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A **MONTHLY PERIODICAL** FOR ASPIRANTS OF UPSC CSE

CONTENTS

1. POLITY & GOVERNANCE

1.1 SHOULD VOTER IDs BE LINKED WITH AADHAAR?

Context

- Debate over Maharashtra's electoral roll highlights the need for Aadhaar-Voter ID linkage to prevent fraud while addressing privacy concerns.

Activists highlight two major concerns

- The Election Commission registered 9.7 crore voters for the 2024 Maharashtra State election, **exceeding the estimated adult population** of 9.54 crore by 16 lakh voters.
- In the six months between Lok Sabha and State elections, 48 lakh new voters registered, compared to only 32 lakh over the previous five years.
- Critics allege these enrollments disproportionately favored one political alliance, which raises doubts about the process's integrity.

How does Aadhaar linkage relate to electoral roll controversies?

- The National Electoral Rolls Purification and Authentication Program (NERPAP) initially linked voter IDs to Aadhaar in 2015 to eliminate duplicates.
- The **Supreme Court's 2018 Puttaswamy judgment restricted mandatory Aadhaar use for voting**, quoting privacy concerns.
- While Parliament **amended the law in 2021 to allow voluntary linkage.**

What advantages does linking Aadhaar with Voter IDs offer?

- Linking Aadhaar with Voter IDs helps the Election Commission **identify and remove duplicate entries** from electoral rolls.
- It **ensures that the voter list remains clean and accurate** through regular verification.
- It **streamlines the voter verification process** using an already widespread database.

- It **simplifies updating voter details** for those who relocate and paves the way for innovations like remote voting.

Critics argue that linking Aadhaar with Voter IDs

- Risks **misusing personal data** without a robust data protection law.
- **May lead to incorrect voter exclusions or inclusions** due to database errors.
- They also question its legality based on the Supreme Court's 2018 ruling.
- Concern about the centralization of sensitive data for political gains.
- Aadhaar only proves residence rather than citizenship.

How can the Election Commission address these concerns?
The Election Commission can:

- Clarify that Aadhaar linkage remains voluntary.
- Allow alternative documents like PAN cards or passports for those without Aadhaar.
- Advocate for a comprehensive data protection law.
- Educate voters about the process and its benefits.
- Conduct regular independent audits to ensure system integrity.
- Update voter registration forms per Supreme Court guidelines.
- Collaborate with UIDAI to correct any errors in the Aadhaar database.

Conclusion

- Linking Aadhaar with Voter IDs offers benefits such as improved electoral roll accuracy and improved administrative efficiency, but it also raises significant privacy, data security and legal concerns; adopting a

balanced approach with voluntary participation, robust safeguards and public education can help strengthen democracy without compromising citizens' rights.

1.2 THE RIGHT TO FOOD AND THE STRUGGLE WITH THE PDS

Context
- Reports from Jharkhand and Odisha reveal alarming cases of households being removed from the Public Distribution System (PDS).

About Public Distribution System (PDS)
- It is a government-run program that provides food and other necessities to low-income households. The **Ministry of Consumer Affairs manages the PDS.**
- The **central government through Food Corporation of India (FCI) purchases food grains at a minimum support price (MSP)** and stores, transports and distributes them to the state governments.
- **State governments are responsible for allocating food grains to districts,** identifying eligible families and issuing ration cards.

Challenges in the Public Distribution System (PDS)
- **Bureaucratic inefficiencies, corruption and systemic inequities** have led to the deprivation of vulnerable groups of their basic entitlement to food.
- Reports from states like Jharkhand, Odisha and Bihar show that many families have been removed from the Public Distribution System (PDS) list without reasonable justification and some communities, like the Musahars, continue to face severe exclusion.
- **Beneficiaries receive substandard or reduced food grains and** applicants face unnecessary documents like Aadhaar details, caste certificates and income proofs, despite being legally unjustified under the National Food Security Act.

- Biometric verification was introduced to reduce fraud and improve PDS efficiency, but it has become a tool for exclusion, mainly for beneficiaries from rural and marginalized communities.
- **Technical errors, poor infrastructure, differences in Aadhaar details** make it difficult for beneficiaries to authenticate their biometrics, leading to the cancellation of their names from the PDS list and reapplying for a new ration card.

Way Forward
- PDS needs to be improved to ensure fair distribution of food grains. This can be achieved **by simplifying the registration process, adopting a single-window registration procedure**, implementing stricter surveillance mechanisms and establishing independent monitoring bodies to protect beneficiaries from exploitation.
- **Local bodies, such as Panchayats, should be given authority to manage the PDS and** decentralising governance can improve responsiveness to local needs and reduce bureaucratic inefficiencies.
- **The PDS can be improved by improving delivery, identification, monitoring, information sharing,** grievance redressal, portability, digitalization, transparency, cost-effectiveness and capacity of local governments.
- The PDS operation should be made more efficient, transparent and accessible to protect families from price rises, stabilize farmer incomes, reduce poverty and improve standard of living.

1.3   SHORT ARTICLES

Enemy Properties

Context

- Saif Ali Khan, a Bollywood actor, has been involved in the 'enemy property' case since 2014 when the Pataudi family's properties in Bhopal were declared enemy property.

About Enemy Properties

- Enemy properties are **assets left behind in India by individuals who migrated to countries India considers "enemy nations" during conflicts**, such as Pakistan (post-1965 and 1971 wars) and China (post-1962 war).
- The Enemy Property Act, 1968, empowers the Union government to take control of properties left by individuals who migrated to enemy nations.
- The **Custodian of Enemy Property for India (CEPI)** manages these assets, barring inheritance or transfer, even by legal heirs. District magistrates value the properties and a committee decides whether to sell, transfer, or retain them.

2017 amendment strengthen the Enemy Property Act

- The Enemy Property (Amendment and Validation) Act, 2017, expanded the definition of "enemy subject" and "enemy firm" to include legal heirs and successors.
- It reinforced that enemy properties remain under government control, regardless of the original owner's death or the heir's nationality.

How do courts handle enemy property cases?

- Courts initially ruled in favor of claimants, such as the Raja of Mahmudabad's son. However, **the 2017 amendment overrode prior judgments,** ensuring enemy properties remain with the Custodian, regardless of court rulings.

What happens to enemy properties after the government takes control?

- The government disposes of enemy properties through auctions or tenders, as per the 2018 guidelines. Vacant properties are auctioned, while occupied ones may be offered to current occupants. Movable assets like shares are sold publicly, with proceeds going to the Consolidated Fund of India.

Unified District Information System for Education (UDISE+) Report

> India has **13,252 enemy properties**, valued at over ₹1 lakh crore. **Uttar Pradesh (5,982) and West Bengal (4,354) have the highest numbers.** Most properties belong to individuals who migrated to Pakistan, with over 100 linked to Chinese migrants.

Context

- The Unified District Information System for Education Plus report indicates a significant decrease in student enrollment in 2023-24 compared to previous years.

Unified District Information System for Education (UDISE+)

- UDISE+ is **India's largest Management Information System**, initiated by the Department of School Education and Literacy (DoSEL), Ministry of Education.
- It collects data from over 14.72 lakh schools, 98.08 lakh teachers and 24.8 crore children across the country.
- The system maintains detailed information about schools, teachers, enrollment, infrastructure and other educational data via an online portal.
- **Schools use a Data Capture Format (DCF)** to enter their data, which is validated at the Block, District and State levels before being certified by the State Project Director (SPD).
- Each school is provided with a unique login ID and password to enter data.

Highlights of UDISE+ Report 2023-2024

- It **highlights a drop in student enrolment;** down from 25.18 crore in 2022-2023 to 24.8 crore in 2023-2024. The average enrollment over the last five years has been around 26.36 crore.
- It shows that boys account for 51.9% of enrolments, while girls make up 48.1%.
- **The minority representation in total enrolment stands at about 20%,** with the majority of minority students being Muslims (79.6%), followed by Christians (10%), Sikhs (6.9%), Buddhists (2.2%), Jains (1.3%) and Parsis (0.1%).
- It shows that **over 90% of schools now have basic amenities like electricity and gender-specific toilets.**
- **Only 57.2% of schools have functional computers**, 53.9% have internet access and 52.3% are equipped with ramps.
- The report highlights the need for improvements in accessibility and technological readiness in schools.

Draft Digital Personal Data Protection Rules 2025

Context

- The Union government has introduced draft Digital Personal Data Protection (DPDP) Rules 2025 to enforce the Digital Personal Data Protection Act 2023, focusing on data privacy, compliance and processing mechanisms.

Key Highlights of the draft Digital Personal Data Protection Rules 2025

- Platforms must **obtain verifiable parental consent before children create accounts.** Age and identity must be validated through government-issued identity proof. However, health, education and daycare institutions are exempt from this requirement.
- **Entities collecting and processing personal data are termed "Data Fiduciaries."** Significant Data Fiduciaries (SDFs) are those processing large volumes or sensitive data

affecting national security, sovereignty, or public order.
  - They must ensure encryption, access control and monitoring of data and retain data only for the duration of consent.
- **Entities must manage consent records comprehensively**. Data fiduciaries must provide grievance redressal mechanisms and allow users to withdraw consent.
- Data fiduciaries should report breaches to users and the Data Protection Board, including details like the nature of the breach and mitigation measures.
- The rules require the **localisation of certain personal and traffic data,** limiting its transfer outside India. A government committee will manage which data is restricted from cross-border transfer.
- Data fiduciaries, who fail to prevent data breaches or violate safeguards can face **fines of up to Rs 250 crore.** Consent managers who frequently violate rules may face suspension/cancellation of their registration.

Transgender Persons Act

Context

- The Karnataka High Court upheld a transgender person's plea to change her birth certificate.

Court Judegement

- A transgender woman, born male, filed a plea to change her birth certificate to reflect her gender identity after undergoing sex reassignment surgery.
- Local authorities denied her request, citing **Section 15 of the Registration of Births and Deaths Act, 1969, which does not allow voluntary changes to birth certificates.**
- The court found a **legal gap between the Transgender Act 2019, which allows gender and name changes in official documents and the Registration Act, which does not permit voluntary amendments to birth certificates.**
- The court directed local authorities to process the transgender woman's application and

ordered the Karnataka Law Commission to suggest appropriate amendments to the law.

- The court directed the Registrar of Births and Deaths to accept and process applications from transgender individuals who provide a revised birth certificate, including both former and current names, along with relevant details from the Transgender Act certificate.

About the Transgender Persons (Protection of Rights) Act 2019

- It **defined transgender as those whose gender identity does not match the gender assigned at birth**, including transmen, transwomen, gender-queers and individuals with intersex variations or other socio-cultural identities.
- Transgender are granted the right to reside with their parents and immediate family members and**can obtain a certificate of identity from the District Magistrate.**
- It prohibits discrimination against transgender persons in areas such as education, employment and healthcare.
- The Act **established the National Council for Transgender Persons (NCTP)** to monitor and promote the welfare of transgender individuals.

