil has traditional medical specialists - Budwa (Shaman) Huvarki (traditiona) birth attendant) Vaidu (herbalist) and Had Vaidu (Bone setter) with some communities having male midwives.

8.6 NEWS IN SHORT

Name	Details
Pulse mission	• MSP-Based Procurement: NAFED (National Agricultural Cooperative Marketing Federation of India) and NCCF (National Cooperative Consumers' Federation of India) will procure pulses from farmers who register and enter into agreements. • **Aim:** Ensure fair prices for farmers and stabilize market prices. • **Post-Harvest Warehousing:** Focus on reducing post-harvest losses and improving storage infrastructure. • **Budget Allocation**: ₹1,000 crore allocated for the mission. • **Objectives:** Achieve self-reliance in pulses production. Provide MSP-based procurement and post-harvest warehousing solutions. Reduce dependence on imports. • **Targeted Crops**: Tur/Arhar, Urad, Masoor
La Nina	• La Niña, meaning **"The Little Girl" in Spanish**, is a **cool phase of the El Nino Southern Oscillation (ENSO).** • It is characterized by colder-than-normal sea surface temperatures in the eastern Pacific Ocean. La Nina is one of the three phases of ENSO, alongside El Nino (the warm phase) and the neutral phase. • It is the **opposite of El Niño,** which brings warming in the same region. Both phases significantly influence global weather patterns. **Mechanism** • In La Nina, the trade winds strengthen, pushing warm water toward the western Pacific. Cooler waters from below rise in the eastern Pacific, causing a temperature drop in that region. • La Niña occurs in irregular cycles, typically lasting from two to seven years, and often follows an El Nino event. • In India, La Nina is expected to lead to above-average monsoon rainfall from July to September, which may result in a decrease in the production of pulses in the Indo-Gangetic Plains, but rice production may see an increase.
Earthquake Swarm	• An earthquake swarm occurs when multiple seismic events of comparable intensity strike a small area in relatively quick succession. **Causes of Earthquake swarm:** • Fluid movement, Slow slip events, active volcanism- Stress is accumulated due to movement along the fault line in the earth's crust, tectonic activity, hydrothermal activity, induced seismicity.
Peatlands	• Peatlands are terrestrial wetland ecosystems in which waterlogged conditions prevent plant material from fully decomposing, composed of partially decayed

	organic matter accumulated over thousands of years. • The production of organic materials is more than decomposition, as a result net accumulation of peat happens.Peatlands are carbon rich ecosystems due to the process of peat accumulation. • The **largest natural terrestrial carbon store is – Peatlands**. • Countries with the most peatlands:Canada, Russia, Indonesia, United States, Brazil, Democratic Republic of the Congo, China, Peru • **Significance of peatlands:**Largest Carbon Store on Land.Acts as a natural water filter and buffer for environmental disasters.Biodiversity Conservation and Livelihood Protection.
Inland Waterways Terminal	• It refers to the movement of people and goods on navigable waterways such as rivers, canals, lakes etc. • **Legislative Frameworks:** Inland Waterways Authority of India (IWAI) in 1986 is created under Inland Waterways Authority of India Act, 1985 It is an autonomous organization responsible for development, maintenance and regulation of National Waterways (NWs). • The Authority primarily undertakes projects for development and maintenance of IWT infrastructure on national waterways through grant received from the Ministry of Ports, Shipping and Waterways.
Rat Hole Mining	• Rat Hole Mining is a method of extracting coal from narrow, horizontal seams, widely prevalent in **Meghalaya.** • The term "rat hole" refers to the narrow pits dug into the ground, typically just large enough for one person to descend and extract coal.
National Dam Safety Authority	• NDSA is a statutory body set up under **Section 8(1) of the National Dam Safety Act, 2021. It is set up by the Central Government.** • It is headed by a chairman and assisted by five members to lead its five wings: policy and research, technical, disaster and resilience, regulation administration and finance. • **Headquarter** is at New Delhi. • **Functions:** It operates with a clear mandate to this authority plays a crucial role in • formulating policies and guidelines that govern the construction, maintenance, and operation of dams nationwide regulate, oversee, and inspect dam resolving any issue between the State Dam Safety Organisations of states between a State Dam Safety Organisation and any owner of a specified dam in that state.

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9. GOVERNMENT SCHEMES

9.1 SHORT ARTICLES

National Commission for Safai Karamcharis (NCSK)

Context

- The Union Cabinet extends the National Commission for Safai Karamcharis tenure to combat manual scavenging.

About the National Commission for Safai Karamcharis (NCSK)

- It is a **body established in 1994 under the *National Commission for Safai Karamcharis Act, 1993*** to promote the welfare of sanitation workers (Safai Karamcharis) and combat manual scavenging.
- It functioned as a **statutory body until 2004.** Since then, it has operated as a non-statutory body under the Ministry of Social Justice and Empowerment.
- The Union Cabinet extended the NCSK's tenure by three years (until March 31, 2028) to improve sanitation workers' welfare, eliminate manual scavenging, and achieve zero fatalities in hazardous cleaning operations.