About National Council for Transgender Persons (NCTP)

- It functions under the Ministry of Social Justice and Empowerment.
- It has a Chairperson and Vice Chairperson and is represented by 10 central departments and five states or Union Territories. **Members hold office for three years.**
- Its powers include monitoring the impact of programs and policies, advising the central government on transgender rights, reviewing and coordinating activities across departments, addressing transgender grievances and investigating complaints of rights violations.

Centre Amends Prison Manual Rules

Context

- The Home Ministry has revised prison regulations to prevent discrimination based on caste and to redefine the classification of habitual offenders.

Details

- The Union Home Ministry has revised prison manual rules following a Supreme Court order in October 2024, which emphasized caste-based discrimination and inconsistencies in treatment of habitual offenders.
- The revisions aim to **ensure equality, fairness and humane treatment of prisoners and** states are urged to align their manuals accordingly.

Key changes made in the Prison Manual Rules

- Jail authorities are required to ensure that there is no caste-based discrimination or segregation in prisons. **All duties and work assignments must be allotted without bias.**
- **Introduction of Section 55(A)** under the Model Prisons and Correctional Services Act, 2023, to forbid caste-based discrimination within prisons.
- The provisions of the Prohibition of Employment as Manual Scavengers and their Rehabilitation Act, 2013, now apply to prisons. **Manual scavenging and hazardous cleaning of sewers or septic tanks are banned.**
- Prison authorities are mandated to ensure equal treatment, particularly in the assignment of duties and work.
- The amendments provide a unified definition of habitual offenders that **applies to individuals convicted twice in five years for different offences, with sentences that were not overturned.**

Essential Part of Religion

Context

- The Bombay High Court directed the Maharashtra government to implement an in-built mechanism to control decibel levels in loudspeakers, public address systems and

other sound-emitting devices at places of worship.

Court Order

- The court ruled that **loudspeakers are not an essential part of any religion.** It highlighted that Article 25 (freedom of religion) does not protect practices disturbing public peace. Noise pollution poses health hazards, which require strict enforcement of regulations.

About the Essential Practices Doctrine

- The Essential Practices Doctrine is rooted in B.R. Ambedkar's vision and the 1954*Shirur Mutt* case, which allows courts to distinguish between "essential" religious practices (protected under Article 25) and non-essential ones.
- The Bombay HC applied this doctrine to reject the claim that loudspeakers are integral to religious worship, allowing stricter noise regulation.

Balancing religious rights and public welfare

- The court stressed respecting religious integrity but prioritizing constitutional values like equality and public health. If a practice harms dignity, excludes individuals, or threatens safety (e.g., excessive noise), the state must override religious freedom to uphold justice and communal harmony.

The impact of Classifying Denotified Tribes

Context

- The Anthropological Survey of India (AnSI) and Tribal Research Institutes (TRIs) have comprehensively categorized 268 denotified, semi-nomadic and nomadic tribes across India.

About Denotified Tribes (DNTs)

- They are **communities that were once labeled as "criminal tribes" under the British colonial Criminal Tribes Act of 1871** due to their traditional occupations and lifestyles, even though it was a biased classification.
- After India gained independence, **the act was repealed in 1949.** However, the social stigma

and discrimination against these communities continued.

Addressing the historical injustice faced by these tribes

- In 2019, the **Prime Minister's Office formed a Special Committee, including experts like Bhiku Ramji Idate and Dr. J.K. Bajaj, to head the study.** This committee initiated an ethnographic study led by the Anthropological Survey of India (AnSI) and Tribal Research Institutes (TRIs).
- The study identified 268 tribes and recommended 179 of them for inclusion in the SC, ST, or OBC categories. 85 communities were classified for the first time and 63 tribes were noted as "not traceable" due to assimilation, migration, or name changes.
- **A Special Committee under NITI Aayog's Vice-Chairperson will review the study's findings.** After the review and approval, state governments will update the SC/ST/OBC lists to include these tribes, ensuring they receive access to welfare schemes and social opportunities.

Rarest of Rare Cases

Context

- The term "rarest of rare cases" has recently been in the spotlight due to a legal decision in the RG Kar Medical College and Hospital rape case.

About the "rarest of rare" doctrine

- The Supreme Court **established the "rarest of rare" doctrine in the *Bachan Singh v/s State of Punjab (1980)* case.** It restricts the death penalty to exceptional cases where the crime shocks society's conscience and the offender shows no potential for reform.
- Courts consider factors like deliberate and brutal murder, killings of public servants on duty, or crimes involving extreme cruelty as aggravating circumstances. These elements make a crime heinous enough to warrant the death penalty.

How do mitigating circumstances influence sentencing?

- Mitigating factors such as the **offender's youth, mental illness, likelihood of reform, or acting under duress can prevent the death penalty**. Courts prioritize these to assess if rehabilitation is possible.
- Over time, **courts expanded mitigating factors, emphasizing age and reform potential.** For example, young offenders often receive leniency due to higher chances of rehabilitation. Judges now demand concrete proof of irreformability before imposing the death penalty.

Important Judgements

- In the *Santosh Bariyar* case (2009), the **Supreme Court stressed that sentencing must depend on objective evidence,** not subjectivity. It mandated clear proof that an offender cannot be rehabilitated to justify the death penalty.
- In the *Dattaraya v/s State of Maharashtra (2020)* **case, the c**ourt criticized rushed sentencing hearings and emphasized the need for a separate, detailed sentencing process post-conviction to ensure fairness.

Way Forward

- Inconsistent application and subjectivity plague the doctrine. Courts often interpret "rarest of rare" differently, leading to arbitrary outcomes.
- Experts urge clearer guidelines and standardized criteria for aggravating/mitigating factors.

Appointing Judges on Adhoc Basis

Context

- The Supreme Court suggested temporarily appointing retired judges on an ad hoc (as required) basis to address the growing backlog of pending criminal cases before several High Courts

About ad hoc judges

- Article **224A empowers the Chief Justice of a High Court to appoint retired judges as ad hoc judges** with the prior consent of the President of India.
- These judges exercise full jurisdiction, powers and privileges equivalent to permanent judges but serve temporarily to address case backlogs.
- They do not hold permanent status.

Process for appointing ad hoc Judges

- The Chief Justice of a High Court recommends a retired judge who consents to the appointment.
- The Chief Justice forwards the proposal to the state's Chief Minister.
- The Chief Minister submits the recommendation to the Union Law Minister.
- The Law Minister consults the Chief Justice of India (CJI).
- The CJI's advice goes to the Prime Minister, who advises the President for final approval.
- *Post-2021*, the Supreme Court collegium (CJI + two senior-most judges) must also review the recommendation.

What guidelines did the Supreme Court establish in 2021 for appointing ad hoc judges?

- The Supreme Court mandated three conditions for appointments:
  - Vacancies in the High Court must exceed **20% of its sanctioned strength** (excluding pending regular appointments).
  - Less than **20% of vacancies** remain unfilled despite recommendations for regular appointments.
  - Over **10% of pending cases** are older than five years.
  - High Courts must maintain a panel of retired judges, appoint them for **2–3 years**, limit numbers to **2–5 per court** and conduct periodic reviews.

In the 2021 *Lok Prahari* case, the Supreme Court ruled that the recommendation for ad hoc judge appointments must go through the Supreme Court's collegium.

1.4   SNIPPETS

Topics	Details
New Types of Visas	• The Ministry of Home Affairs has introduced two special visas for international students. • The Ministry of Home Affairs has introduced two special category visas for international students: the e-student visa and the **e-student-x visa for the dependents of e-student visa holders.** • The e-student visa is for eligible international students admitted at recognized educational institutions in India. It is issued for up to five years, depending on the course duration and can be extended if necessary. • **Students can apply for these visas through the Study in India (SII) portal,** which hosts over 600 partner institutions offering over 8,000 courses across various disciplines. • **A visa is a temporary permission issued by a country's authorized representative**, allowing a foreigner to enter, stay, or leave a country, stamped in a passport.
Chief Secretary Of State	• The Union Home Ministry has renamed the Chandigarh advisor's post as chief secretary. • The **Chief Secretary is the highest-ranking civil servant and administrative head of a state government,** responsible for guiding and managing the state's administrative system. • They formulate and implement policies aligning with the government's vision, coordinate departments to achieve common goals and head the state civil service board. • The **Chief Secretary is appointed by the Chief Minister,** who chooses the appointee based on their ability and confidence. • There is **no fixed tenure** for the Chief Secretary's position.
Fact Checking	• Meta plans to discontinue its third-party fact-checking program and transition to a Community Notes model. • Meta, formerly Facebook, is **shifting from its third-party fact-checking program to a new model called Community Notes** to allow users to add facts and context to posts, enabling crowd sourced fact-checking. • If introduced in India, it could significantly affect Indian fact-checking organizations, which depend on Meta funding and may face job losses or closures. • The major concern is the potential for biased ratings or coordinated manipulation from users with similar agendas.
EmpowHER Biz Initiative	• The Women Entrepreneurship Platform (WEP) of NITI Aayog has launched "EmpowHER Biz - Sapno Ki Udaan" as part of its Award to Reward (ATR) program. • It is an initiative aimed at **empowering women entrepreneurs** by providing them with the necessary skills, resources and mentorship to succeed in the organized retail sector. • The initiative aims to **empower over 10,000 entrepreneurs by 2030.** Fifty participants aged 18 to 35 will be selected through an online application process. • The **Women Entrepreneurship Platform (WEP) was launched by NITI Aayog in**

	2018 to provide support in areas like access to finance, market linkages, training, mentoring, legal assistance and business development services.
Good Governance Index	• The Union government has cancelled the release of the Good Governance Index 2023.
	• The GGI is a **biennial ranking tool launched in 2019 by the Department of Administrative Reforms and Public Grievances (DARPG).**
	• It evaluates governance quality in states and Union Territories (UTs) based on over 50 indicators across sectors like agriculture, economic governance, public health and citizen-centric governance.
	• The last GGI was released in December 2021, with Gujarat top the rankings among big states.
National Sports Awards	• The Union Ministry of Youth Affairs & Sports has announced the National Sports Awards 2024.
	• The **Major Dhyan Chand Khel Ratna Award** is a sporting honour given to athletes for their exceptional performances over the past four years.
	o **Shri Gukesh D: Chess**
	o **Shri Harmanpreet Singh: Hockey**
	o **Shri Praveen Kumar: Para-Athletics**
	o **Ms. Manu Bhaker: Shooting**
	• The Arjuna Award recognizes outstanding performance in sports over the previous four years.
	• The Dronacharya Award honors outstanding coaches who consistently contribute to their athletes' success in international competitions.
	• The Maulana Abul Kalam Azad (MAKA) Trophy is awarded to the university that performed best overall in the Khelo India University Games.
National Organ and Tissue Transplant Organisation (NOTTO)	• NOTTO has announced that central government employees donating organs will receive 42 days of special casual leave.
	• It was established in 2010 to **regulate organ donation and transplantation.**
	• It works **under the Union Ministry of Health and Family Welfare** and implements the National Organ Transplant Program (NOTP) and carries out activities **as per the Transplantation of Human Organs and Tissues Act (THOTA) 1994.**
	• It works with Regional Organ and Tissue Transplant Organizations (ROTTOs) and provides financial support to states and institutions to expand transplant centers.
Open Data Kit (ODK)	• The Comptroller and Auditor General (CAG) utilizes the Open Data Kit (ODK).
	• The Open Data Kit (ODK) is a **digital tool designed to assist the Comptroller and Auditor General (CAG)** in securely collecting, managing and storing data.
	• It enhances transparency in public spending and ensures accountability in government schemes.
	• It is integrated with the CAG's operating system, One Indian Audit & Accounts Department One System (OIOS) and provides end-to-end encryption for data security.
	• It aids in identifying problem areas and supports launching surveys in multiple languages for inclusivity.
Doctrine of Merger	• The Doctrine of merger states that when a higher court reviews a lower court's decision

	• The Doctrine of Merger is a legal principle that ensures only one operative order governs a specific legal matter. • **When a higher court reviews a lower court's decision, the higher court's judgment absorbs the lower court's order**. The higher court's decision then becomes the final, binding authority. • The doctrine's applicability depends on the jurisdiction exercised by the higher court and the subject matter of the case.
8th Central Pay Commission	• The Union Cabinet set up the 8th Pay Commission. • The Central Pay Commission reviews and recommends changes to the salary, pensions and benefits of government employees. • The government establishes the Central Pay Commission every 10 years. • The Commission considers inflation, cost of living, economic growth and fiscal constraints while proposing revisions to salaries, pensions and allowances for civil and military employees.
Conjugal Rights	• The Supreme Court ruled that proceedings for restitution of conjugal rights and maintenance are independent of each other. • Conjugal rights are the **rights and privileges that married people have.** These include the right to companionship, affection and support. • The Supreme Court ruled that a **husband must continue to pay maintenance to his wife, even if she refuses to comply with a decree for restitution of conjugal right**s and does not return to the matrimonial home. • Section 9 of the Hindu Marriage Act, 1955 deals with restitution of conjugal rights. An aggrieved party can apply for restitution of conjugal rights by filing a petition with the District Court.
National Voters' Day	• The 15th National Voters' Day celebrated on 25th January. • National Voters' Day is observed to mark the foundation day of the **Election Commission of India (ECI)**, established on January 25, 1950. • First celebrated in **2011** to promote electoral participation, particularly among young voters. • The theme for 2025 is **"Nothing Like Voting, I Vote for Sure".**

1.5   ADDITIONAL TOPICS FOR READING FROM IASGYAN WEBSITE

Topic Name	Uploaded Date
The Nature of Dissent in the Indian Judiciary	2nd January, 2025
In the name of Democracy	2nd January, 2025
India, Cross-border insolvency and legal reform	7th January, 2025
Transforming 'men'-talities, redefining masculinity	15th January, 2025
A grey birthday for ECI	25th January, 2025

2. INTERNATIONAL RELATIONS

2.1   INDIA INDONESIA TIES

Context

- Indonesian President Prabowo Subianto made his first official visit to India, serving as Chief Guest at India's 76th Republic Day celebrations.

India and Indonesia Relation

- India and Indonesia share a rich historical and cultural connections spanning over two millennia.
- The transmission of Hinduism and Buddhism from India influenced Indonesian culture, as evidenced by the adoption of Indian epics like the Ramayana and Mahabharata, which remain integral to Indonesian performing arts and traditions.

How Diplomatic relations evolved over time?

- Diplomatic relations between India and Indonesia were formally established in 1949.
- Both nations signed a **Treaty of Friendship in 1951** to strengthen their commitment to mutual cooperation.
- Both countries played important roles in founding the Non-Aligned Movement during the 1955 Bandung Conference.

- Over the decades, the relationship has remained largely peaceful, with occasional tensions, such as during the 1965 war when Indonesia offered assistance to Pakistan.
- Since India's adoption of the **'Look East Policy' in 1991, bilateral relations have strengthened** across political, security, defense, commercial and cultural sectors.

Key aspects of the strategic partnership

- **Maritime Cooperation:** In 2018, both nations adopted the "Shared Vision of India-Indonesia on Maritime Cooperation in the Indo-Pacific," underscoring the importance of collaborative efforts in maritime safety and security.
- **Defense Collaboration:** Regular joint military exercises, such as the biannual Coordinated Patrol (CORPAT), Exercise Garuda Shakti (Army) and Exercise Samudra Shakti (Navy), enhance operational synergy between their defense forces.
- **Security Dialogues:** Both countries have agreed to establish new platforms like the Bilateral Maritime Dialogue and Cyber Security Dialogue to address emerging security challenges.

Economic Relations

- **Trade Volume:** Bilateral trade reached about US$29.4 billion in the fiscal year 2023-24, with ambitions to boost this figure to US$50 billion by 2025.
- **Key Exports from India:** Engineering goods, petroleum products, organic and inorganic chemicals and oil seeds.
- **Key Imports to India:** Mineral fuels, oils and waxes, animal or vegetable fats and oils, natural or cultured pearls, precious or semi-precious stones, iron and steel.
- **Investment:** Indonesia ranks as the 36th largest source of Foreign Direct Investment

(FDI) into India, with cumulative FDI amounting to $654.12 million from April 2000 to March 2024.

Outcomes of Indonesian President Prabowo Subianto's recent visit to India

- Both leaders agreed to continue regular meetings through existing bilateral mechanisms and to establish new platforms like the Bilateral Maritime Dialogue and Cyber Security Dialogue.

Defense and Security

- India agreed to share expertise to support Indonesia's defense modernization programs.
- Both nations committed to enhancing collaboration in the defense industry through the Joint Defense Cooperation Committee (JDCC).
- Discussions also covered maritime safety, with plans to position an **Indonesian International Liaison Officer at the Information Fusion Centre-Indian Ocean Region (IFC-IOR) in Gurugram, Haryana.**

Trade and Development

- The leaders agreed to hold the 2nd meeting of the Working Group on Trade and Investment and the 4th Biennial Trade Ministers' Forum to address trade barriers.
- They also aimed to expedite the **review of the ASEAN-India Trade in Goods Agreement by 2025.**

- Memorandums of Understanding (MoUs) on Health Cooperation and Traditional Medicine Quality Assurance were signed to bolster collaboration in the health sector.

What steps can be taken to strengthen India-Indonesia ties?

- **Leveraging Multilateral Platforms:** Indonesia's membership in BRICS presents an opportunity for collaboration within this strategic bloc. Both countries can work together to bring greater strategic weight to BRICS, despite Indonesia's economic ties with China potentially influencing its stance on certain issues.
- **Aligning Indo-Pacific Strategies:** Indonesia's evolving stance on the Indo-Pacific, particularly its role in ASEAN's Outlook on the Indo-Pacific (AOIP), aligns with India's Indo-Pacific Oceans Initiative (IPOI). This alignment offers avenues for deeper cooperation in ensuring regional stability and security.
- **Enhancing Regional Cooperation:** Engaging more directly in forums like the ASEAN-plus-one, East Asia Summit (EAS) and ASEAN Regional Forum (ARF) meetings can amplify the impact of both nations on regional architecture. Prior consultations can lead to more coordinated and influential participation.

2.2   INDIA TALIBAN TALKS

Context

- Indian Foreign Secretary Vikram Misri meets Afghanistan Acting Foreign Minister Mawlawi Amir Khan Muttaqi, in Dubai.

India engagement with Taliban

- India initiated its first official contact with the Taliban in **August 2021**, shortly after the US withdrawal from Afghanistan.

- While maintaining a cautious stance, India underlined the necessity for an **"inclusive" government** in Afghanistan that represents all ethnic groups and includes women.
- Despite the Taliban's announcement of a Cabinet with minimal minority representation and no women, India continued to engage pragmatically, focusing on humanitarian aid and security concerns.

What is India's core concern regarding Afghanistan under Taliban rule?

- India's core concern is **security**. India aims to ensure that no **anti-India terrorist groups**, such as **Lashkar-e-Taiba (LeT)** and **Jaish-e-Mohammed (JeM)**, operate from Afghan territory.
- India remains vigilant about the potential threat these groups pose to its national security and has adopted a pragmatic approach to balance its security concerns with humanitarian efforts in Afghanistan.

What challenges has India faced in maintaining its diplomatic presence in Kabul?

- After the Taliban takeover, India evacuated its embassy in Kabul but sent a **small technical team** in **mid-2022** to coordinate humanitarian aid.
- The Afghan embassy in New Delhi ceased operations in **December 2022**, though a few Afghan diplomats resumed limited functions in 2023.
- The primary challenge lies in **formalizing diplomatic channels**, as India has not officially recognized the Taliban government.

India has consistently supported Afghanistan through humanitarian aid:

- In **December 2021**, India sent **1.6 tonnes of essential medicines** to Afghanistan.
- A **technical team** stationed at the Indian Embassy in Kabul oversees the delivery of aid and coordinates humanitarian operations.
- India's assistance reflects its commitment to supporting the Afghan people despite political challenges.

How has India's approach to the Taliban evolved since their takeover?

India's approach has evolved from a **non-recognition stance** to **pragmatic engagement**. Key developments include:

- **Increased Engagement**: India recognizes the need to prevent other countries, particularly China, from gaining undue influence in Afghanistan.
- **Humanitarian Focus**: India continues to provide aid and support for Afghan refugees.
- **Security Concerns**: India remains focused on ensuring that no anti-India groups operate from Afghan soil.
- **Cultural Ties**: India has even discussed cricket ties as part of its evolving engagement.

What role does India play in the wider regional context?

India plays a significant role in the regional dynamics of Afghanistan:

- **Stability and Rebuilding**: India aims to help Afghanistan rebuild while safeguarding the gains made over the past two decades.
- **Countering Influence**: India seeks to counter the influence of countries like China and Pakistan in Afghanistan.
- **Regional Security**: India works to ensure that Afghanistan does not become a hub for terrorism that could threaten regional stability.

How does India justify its engagement with the Taliban despite ideological differences?

India justifies its engagement on **pragmatic grounds**:

- **Inclusive Governance**: India advocates for an inclusive political process that upholds human rights and protects minorities.
- **Regional Stability**: Engaging with the Taliban is essential to prevent Afghanistan from becoming a breeding ground for terrorism.
- **Humanitarian Responsibility**: India believes in supporting the Afghan people through aid and development, regardless of the ruling regime.

Challenges in engagement with the Taliban

- **Balancing Values and Pragmatism**: India must negotiate its commitment to democratic values with the need to engage a group known for human rights violations.