Functions and Powers

- Monitors implementation of the Prohibition of Employment as Manual Scavengers and their Rehabilitation Act, 2013 (MS Act 2013).
- Investigates grievances and non-implementation of welfare schemes.
- Recommends programs for the socio-economic upliftment of sanitation workers.
- Overseas working conditions, health, safety, and wages .

PM Dhan Dhanya Krishi Yojana

Context

- The **Pradhan Mantri Dhan Dhanya Krishi Yojana** was launched by the Union Finance Minister in the **Union Budget 2025–26**.

About Pradhan Mantri Dhan Dhanya Krishi Yojana

- The scheme targets **100 districts** characterized by low productivity, moderate crop intensity, and gaps in modern farming practices.
- It aims to uplift **1.7 crore farmers**, particularly small and marginal landholders (less than 2 hectares), by integrating technology, infrastructure, and financial support.
- The scheme builds on the **Aspirational Districts Programme (2018)**, which prioritized rapid development in underperforming districts.

Main Objectives

- **Enhance Productivity** by introducing advanced farming techniques (e.g., precision agriculture, drones) and modern equipment to boost yields.
- **Promote Crop Diversification by e**ncouraging cultivation of high-value crops like pulses, oilseeds, and millets to improve farmer incomes.
- **Improve Irrigation by e**xpanding solar-powered and micro-irrigation systems to ensure water efficiency, especially in drought-prone districts.
- **Expand Post-Harvest Storage** by building storage facilities at panchayat and block levels to minimize crop wastage and stabilize prices.
- Providing long-term and short-term loans to adopt modern practices, with a focus on marginalized farmers.

Implementation Strategy

- The scheme leverages existing programs like **MGNREGA**, **Pradhan Mantri Fasal Bima Yojana**, and **Krishi Vigyan Kendras** to avoid duplication and ensure holistic support.
- State governments will align interventions to district-specific needs, using local knowledge to address soil health, water availability, and market linkages.
- Promote digital tools (e.g., farm apps, IoT sensors) and training programs to modernize farming practices.

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E-Shram Microsite and Occupational Shortage Index

Context

- The Union Minister for Labour and Employment launched two initiatives – State and Union Territory Microsites under the e-Shram initiative and the Occupational Shortage Index (OSI).

About e-Shram Microsite

- It ensures unorganised workers (e.g., gig workers, informal sector employees) access Central and State welfare programs seamlessly.

Key Features

- **State-Specific Platforms**: Digital portals integrated with the national e-Shram database, enabling access to both Central and State schemes .
- **Two-Way Integration**: Simplifies registration and updates worker data in real-time via state portals .
- **One-Stop Solution**: Workers access social security benefits, employment opportunities, and skilling programs through a single platform.
- **Multilingual Support**: Workers use their preferred language, enhancing inclusivity .
- **Real-Time Updates**: Workers receive instant notifications on welfare schemes and job openings .
- **Analytics for Policy Making**: States gain real-time dashboards for data-driven decisions, reducing development costs .

About Occupational Shortage Index (OSI)

- It addresses skill gaps by matching job seekers' skills with industry demands using real-time labour market data .

Key Features

- **Data-Driven Insights**: Identifies occupations facing shortages using ILO methodology and Periodic Labour Force Survey (PLFS) data .
- **Targeted Skill Development**: Guides policymakers and training institutions to design programs for high-demand sectors (e.g., healthcare, IT) .
- **Job Matching**: Aligns workers' skills with employer needs, reducing unemployment .

Trade Enablement and Marketing (TEAM)

Context

- The Ministry of Micro, Small, and Medium Enterprises (MoMSME) announced the TEAM Initiative.

About the TEAM Initiative

- The **Ministry of Micro, Small, and Medium Enterprises (MoMSME) has launched the TEAM (Trade Enablement and Marketing) Initiative** in partnership with the Open Network for Digital Commerce (ONDC) to empower micro and small enterprises (MSMEs).
- The **initiative has a ₹277.35 crore budget over three years**, aiming to onboard 5 lakh MSMEs onto the ONDC network. Women-led businesses will make up 50% of the target.

Key Objectives

- The initiative **allows MSMEs to adopt digital commerce by connecting them to ONDC**, to provide access to digital storefronts, payment systems, and logistics support.
- It helps MSMEs formalize operations and build digital transaction histories to boost credibility.
- The program focuses on women-led businesses and SC/ST-owned enterprises, **conducting 150+ workshops in Tier 2/3 cities to guide digital catalog creation.**
- The initiative collaborates with PM Vishwakarma and the Digital MSME Scheme for cohesive development.

PM Ajay Scheme

Context

- The Union Minister for Social Justice and Empowerment chaired a meeting of the central advisory committee for the PM-AJAY scheme.