- **Regional Dynamics**: India navigates complex relationships with the US, Pakistan and other regional powers, each with its own agenda in Afghanistan.
- **Security Risks**: Ensuring that engagement does not compromise India's national security or embolden anti-India groups.

Way Forward

- India is likely to continue engaging with the Taliban while balancing humanitarian and

security concerns. While India has not yet formally recognised the Taliban government, it is clear that New Delhi is willing to work on practical issues like aid and infrastructure development. How India deals with these challenges in the coming years will be determined by both regional dynamics and the Taliban's stance on key issues such as inclusivity and security.

2.3 IMPACT OF U.S. WITHDRAWAL FROM WHO

Context

- The United States President Donald Trump signed an executive order to withdraw from the membership of the World Health Organization (WHO).

Why did the United States decide to withdraw from the World Health Organization (WHO)?

The U.S. withdrew from the WHO in 2020, citing four main reasons:

- **Mishandling of the COVID-19 Pandemic**: The U.S. criticized the WHO for its delayed response and perceived mismanagement of the pandemic.
- **Lack of Reforms**: The U.S. argued that the WHO failed to adopt urgently needed reforms to improve its efficiency and transparency.
- **Political Influence**: The U.S. accused the WHO of being influenced by certain member states, particularly China and failing to demonstrate independence.

- **Disproportionate Funding**: The U.S. highlighted that it contributed significantly more to the WHO than other countries, especially China, despite China's larger population.

What is the impact of the U.S. withdrawal on the WHO's funding?

The U.S. withdrawal creates a major funding gap because the U.S. contributes **20% of the WHO's total budget**. This includes:

- **Assessed Contributions**: The U.S. pays **22.5% of mandatory contributions**, the largest share among member states, while China contributes **15%**.
- **Voluntary Contributions**: The U.S. is the largest donor, contributing **13% (USD 356.3 million)** of voluntary funds, compared to China's **0.14% (USD 3.9 million)**.

The loss of U.S. funding could disrupt WHO programs, especially in low-income countries.

> **The U.S. withdrawal could negatively impact developing countries like India, which rely on WHO support for:** Combating diseases and Supporting **vaccination programs**. A reduction in WHO funding and the loss of U.S. expertise could worsen health outcomes in these countries.

How WHO will manage funding after the U.S. withdrawal?

Despite the U.S. withdrawal, the WHO has secured increased voluntary contributions from other countries and organizations. For example:

- During the **2024 funding round**, countries like Australia, Indonesia and Spain pledged **USD 1.7 billion**.
- This helped the WHO secure **53% of the USD 7.1 billion** it needs for its programs between **2025 and 2028**, a significant increase from **17% in the previous four-year period (2020-2024)**.

How can the Global South address the void left by the U.S.?

Countries in the global south can take several steps to address the funding and expertise gap:

- **Collaborate Through Platforms**: Countries like India, Brazil and South Africa can use platforms like **BRICS** to supplement WHO funding.
- **Invest in Training**: They can train public health experts to reduce dependency on high-income countries.
- **Establish Regional Institutions**: Creating regional training centers can help address local health challenges more effectively.
- **Advocate for WHO Reforms**: They can push for reforms, such as decentralizing WHO headquarters to regions like Africa or Asia, to reduce costs and focus on pressing health issues.

What reforms does the WHO need to address its challenges?

The WHO needs urgent reforms to improve efficiency and reduce bureaucracy. Key reforms include:

- **Cutting Staff and Relocating Headquarters**: Moving the headquarters to regional offices in places like **Brazzaville, Cairo, Manila, or New Delhi** would lower operational costs and align WHO's focus with the health priorities of Africa and Asia.
- **Diversifying Funding Sources**: Reducing dependence on a few high-income countries and increasing contributions from other nations and organizations would ensure more equitable and sustainable financing.
- **Improving Transparency and Independence**: The WHO must demonstrate greater independence from political influences and adopt reforms to enhance its credibility.

2.4 NEW US AI EXPORT RULE

Context

- The US government has released a new regulatory framework on the export of artificial intelligence (AI) hardware.

What is the new US AI export rule and how does it affect India?

- The US government introduced a new regulatory framework that **classifies countries into three tiers** based on their access to advanced AI hardware, such as GPUs (Graphics Processing Units).
- **India falls under Tier 2**, which imposes restrictions on the number of GPUs it can import from the US. This could hinder India's plans to procure **10,000 GPUs** for its **IndiaAI Mission**, aimed at strengthening its AI computing infrastructure.
- The export limits may slow down India's efforts to build AI data centers and expand its AI capabilities, impacting its competitiveness in AI research and development.

The US AI export rule divides countries into three tiers

- **Tier 1**: Includes close US allies like **Australia, Japan and the UK**. These countries face **minimal export restrictions** and can access AI chips and GPUs without limits.
- **Tier 2**: Includes countries like **India**. They face **caps on advanced AI chip imports**, limited to around **50,000 GPUs through 2027**, though this could double with special agreements. These imports must be hosted in secure and trusted environments.
- **Tier 3**: Includes countries like **China, Russia and North Korea**, which the US considers

security concerns. These countries face **almost total restrictions** on US AI technology exports.

What special provision is made for India and China under the new rule?

The US introduced a **General Validated End User (GVEU) list** for India and China:

- **India**: Indian companies with GVEU authorization can use exported AI technology for **both civilian and military purposes**, except for nuclear applications.
- **China**: Chinese companies are restricted to using the technology for **civilian purposes only**.
- These provisions allow both countries to access advanced technology but with specific limitations, particularly on military uses in India's case.

Way Forward

India faces challenges in scaling up its AI infrastructure due to the export limits. However, it can explore alternative strategies:

- **Diversify Suppliers**: Partner with other countries or companies not bound by US restrictions.
- **Boost Domestic Production**: Invest in developing indigenous AI hardware capabilities.
- **Leverage GVEU Provisions**: Maximize the use of the GVEU list to access advanced technology for civilian and limited military applications.
- **Collaborate with Allies**: Work with Tier 1 countries to secure technology transfers or joint ventures.

2.5 US SANCTIONS ON RUSSIA AND IMPACT ON INDIAN OIL IMPORTS

Context

- The US has imposed a fresh round of sanctions specifically targeting Russia's oil sector.

Details

- The United States imposed sanctions on Russia to target its oil trade and reduce its revenue streams, particularly in response to Russia's aggressive international policies. These sanctions affect **tankers** in Russia's "shadow fleet," which Russia uses to bypass Western restrictions.
- The broader implications include:
  - **Disruptions in global oil supply chains**.
  - **Increased freight costs** due to fewer available tankers.
  - **Higher price volatility** in global oil markets, affecting both producers and consumers.

The sanctions have impacted India's oil imports in the following ways:

- <u>Short-Term Deliveries</u>: Sanctioned vessels booked before **January 10, 2024**, can deliver oil to India until **March 12, 2024**, allowing India to complete current agreements.
- <u>Long-Term Disruptions</u>: After March 12, the sanctions may reduce Russian oil shipments to India, forcing India to seek alternative suppliers.
- <u>Rising Freight Costs</u>: With fewer tankers available, transportation costs for Russian oil may increase, diminishing the price advantage of Russian crude.

What role does Russia play in India's oil imports and how might this change due to the sanctions?

- Russia has become India's **largest oil supplier**, accounting for **38% of India's crude oil imports** in 2024.
- This shift occurred after Russia offered **significant discounts** following Western sanctions post-Ukraine war. However, the new US sanctions may:
  - **Slow down Russian oil exports** to India in the near term.
  - **Push India to diversify** its oil sources, increasing reliance on West Asian suppliers like Iraq, Saudi Arabia and the UAE.

How might the sanctions influence Russia's pricing strategy for oil exports?

- The sanctions may force Russia to **lower its oil prices** to below **$60 per barrel** to comply with the US price cap, which restricts access to Western shipping and insurance services above this price.
- While India buys Russian oil on a **delivered basis** and is not part of the price cap, deeper discounts could:
  - Reduce Russia's revenues.
  - Maintain oil flows to key markets like India and China.

Is India likely to face an oil crisis due to these sanctions?

India is **unlikely to face a major oil crisis** because:

- It imports over **85% of its crude oil** from diverse sources.
- West Asian suppliers like Iraq, Saudi Arabia and the UAE are already increasing their exports to India.
- India has the flexibility to adapt to short-term disruptions by leveraging alternative suppliers.

Way Forward

- India must remain adaptable and diversify its oil sources to mitigate the impact of US sanctions on Russia. While short-term disruptions are likely, India's diverse import strategy and commitment to renewable energy will contribute to energy security and economic stability.

2.6   SHORT ARTICLES

Global Estimates on International Migrant Worker

Context

- The International Labour Organisation (ILO) released the fourth edition of "Global Estimates on International Migrant Workers" Report.

Highlights of the Report

- The report reveals that **167.7 million international migrants (IMs)** made up **4.7% of the global labour force** in 2022. Of these, **155.6 million held jobs**, while **12.1 million were unemployed but seeking work**.
- **61.3% of male migrants held jobs** in 2022 compared to **38.7% of female migrants**. Fewer women migrate for work due to social, cultural and economic barriers. However, the number of female migrants has risen steadily since 2015.
- The **services sector employs 68.4% of international migrants**, far exceeding non-migrants (59.4% for women and 46.3% for men). Women migrants dominate this sector even more sharply, with **80.7% working in services** versus 60.8% of male migrants. Only **7.4% of migrants work in agriculture**, compared to 24.3% of non-migrants.
- **High-income countries absorb 68.4% (114 million) of migrant workers**, driven by demand in services and care sectors. Upper-middle-income countries host **17.4% (29.2 million)**. Northern, Southern and Western Europe saw migrant workers rise to **23.3% of their labour force** by 2022, while Northern America's share fell to **22.6%** and Arab states dropped to **13.3%**.
- High-income countries attract migrants due to **ageing populations**, **rising demand for care workers** and **greater economic opportunities**. These nations rely on migrants to address labour shortages in critical sectors.

About International Labour Organisation (ILO)

- The ILO was founded in **1919 under the Treaty of Versailles** to promotes social justice and labour rights.
- After World War II, it became the **first UN specialized agency** in 1946.
- Its **tripartite structure**—involving governments, employers and workers—ensures balanced policymaking.
- The ILO adopted the **Declaration of Philadelphia** in 1944, committing to full employment and equal opportunity and won the **Nobel Peace Prize in 1969**.

World Employment and Social Outlook: Trends 2025

Context

- The International Labour Organization (ILO) has released the World Employment and Social Outlook: Trends 2025 in Geneva, Switzerland.

Highlights of the Report

- The report states that the **global economic slowdown continues to hinder labour market recovery** from COVID-19, delaying a full rebound.
- The report projects India's GDP to grow by **6.4% in 2025**, fueled by strong domestic demand, public investment and relaxed monetary policies. This growth propels Southern Asia's overall GDP to **5.8%** for the same year.
- Global employment expanded in 2024, matching labour force growth and stabilizing unemployment at **5%**. However, **youth unemployment persists at 12.6%**, while informal work and poverty levels mirror pre-pandemic figures.
- Geopolitical conflicts, climate change costs and unresolved debt issues strain labour markets. Although inflation has eased, high prices continue eroding wages. Real wage

growth remains limited to select developed economies.

- Low-income countries face declining labour participation rates, while high-income nations see increases—driven by older workers and women. Persistent gender gaps, however, restrict living standard improvements.
- Around **402 million people** globally lack jobs despite wanting to work, including **186 million officially unemployed**.

Recommendations made in the report

- The ILO urges governments to **boost productivity** through investments in skills training, education and infrastructure. It advocates expanding social protections, improving access to social security and leveraging private funds (e.g., remittances) for local development.
- ILO Director-General emphasized that **decent work and productive employment** are critical for achieving social justice and the Sustainable Development Goals (SDGs). He urged swift action to address labour market pressures and build a **fairer, sustainable future**.

Net Zero Banking Alliance

Context

- Wall Street banks such as Goldman Sachs, Wells Fargo, Citigroup, Bank of America, Morgan Stanley and JPMorgan Chase & Co. have withdrawn from the Net-Zero Banking Alliance due to political pressure.

About the Net-Zero Banking Alliance (NZBA)

- The NZBA was established in 2021 by 43 global financial institutions.
- The UN Environment Programme Finance Initiative (UNEP FI) convened the NZBA in 2021.
- It is a coalition of banks that work together to align their lending, investment and capital markets activities with net-zero greenhouse gas emissions by 2050.
- **Objectives of the NZBA:**

  o To help banks shift their lending and investment portfolios to net-zero emissions by 2050.
  o Member banks must set interim targets for 2030, focusing on high-emission sectors.
  o Banks are required to publish emissions data and track progress annually.
- It is governed by a Steering Group made up of members from diverse geographies and business models.
- The **United Nations holds a seat in the Steering Group.**
- The governance documents are updated regularly, with the latest revision in March 2024.

What are the requirements for banks joining the NZBA?

- Transition their emissions from lending and investment portfolios to net zero by 2050.
- Set targets for 2030 and 2050 within 18 months of joining and update targets every five years.
- Focus initially on greenhouse gas-intensive sectors.
- Publish annual emissions data.

As of January 2025, the NZBA has 142 members from 44 countries. Around 80 European banks represent the majority of the assets. Currently, **no Indian bank is a member of the NZBA.**

Is Congestion Pricing feasible in India?

Context

- New York City became the first city in the United States to implement congestion pricing.

About Congestion Pricing

- Congestion pricing is a system **where drivers pay a fee to enter a city's central area, aiming to reduce traffic congestion.** In January 2025, New York City became the first U.S. city to implement this system, charging drivers $9 during peak hours to enter Manhattan.

- Several cities worldwide have adopted congestion pricing. Singapore introduced it in 1975, followed by London in 2003 and Stockholm in 2006. These cities use electronic toll systems, but the fees differ.

Benefits of Congestion Pricing

- **Revenue generation**: Cities generate revenue, which can be reinvested in transportation infrastructure. For example; New York plans to raise $15 billion for subway and railway upgrades.
- **Environmental improvements**: Cities like London have seen a drop in air pollution, with nitrogen oxide levels halving. Milan's congestion charge has reduced carbon pollution by about 30%.
- **Reduced traffic and improved commutes**: Traffic levels decrease, leading to quicker commutes, less noise and cleaner air. For example, Stockholm saw a 25% reduction in traffic and improved bus punctuality.

Can India benefit from congestion pricing?

- India can benefit from congestion pricing, especially in major cities like Mumbai. This system could ensure faster commutes for people who can afford it while improving public transportation alternatives, such as buses and trains, for the rest.
- However, implementation is challenging due to the high number of private vehicles in cities. For example, Mumbai has 2.7 million private vehicles for a population of 12.4 million, making congestion pricing a challenge without widespread public support.
- Indian cities would need strong communication strategies to clarify its benefits and improve alternatives like buses. Without these, people may view it as a punishment rather than a solution, leading to resistance.

Urengoy-Pomary-Uzhgorod Pipeline

Context

- Ukraine's refusal to renew a transit agreement has resulted in the suspension of Russia's gas supply to Europe.

About the Urengoy-Pomary-Uzhgorod Pipeline

- The pipeline is also **known as the Bratstvo Pipeline or Brotherhood Pipeline**, is one of Russia's major natural gas export pipelines.
- It runs from Siberia's Urengoy gas field through a compressor plant at Pomar in Mari El to Uzhhorod in Western Ukraine. From there, it supplies natural gas to Central and Western European countries.
- It was constructed between 1982 and 1984.

Ukraine Stop Russian Gas transit to Europe

- Ukraine suspended the flow of Russian gas to Europe by refusing to renew the transit agreement with Russia. The decision was made for national security reasons, mainly due to the ongoing war.
- The **European Union had prepared for such a situation by diversifying its energy sources**. Over recent years, the EU reduced its dependence on Russian gas by increasing imports of liquefied natural gas (LNG) from countries like Qatar, the US and Norway.
- The gas transit stoppage has serious financial consequences for both Russia and Ukraine. Ukraine loses around $800 million annually from transit fees and Russia loses nearly $5 billion in gas sales. At its peak, **Russia**

controlled 35% of Europe's gas supply, but this share has now fallen to just 8%.

Silver Notice

Context

- The International Criminal Police Organisation (Interpol) has introduced the 'Silver Notice' to trace assets laundered across international borders.

About Interpol

- It is an international police agency that helps countries to work together to prevent and fight crime.
- The first International Criminal Police Congress was held in 1914. The idea for Interpol was revived in 1923 by Dr. Johannes Schober, the President of the Vienna Police.
- **It focuses on the following types of crimes:**
  o Terrorism
  o Crimes against people and property
  o Economic, financial and computer crimes
  o Illegal drugs and criminal organizations
- Each country has a **National Central Bureau (NCB)** that acts as a contact point for Interpol.

For India, the **Central Bureau of Investigation (CBI)** is the NCB.
- Its headquarters are in **Lyon, France**. It also has a representative office at the **United Nations**.

About Silver Notice

- The Notice aids countries in **locating and recovering assets linked to crimes like fraud, corruption, drug trafficking and environmental offenses**, enabling legal actions like seizure or confiscation of properties, vehicles, financial accounts and businesses.
- It allows participating countries to request information on assets linked to criminal activities, enabling them to identify and locate these assets, which can then be seized or confiscated.
- Interpol introduced the Silver Notice as part of a pilot project involving 52 countries, including India. It was launched after Italy's request to locate the assets of a mafia member.

2.7   SNIPPETS

Topics	Details
Youth Pravasi Bharatiya Divas	• The Prime Minister inaugurated the 18th Pravasi Bharatiya Divas convention on January 9th, 2025. • It is a celebration held on January 9th to honor the contributions of the Indian diaspora to India and the return of Mahatma Gandhi to the country in 1915. • It was established in 2003 and the event has evolved into a biennial event since 2015. • The 18th Pravasi Bharatiya Divas in Bhubaneswar, Odisha, focuses on **"Diaspora's Contribution to a Viksit Bharat".** • The total number of overseas Indians worldwide is around 35.42 million, with the **United States having the largest Indian population in the world.**
Hanley Passport Index	• India's ranking in the Henley Passport Index has dropped from 80th place in 2024 to 85th place in 2025. • The Henley Passport Index was established in 2006, ranks passports based on the number of destinations they can access without a visa. • The index is based on data from the International Air Transport Association (IATA) and Henley & Partners' research team. • It assigns a score of 0 or 1 for each destination, based on whether a visa is

	required. The **index ranks 199 passports, with India ranking 85th globally.** • **Indian passport holders can travel visa-free to 57 destinations.** Singapore has topped the list for the second year in a row, with Japan second.
Rural Community Immigration Class (RCIC) Scheme	• Canada has introduced the Rural Community Immigration Class (RCIC) program. • The RCIC scheme aims to **address labour shortages and promote growth in smaller rural communities** by offering foreign nationals the opportunity to apply for Permanent Residency (PR) if they commit to living and working in designated areas. • Eligibility criteria include education level, studies completed within 18 months in a designated rural community, job offer from a registered employer in a rural community, work experience. • It is significant for **Indian students, who make up nearly 40% of international students in Canada.**
Stargate	• President Trump launched $500-billion Stargate project. • It is a proposed **$500 billion initiative** under the Trump administration. • It aims **to secure U.S. leadership in AI technology**, boost national security and industrial growth, drive advancements in Artificial General Intelligence (AGI) and promote innovation in healthcare. • It plans to achieve this through the construction of massive data centers and AI campuses.
United Nations Relief And Works Agency (UNRWA)	• Israel announced the end of cooperation with the UNRWA. • It is a **specialized agency established by the UN General Assembly in 1949.** • Its primary mission is to provide relief, protection and essential services—including education, healthcare and social services—to Palestinian refugees and their descendants displaced during the 1948 Arab–Israeli conflict. • The United States has shown support for Israel's decision; however, many other countries and humanitarian organizations have voiced strong concerns.

2.8 ADDITIONAL TOPICS FOR READING FROM IASGYAN WEBSITE

Topic Name	Uploaded Date
Looking at 2025, Diplomacy: Challenges of A Complex World	2nd January, 2025
The End Of Global Climate Policy	10th January, 2025
Delhi Must Look Beyond H-1B	16th January, 2025
A Surge In Radical Governments, The Hope Of Democracy	22nd January, 2025
US India Nuclear Deal	24th January, 2025
Trump 2.0 As Disruptor Of The Global Legal Order	24th January, 2025
Geopolitics Of Lng	29th January, 2025
The U.S.'S Immigration Blocks As A Self-Defeating Path	30th January, 2025
ICJ's Advisory Opinion On Climate Change	31st January, 2025

3. ECONOMY

3.1   RBI STRATEGY ON RUPEE DEPRECIATION

Context

- The Indian rupee has recently hit a record low of 87.57 against the US dollar.

The recent depreciation of the Indian rupee is mainly driven by a combination of global and domestic factors.

Global Factors

- The increase in global oil prices is partly due to the **West Asia crisis,** has **increased import costs,** raising the demand for US dollars and putting pressure on the rupee.
- The US dollar has strengthened due to **strong economic policy moves,** such as tariff decisions by the US government, which has led to capital flows favoring dollar-denominated assets, weakening emerging market currencies like the rupee.