About the Pradhan Mantri Anusuchit Jaati Abhyuday Yojana (PM-AJAY)

- It is a **100% centrally sponsored scheme** launched by the Union Ministry of Social Justice and Empowerment in 2021-22.

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- It aims to uplift Scheduled Caste (SC) communities by reducing poverty, generating employment, improving infrastructure, and enhancing education in SC-dominated villages.
- It consolidates three existing schemes:
  - **Pradhan Mantri Adarsh Gram Yojana (PMAGY):** Focuses on integrated development of SC-majority villages.
  - **Special Central Assistance (SCA) to Scheduled Castes Sub Plan (SCSP):** Provides financial support for SC welfare.
  - **Babu Jagjivan Ram Chhatrawas Yojana (BJRCY):** Funds hostel construction for SC students .

Eligibility Criteria

- SC persons below the poverty line are eligible for benefits .
- Villages with ≥50% SC population qualify for infrastructure grants .

Achievements Under PM-AJAY (2023-24)

- **Adarsh Grams:** As of August 2024, 2,489 villages were declared Adarsh Grams, benefiting over 4.1 million individuals .
- **Hostel Construction**: 21 hostels were built in higher education institutions, enhancing access to quality education for SC students .
- **Financial Allocation**: The scheme is fully funded by the central government, with states/UTs free to contribute additional resources.

Mutual Credit Guarantee Scheme to Strengthen MSME

Context

- The Union Government has approved the Mutual Credit Guarantee Scheme for Micro, Small, and Medium Enterprises (MCGS-MSMEs).

About the Mutual Credit Guarantee Scheme for MSMEs (MCGS-MSME)

- It aims to strengthen the manufacturing sector by providing collateral-free credit support to Micro, Small, and Medium Enterprises (MSMEs).
- The National Credit Guarantee Trustee Company Limited (NCGTC) provides **60% guarantee coverage** on loans up to ₹100 crore sanctioned to eligible MSMEs.
- **Member Lending Institutions (MLIs)**—including Scheduled Commercial Banks, Non-Banking Financial Companies (NBFCs), and All India Financial Institutions—receive the guarantee.
- **Eligibility**:
  - Borrowers must be MSMEs with a valid **Udyam Registration Number**.
  - At least **75% of the project cost** must be allocated to machinery/equipment purchases.
- **Repayment Period**: Up to 8 years for loans ≤ ₹50 crore (with a 2-year moratorium on principal installments). Terms can be extended for larger loans. Borrowers deposit **5% of the loan amount** as an upfront contribution.
- The scheme applies for **four years** from the operational guidelines' issuance or until cumulative guarantees of ₹7 lakh crore are issued.

National Geospatial Mission

Context

- The National Geospatial Mission (NGM) was announced by the Union Finance Minister in the Budget 2025-26, with an allocated budget of ₹100 crore.

Key Objectives

- It aims to **update and digitize land records using geospatial technology**, which will reduce disputes over property boundaries and promote more efficient land use.
- By providing accurate geospatial data, the mission promotes better infrastructure design and execution in urban areas.

Key Features

- The mission **focuses on modernizing land records** and enhancing urban planning across India.
- **Integration with PM Gati Shakti Framework** to develop foundational geospatial infrastructure and data, directly improving the design and execution of infrastructure projects across the country.

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- It allows private entities to access high-resolution geospatial data, reducing India's dependence on foreign sources for this critical information.
- **National Geospatial Data Infrastructure (NGDI)** integrates data from various government departments, making spatial information more accessible and usable for all stakeholders.

9.2 SNIPPETS

Topics	Details
GREAT	• **Context:** The 10th Empowered Programme Committee (EPC) meeting under the National Technical Textiles Mission approved four start-ups under the GREAT scheme. • The GREAT (Grant for Research & Entrepreneurship across Aspiring Innovators in Technical Textiles) Scheme **supports startups and educational institutes in the technical textiles** sector by providing grants for innovation, research, and skill development . • The National Technical Textiles Mission was launched in 2020 to promote technical textiles sector (e.g., healthcare, automotive fabrics) by boosting research, education, and exports,
Swavalambini	• **Context:** The Union Government has launched the Swavalambini Women Entrepreneurship Programme. • Initiative **by the Union Ministry of Skill Development and Entrepreneurship (MSDE) and NITI Aayog.** • Aims to **empower female students in northeastern states's higher education institutions (HEIs)** through entrepreneurship training, mentorship, and funding. • Train business skills through the Women Entrepreneurship Development Programme (EDP).
Electronic Personnel License (EPL)	• **Context:** India has become the second country after China to introduce the Electronic Personnel License (EPL) for pilots. • The Union Civil Aviation Minister launched the Electronic Personnel License (EPL) for pilots to align with global standards set by the International Civil Aviation Organization (ICAO). • Pilots can access their licenses via the eGCA Mobile Application, eliminating the need for physical cards.

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