Domestic Factors

- **Continuous trade deficit,** driven by **high dependence on imports of energy, electronics and machinery**, has created downward pressure on the rupee.
- **Foreign Institutional Investors (FIIs) have been withdrawing from Indian markets,** converting rupees into dollars, which further increases dollar demand and weakens the rupee.
- **Rising inflation and slowing domestic growth** have eroded investor confidence, making the rupee less attractive.

Effect of depreciation

Positive Impacts

- A weaker rupee **makes exports more competitive in global markets**, as exports become cheaper for foreign buyers, which can benefit sectors like textiles, IT services and pharmaceuticals.
- Immigrants sending money back to India will be benefited, as they get more rupees for every dollar they send.

Negative Impacts

- The cost of imports, especially crude oil, electronics and machinery, increases. This leads to higher domestic prices and **inflationary pressures.**
- Companies with foreign currency debt would face higher repayment costs, which will weaken their balance sheets and potentially reduce investments.
- **Depreciation can lead to foreign investors pulling out of Indian market**s, causing volatility in stock prices and reducing foreign exchange reserves.

The RBI has adopted a more flexible approach to managing the rupee

- The Reserve Bank of India (RBI) has **shifted to a more market-driven approach, which allows smooth depreciation of the rupee instead of aggressively defending its value.** The shift in approach reflects a growing tolerance for rupee depreciation and a resource-efficient strategy to manage volatility.
- The RBI intervenes strategically in the forex market through dollar-rupee swaps and spot market operations to prevent extreme volatility. However, excessive interventions are avoided to conserve foreign exchange reserves.
- The RBI has cut interest rates to support domestic growth, though this can contribute to rupee depreciation due to interest rate differentials with the US.
- The **RBI uses a managed float system,** allowing market forces to determine the rupee's value while stepping in to moderate sharp fluctuations.

Way Forward

- India needs to **address both structural and policy-related issues** to stabilize the rupee in the long term.

- Promote domestic manufacturing through initiatives like "Make in India" to reduce reliance on imports, especially in sectors like electronics, machinery and energy.
- Enhance export competitiveness by improving infrastructure, reducing logistics costs and providing export incentives.
- **Simplify regulations and ensure policy continuity to attract long-term foreign direct investment (FDI)** rather than volatile portfolio flows.

- Implement targeted fiscal measures to support domestic demand while maintaining a balanced monetary policy to manage inflation and growth.
- Use foreign exchange reserves judiciously to manage volatility without depleting reserves excessively.
- Focus on structural reforms to boost productivity, reduce inflation and sustain economic growth, which will improve investor confidence in the rupee.

3.2 STATUS OF SEMICONDUCTOR INDUSTRY IN INDIA

Context
- India and Singapore are exploring a data corridor between Gujarat's GIFT City and Singapore, to secure financial institution data exchange and promote sustainable energy collaboration.

Current Status of Indian Semiconductor Industry
- The Indian semiconductor industry is growing rapidly, with a **compound annual growth rate (CAGR) of 20.1%**.
- In 2023, the market reached a valuation of **$34.3 billion** and the country is expected to create **over 300,000 jobs** in the sector by 2026.

Key growth drivers include:
- **Government Initiatives:** Programs like the **India Semiconductor Mission (ISM)**, **Production Linked Incentive (PLI) Scheme** and **Semicon India program** provide fiscal support and incentives.
- **Increasing Demand:** Rising demand for consumer electronics, IoT applications, 5G technology, AI, cloud computing and electric vehicles (EVs) is fueling semiconductor demand.
- **International Collaborations:** Partnerships with countries like the US, Japan and Taiwan, as well as companies like PSMC and Synopsys, are boosting India's semiconductor ecosystem.

- **Strategic Investments:** Significant funding and the establishment of new manufacturing facilities are driving growth.

What challenges does India's semiconductor industry face?
- The **industry lacks professionals in chip design, fabrication, testing and packaging.** The government is addressing this through training programs and centers of excellence.
- Setting up semiconductor fabs requires massive capital investment and access to high-end, expensive technologies.
- The industry needs uninterrupted power, clean water, sophisticated purification facilities and clean rooms, which are not readily available in many regions.
- Establishing a reliable supply chain for raw materials and navigating trade conflicts and sanctions remain critical challenges.
- **Multiple clearances and approvals** delay the establishment of indigenous facilities.
- The industry's hazardous chemicals require careful management.

How is India collaborating with Singapore in the semiconductor sector?
India and Singapore are strengthening ties in **advanced manufacturing** and **semiconductors** through:
- Both countries are collaborating on initiatives like **"generation and net zero" industrial parks** to promote skilling and innovation in emerging industries.

- They are exploring a data corridor between **GIFT City in Gujarat** and Singapore to enable secure data exchange for financial institutions.
- Discussions are underway to create a renewable energy corridor to enhance collaboration in sustainability and clean energy.
- These initiatives aim to boost economic and technological cooperation, particularly in digital and sustainability sectors.

What lessons can India learn from Singapore's semiconductor success?

- <u>Specialized Infrastructure:</u> Develop **wafer fabrication parks** with the necessary infrastructure to attract global semiconductor companies.
- <u>Industry-Academia Collaboration:</u> Strengthen partnerships between universities and the semiconductor industry to nurture a skilled workforce.
- <u>Stable Ecosystem:</u> Ensure a stable business environment, strategic location and integrated infrastructure to attract investments.

- <u>Government Support:</u> Implement policies and incentives to support semiconductor manufacturing and innovation, as Singapore did in the 1970s.

> Singapore produces **10% of the world's semiconductor output**.

What recent developments have taken place in India's semiconductor industry?

- <u>First Advanced Chip Facility:</u> India's first advanced chip manufacturing facility in Gujarat is expected to start production by **December 2026**.
- <u>New Manufacturing Units:</u> The government approved **four new semiconductor manufacturing units** in 2024.
- <u>State-Level Initiatives:</u> States like Gujarat are working to establish themselves as semiconductor manufacturing hubs.
- <u>Modernization:</u> The government is modernizing the **semiconductor laboratory in Mohali** and providing fiscal support for setting up fabs and display units.

3.3   FISCAL HEALTH INDEX 2025

Context

- The **Fiscal Health Index (FHI) 2025** was launched by the Chairman of the 16th Finance Commission, is a significant tool developed by **NITI Aayog** to assess the fiscal performance of Indian states.

About the Fiscal Health Index 2025

- It provides a comprehensive evaluation of 18 major states based on five key sub-indices: **Quality of Expenditure**, **Revenue Mobilization**, **Fiscal Prudence**, **Debt Index** and **Debt Sustainability**.
- The index uses data from the **Comptroller and Auditor General (CAG)** to analyze fiscal trends from **2014-15 to 2021-22**.

Key Highlights of the Fiscal Health Index 2025

Top Performers:

- **Odisha** emerged as the top-performing state with an overall score of **67.8**, excelling in **debt sustainability**, **revenue mobilization** and **capital expenditure**. It ranked highest in the **Debt Index (99.0)** and **Debt Sustainability (64.0)**.
- Other **'Achievers'** include **Chhattisgarh, Goa, Jharkhand and Karnataka**, which demonstrated:
- Higher capital outlay (up to 4% of GSDP).
- Revenue surplus due to effective non-tax revenue mobilization.
- Low interest payments (less than 7% of revenue receipts).
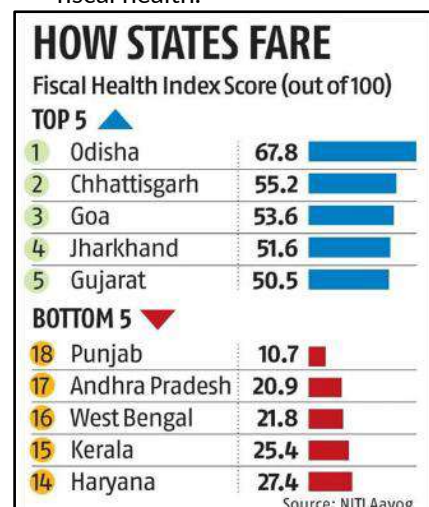- Sustainable debt-to-GSDP ratios and low fiscal deficits.

Front-Runners and Performers:

- States like **Maharashtra, Uttar Pradesh, Telangana, Madhya Pradesh and Karnataka** were categorized as **'Front-Runners'**, showcasing:
- High developmental expenditure (up to 73% of total expenditure).
- Consistent growth in own tax revenue.
- Improved fiscal management with an average debt-to-GSDP ratio of **24%**.
- **Tamil Nadu, Bihar, Rajasthan and Haryana** were listed as **'Performers'**, indicating moderate fiscal stability with room for improvement.

Aspirational States:

Punjab, Kerala, West Bengal and Andhra Pradesh were flagged for fiscal vulnerabilities, including:

- High fiscal deficits and growing debt burdens.
- Challenges in revenue mobilization and expenditure quality.
- Weak debt sustainability, posing risks to long-term fiscal health.

HOW STATES FARE

Fiscal Health Index Score (out of 100)

TOP 5 ▲

#	State	Score
1	Odisha	67.8
2	Chhattisgarh	55.2
3	Goa	53.6
4	Jharkhand	51.6
5	Gujarat	50.5

BOTTOM 5 ▼

#	State	Score
18	Punjab	10.7
17	Andhra Pradesh	20.9
16	West Bengal	21.8
15	Kerala	25.4
14	Haryana	27.4

Source: NITI Aayog

Recommendations for States

- Utilize non-tax revenues (e.g., fees, charges, public-private partnerships) and improve tax compliance to reduce dependency on a single revenue source.
- Focus on infrastructure, health and education to boost long-term economic growth and improve citizens' quality of life.
- Adopt a comprehensive debt sustainability framework to evaluate, manage and reduce fiscal stress.
- Improve reporting mechanisms and adhere to fiscal responsibility standards to ensure citizen participation in decision-making.

  By adopting targeted strategies, states can contribute

to the broader goals of **Atmanirbhar Bharat** and **Viksit Bharat @2047**, ensuring sustainable development and economic resilience.

3.4 UNIFIED PENSION SCHEME (UPS)

Context
- The Union Government has notified the Unified Pension Scheme (UPS) for central employees.

About the Unified Pension Scheme (UPS)
- It is a new pension framework introduced by the Union finance ministry for central government employees covered under the **National Pension System (NPS)**.
- The scheme will take effect on **April 1, 2025**.

Why Introduced?
- The UPS was introduced to address widespread grievances from central government employees and political controversies over the NPS.
- Some opposition-ruled states reverted to the **Old Pension Scheme (OPS)**, prompting the central government to set up a committee led by then-finance secretary **TV Somanathan** in April 2023 to rework the pension system.
- The UPS aims to balance employee concerns with fiscal prudence.

Who is eligible for the Unified Pension Scheme (UPS)?
- **Central Government Employees:** Those covered under the **National Pension System (NPS)** and who choose to opt for the UPS.
- **Retired Employees:** Employees who retired since 2004 are also eligible to opt for the UPS.
- **Pre-2004 Employees:** Employees who joined before April 2004 will continue under the **Old Pension Scheme (OPS)**.

The UPS offers
- **Guaranteed Pension:** Employees will receive **50% of the average basic pay** drawn over the 12 months before retirement if they complete **25 years of service**.

- **Proportionate Pension:** Employees with less than 25 years but more than 10 years of service will receive a pension on a **proportionate basis**.
- **Minimum Pension:** Employees with at least 10 years of service will receive a **minimum assured pension of ₹10,000 per month**.
- **Family/Survivor Pension:** Fixed at **60% of the last-drawn salary** of a deceased employee.
- **Indexation to CPI-IW:** The pension will be indexed to the **Consumer Price Index for Industrial Workers (CPI-IW)** to calculate dearness relief, accounting for inflation.

How does the UPS differ from the Old Pension Scheme (OPS) and the National Pension System (NPS)?
- **Old Pension Scheme (OPS):** Offers a fixed pension of **50% of the last-drawn salary** after retirement, but it is fiscally straining as it is unfunded.
- **National Pension System (NPS):** A market-linked, fully funded system where pension amounts depend on market returns.
- **Unified Pension Scheme (UPS):** Combines elements of both OPS and NPS to offer **guaranteed retirement benefits** (like OPS) while maintaining **fiscal prudence** (like NPS). It ensures a fixed payout while being indexed to inflation.

Significance of UPS
- **For Employees:** It provides **financial security** through guaranteed retirement benefits, family pensions and inflation-indexed adjustments.
- **For the Government:** It maintains **fiscal prudence** by balancing employee demands with sustainable financial practices, unlike the fiscally straining OPS.
- **For the Pension System:** It bridges the gap between the unfunded OPS and the market-

linked NPS, offering a balanced and sustainable solution.

3.5   SHORT ARTICLES

India's Maritime Sector

Context

- The Union Ministry of Ports, Shipping & Waterways, stated that the Marine Sector needs $1 trillion in investment by 2047 and ₹5 lakh crore by 2030 to reach its full potential.

Current Status of Maritime sector

- The Maritime sector is a critical driver of the economy, handling **95% of the country's trade volume** and **70% by value**. With a **7,500 km coastline**, India is the **16th largest maritime nation globally**.
- The sector includes **13 major ports** (like Mumbai, Chennai and JNPT) and over **200 minor ports**, collectively handling **1,629 million tonnes per annum (MTPA)** as of FY 2023-24.
- The sector also includes **inland waterways**, which reduce logistics costs and improve connectivity.

The government has launched several initiatives to boost the maritime sector:

- **Sagarmala Programme**: Allocated **₹3,714 crore** for **130 projects** focusing on port development, coastal berths and connectivity. It also introduced a **one-time trading license** for vessels and relaxed cabotage rules.
- **Maritime India Vision (MIV) 2030**: A 10-year roadmap to establish India as a global maritime leader. It has already increased **port traffic, coastal tonnage and cargo volume** on National Waterways.
- **Green Tug Transition Program (GTTP)**: Aims to replace conventional tugs with eco-friendly alternatives by **2040**.
- **Shipbuilding Financial Assistance Policy (SBFAP)**: Provides financial aid to enhance India's competitiveness in shipbuilding.

India as a global leader in ship recycling

- India is already a global leader in ship recycling, with **Alang in Gujarat** being the world's largest ship-breaking facility.

- The **Hong Kong Convention**, effective from **June 2025**, will further benefit Indian shipyards as recycling yards in Alang already comply with its standards.

QS World Future Skills Index 2025

Context

- India has been ranked second globally in the QS World Future Skills Index 2025.

About the QS World Future Skills Index 2025

- The index is developed by Quacquarelli Symonds (QS), evaluates countries across four dimensions: **Skills Fit**, **Academic Readiness**, **Future of Work** and **Economic Transformation**.
- India's strong performance highlights its potential to lead in emerging sectors like **Artificial Intelligence (AI)**, **digital industries** and **green technologies**.

Key Highlights of India's Performance

Global Ranking

- India ranks **2nd globally** in job market preparedness.
- In the **"Future of Work"** category, India secured the **2nd highest global score (99.1)**, just behind the United States.
- Overall, India ranks **25th** across all indicators, earning the title of a **"future skills contender."**

Tobacco Production In India

Context

- The Tobacco Board of India exports reached a record high of Rs 12,005.89 crore in 2023-24.

About Tobacco Board

- It was established in 1976 under the Tobacco Board Act of 1975.
- The headquarters is located in Andhra Pradesh.
- Its primary function is to regulate tobacco production and ensure fair prices for farmers.

Tobacco Production

- Tobacco grows best in well-drained, well-aerated soils that are free from water logging.
- It grows in climates with a **frost-free period of 90 to 120 days** and a mean daily temperature between 20 to 30°C. A dry period is essential for ripening and harvesting the leaves.
- The production process involves moisturizing, conditioning, cutting, expanding and drying.

Tobacco Production in India

- India is the **second-largest producer of tobacco in the world, after China**. It is the only country that produces tobacco in two seasons.
- **India has about 10% of the global area dedicated to tobacco farming** and contributes 9% of the global tobacco production.
- The Indian tobacco industry benefits from low production, farming and export costs. Indian tobacco has a competitive edge due to its lower levels of heavy metals, Tobacco Specific Nitrosamines (TSNAs) and pesticide residues.
- The major tobacco-producing states in India are Gujarat, Andhra Pradesh, Karnataka.
- India is the second-largest exporter of unmanufactured tobacco, after Brazil.
- In 2023-24, the **UAE was the largest importer of tobacco from India,** accounting for about 19.76% of total exports.

Logistics Ease Across Different States (LEADS) 2024 Report

Context

- The "Logistics Ease Across Different States (LEADS) 2024 report" was released by the Union Minister of Commerce and Industry.

About LEADS Report

- It was first launched in 2018 **by the Department for Promotion of Industry and Internal Trade (DPIIT), Ministry of Commerce and Industry.**
- It evaluates the logistics performance of states and Union Territories and was designed based on the World Bank's Logistics Performance Index.
- **The LEADS 2024 report** evaluates logistics performance across four key pillars: **Logistics**

Infrastructure, Logistics Services, Operating and Regulatory Environment and the newly introduced Sustainable Logistics.

Key performance groups in the LEADS 2024 report

Coastal Group

- Achievers – Gujarat, Karnataka, Maharashtra, Odisha, Tamil Nadu
- Fast Movers – Andhra Pradesh, Goa
- Aspirers – Kerala, West Bengal

Landlocked Group

- Achievers – Haryana, Telangana, Uttar Pradesh, Uttarakhand
- Fast Movers – Bihar, Himachal Pradesh, Madhya Pradesh, Punjab, Rajasthan
- Aspirers – Chhattisgarh, Jharkhand

North-Eastern Group

- Achievers – Assam, Arunachal Pradesh
- Fast Movers – Meghalaya, Mizoram, Nagaland, Sikkim, Tripura
- Aspirers – Manipur

Union Territories

- Achievers – Chandigarh, Delhi
- Fast Movers – Dadra and Nagar Haveli and Daman and Diu, Jammu and Kashmir, Lakshadweep, Puducherry
- Aspirers – Andaman and Nicobar Islands, Ladakh

Future of Jobs Report

Context

- The World Economic Forum (WEF) released the 'Future of Jobs Report 2025' report.

About the 'Future of Jobs Report 2025' report

- **By 2030, the global labor market will see a net increase of 78 million jobs by 2030.** While 170 million new jobs will be created, 92 million jobs will be displaced. This change will affect about 22% of current jobs.
- Technological advancements, geoeconomic fragmentation, economic uncertainty, demographic changes and the green transition will shape the future of jobs.
- Frontline jobs like farmworkers, delivery drivers, construction workers, salespersons and nursing professionals will see the most growth in absolute terms.

- By 2030, skills in AI, big data, networks and cybersecurity, technological literacy, creativity and resilience will be in high demand.
- Automation will lead to **workforce reductions in 41% of companies by 2030.**
- By 2030, 59% of the global workforce will need new or updated skills. **Nearly 40% of future job skills will be completely new,** underlining the importance of adaptability and continuous learning.

About World Economic Forum (WEF)

- It is an independent, not-for-profit organization that aims to improve the world by engaging leaders from business, politics, academia and civil society.

10 fastest-growing job roles by 2030
1. Big Data Specialists
2. FinTech Engineers
3. AI and Machine Learning Specialists
4. Software and Application Developers
5. Security Management Specialists
6. Data Warehousing Specialists
7. Autonomous and Electric Vehicle Specialists
8. UI and UX Designers
9. Light Truck or Delivery Services Drivers
10. Internet of Things Specialists

- It was founded in 1971 by German economist Klaus Schwab.
- It is headquartered in Geneva, Switzerland.

DAP beyond NBS Subsidy

Context

- The Union Cabinet has approved the extension of the One-time Special Package on Di-Ammonium Phosphate (DAP).

About Fertilizer Subsidy in India

- The Government provides financial support to make fertilizers affordable for farmers, particularly small and marginal ones.
- The **Union Budget for 2024 allocated Rs 164,000 crore for fertilizer subsidy.**
- The subsidy consists of **two main components**: Urea Subsidy, which accounts for 80% of total fertilizer consumption in India and Nutrient-Based Subsidy (NBS)
- NBS was introduced in 2010 to set a subsidy rate for each nutrient based on its content and market prices.

Recent Cabinet approval regarding Di-Ammonium Phosphate (DAP)

- The Union Cabinet has extended the One-time Special Package on Di-Ammonium Phosphate (DAP) beyond the National Budgetary Support (NBS) subsidy, effective from January 1, 2025.
- The extension aims to ensure sustainable availability of DAP at affordable prices for farmers, with the package provided at Rs 3,500 per metric ton (MT).
- Since April 1, 2010, the **NBS scheme has managed the subsidy on Phosphatic and Potassic (P&K) fertilizers, including DAP.** The extension will ensure DAP remains available at subsidized, affordable and reasonable prices, helping farmers maintain productivity without the burden of high fertilizer costs.

Slowdown in Indian Economy

Context

- The Ministry of Statistics and Programme Implementation (MoSPI) has released the First Advance Estimates (FAEs) for India's GDP growth for the current financial year ending in March 2024-25.

Highlights of the Report

Latest GDP estimate for FY25

- India's nominal GDP in FY25 is expected to reach ₹324 lakh crore, reflecting a 9.7% growth over FY24. However, real GDP growth is projected to decline from 8.2% in FY24 to 6.4% in FY25, which is lower than the 6.5-7% range predicted by the Economic Survey in July 2024.

Difference between nominal and real GDP
- Nominal GDP measures the total value of goods and services produced at current prices, including the effect of inflation.
- Real GDP adjusts for inflation and provides a clearer picture of the actual growth in the economy's output.

Issues with GDP estimates

- Experts, including the International Monetary Fund (IMF), have **criticized the use of the Wholesale Price Index (WPI) as a deflator, arguing that the Producer Price Index (PPI)**

would **provide more accurate real GDP figures**.

- GDP also has inherent limitations, such as skipping non-market transactions, failing to reflect income inequality and not indicating whether growth is sustainable.

Trends observed in investment and consumption

- From 2004 to 2014, India experienced high investment growth under the UPA government, with real investment growing over 10%.
- Between 2014 and 2020, under the NDA government, private investment growth slowed, while public sector investment became the primary driver.
- Post-pandemic, GDP and investment grew at an average of 7.2%, but private consumption growth remained weak.
- The **2019 corporate tax cuts failed to trigger a sustained investment boom,** unlike the investment-led growth seen during the UPA era.

Impact on Fiscal Situation

- The **economic slowdown has reduced government revenue collection,** making it difficult to meet fiscal targets. As of November 2024, only 56% of the projected net tax revenue was collected.
- Capital expenditure has also fallen short, with only half of the budgeted ₹11.11 trillion spent. This fiscal gap poses a dilemma: cutting public spending could worsen the slowdown, while increasing public debt is challenging due to high interest payments.

Production Linked Incentive Scheme 1.1

Context

- The Union Minister of Steel and Heavy Industries has launched PLI Scheme 1.1, the second phase of the Production Linked Incentive (PLI) program for Speciality Steel.

About the Production Linked Incentive (PLI) Scheme

- It was **launched in 2020** to provide **financial incentives** to **14 critical sectors** that have

been strategically chosen to boost manufacturing and innovation in India.

- The PLI Scheme has a **total budget of Rs 1.97 lakh crore.**
- According to a note from rating agency Crisil, the scheme could generate Rs 3-3.5 lakh crore in industrial capital expenditure, accounting for 8-10% of total capital expenditures in key industrial sectors over the next three to four years.
- As of August 2024, investments of about Rs 1.46 lakh crore had been made that have increased production and sales by Rs 12.50 lakh crore and **created around 9.5 lakh jobs.**

14 Sectors under PLI Scheme	
Electronics	Food Products
Pharmaceuticals	Textiles
Medical Devices	Solar
Automobiles	Batteries
Steel	Drones
Telecom	IT Hardware
White Goods	Critical materials

About the PLI Scheme 1.1 for Specialty Steel

- It aims to **promote domestic manufacturing of value-added steel grades** to strengthen the Steel industry, it also focuses on promoting innovation, improving energy efficiency and generating employment.
- It will be implemented during the production period from **FY 2025-26 to FY 2029-30**.
- **It covers five product categories:** Coated / Plated Steel Products, High Strength / Wear-resistant Steel, Specialty Rails, Alloy Steel Products & Steel Wires, Electrical Steel.

Indian Coffee Exports

Context

- India's coffee exports reached a record high of $1,146.9 million in FY24.

Climatic Conditions required for coffee cultivation

- Coffee grows in a hot and humid climate.
- The ideal temperature range for growth is between 15°C and 28°C.
- Annual rainfall should range from 150 cm to 250 cm.

- The soil should be well-drained, loamy and rich in humus, with minerals like iron and calcium.
- **Coffee plants grow best under shade,** as this protects them from direct sunlight and ensures optimal conditions.

Coffee Production in India

- The country mainly produces two varieties: Arabica and Robusta.
- Arabica is valued for its mild, aromatic flavor, while **Robusta accounts for 72% of India's coffee production.**
- **Karnataka leads with 71% of India's coffee production**, followed by Kerala (20%) and Tamil Nadu (5%).
- The European Union is the largest importer, taking 70% of India's coffee exports, with Italy alone accounting for 20%.

Coffee Export from India

- India ranks as the **seventh-largest coffee producer** globally (2023-2024).
- India is the **third-largest coffee producer and exporter in Asia**. In 2023-24, India's coffee exports increased by 12.22% to $1.28 billion.
- Global Robusta prices surged by 63% in June 2024, reaching $4,667 per metric ton, due to supply shortages in Vietnam and Brazil.
- **Brazil, the world's largest coffee producer (40% of global supply)**, faced adverse weather like drought and high temperatures. In FY24, Brazil's coffee bean exports dropped by 2.6 million bags due to reduced yields and stock depletion.
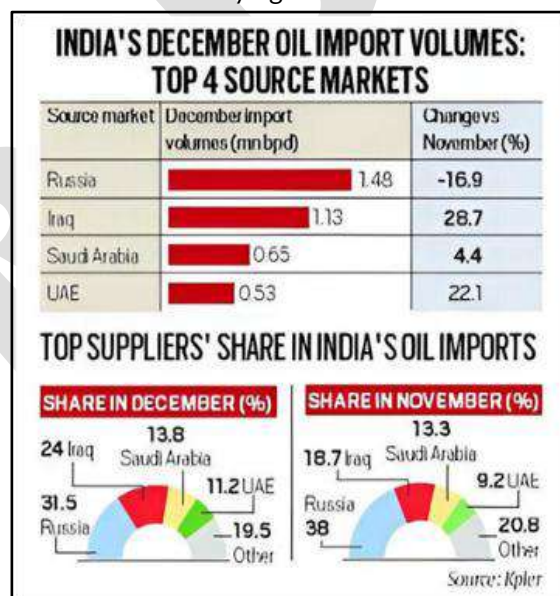
India's import of Crude Oil

Context

- India's crude oil imports shifted in December as Russian supplies fell, leading to increasing Imports from Iraq and the UAE due to cost efficiency and shifting global dynamics.

Oil Import by India

- **India imports almost 85% of its required oil,** making it highly dependent on foreign sources for energy security. It is the world's second-largest importer of crude oil, after China.
- **Reasons for oil imports**
  o Growing population and industrialization have increased its energy needs.

  o Rapid economic growth is expected to increase its energy demand.
  o India's petroleum reserves are not enough to meet its demand.
  o Increasing oil prices can widen India's trade deficit.

- India increased crude oil imports from Iraq and the UAE in December 2024 due to reduced supplies from Russia, **as its domestic refineries operated at high capacity to meet seasonal demand**.
- **When Russia's spring refinery maintenance season begins around March-April, exports are expected to rise.** Until then, India will continue diversifying its crude oil sources.

INDIA'S DECEMBER OIL IMPORT VOLUMES: TOP 4 SOURCE MARKETS

Source market	December import volumes (mn bpd)	Change vs November (%)
Russia	1.48	-16.9
Iraq	1.13	28.7
Saudi Arabia	0.65	4.4
UAE	0.53	22.1

TOP SUPPLIERS' SHARE IN INDIA'S OIL IMPORTS

SHARE IN DECEMBER (%)
24 Iraq 13.8 Saudi Arabia 11.2 UAE 31.5 Russia 19.5 Other

SHARE IN NOVEMBER (%)
18.7 Iraq 13.3 Saudi Arabia 9.2 UAE 38 Russia 20.8 Other

Source: Kpler

New RBI Rules on ARCs

Context

- The Reserve Bank of India (RBI) has introduced new rules to make the process of settling borrower dues with Asset Reconstruction Companies (ARCs) more structured and transparent.

What are Asset Reconstruction Companies (ARCs)?

- ARCs are institutions that buy bad loans (Non-Performing Assets or NPAs) from banks. Their job is to recover these debts or manage the assets tied to them.
- They work under the **SARFAESI Act, 2002** and are regulated by the RBI.

- **Eligibility**: Must have ₹300 crore as minimum net owned funds (NOF) and maintain a **Capital Adequacy Ratio (CAR)** of 15% (a measure of financial stability).
- **Funding**: Raise money from Qualified Buyers like banks, insurance firms and mutual funds—**not public deposits**.
- **Role**: Clean up banks' balance sheets by resolving bad loans, allowing banks to focus on fresh lending.

RBI's New Rules for Settling Borrower Dues

- For loans **over ₹1 crore**:
- An **Independent Advisory Committee (IAC)** of experts (legal, financial, or technical) must evaluate the borrower's financial health and recovery prospects.
- The ARC's **Board of Directors** (including two independent directors) reviews the IAC's recommendations and documents its final decision.
- For loans **up to ₹1 crore**:
- ARCs can settle based on their Board-approved policy.
- **Conflict of Interest Rule**: Employees involved in acquiring the loan cannot approve its settlement.

The Bigger Picture

- ARCs play a critical role in the financial system by resolving bad debts. The RBI's rules aim to balance **efficiency** (quick settlements) with **fairness** (transparent processes). For banks, this means healthier balance sheets. For borrowers, it ensures settlements are based on objective assessments, not arbitrary decisions.

3.6   SNIPPETS

Topics	Details
Dozer Push Mining Method	• The Central Institute of Mining and Fuel Research (CIMFR) has conducted the first trial blast for the Dozer Push Mining Method in India. • The Dozer Push Mining method is **an automated, unmanned machine that optimizes the mining proces**s by limiting vibration and flyrock. • It offers a cost-effective alternative to traditional methods like truck-shovel or shovel-dumper. • It improves efficiency by allowing faster coal recovery, reduces delays due to weather conditions and increases productivity by maximizing dragline machine use. • The **mining sector in India contributes around 2.2-2.5% to GDP** and 10-11% to the total industrial sector GDP.
Badge Engineering	• Toyota Kirloskar Motor's "badge engineering" sales strategy led to a 40% increase in unit sales in India. • Badge engineering is a practice in the automobile industry where **different car manufacturers share a platform or vehicle without designing or engineering a new model from scratch.** • This process allows two cars with different brands to share the same platform, engine, or parts, but with modifications to match the brand's identity.
Centralised Pension Payments System (CPPS)	• The Employees' Provident Fund Organisation has successfully implemented the Centralized Pension Payments System to enhance pension accessibility and streamline the process. • It is a centralized pension disbursement system **implemented by the Employees' Provident Fund Organisation (EPFO).** • It **allows pensioners to access their pension payments from any bank branch** across the country, **eliminating the need for physical verification** or transfer of Pension Payment Orders (PPOs) when relocating or changing banks.

	• It **improves pension accessibility, reduces administrative burden and** promotes financial inclusion by enabling pensioners to access their pension funds through a wider network of banks.
Cannabis Farming	• Himachal Pradesh has launched a pilot project for cannabis farming to explore its medicinal and industrial potential. • Cannabis is a plant with three main types: *Cannabis sativa*, *Cannabis indica* and *Cannabis ruderalis*. It is used for **medicinal and Industrial purposes**. • It grows naturally in regions like the Indo-Gangetic plains and the Deccan region. In local languages, it is called *Ganja*, *Bhang*, or *Charas*. • Cannabis cultivation is controlled by the **Narcotic Drugs and Psychotropic Substances (NDPS) Act, 1985**. • **Uttarakhand** was the 1st state to allow commercial hemp cultivation in 2018.
Bowstring Arch Bridge	• The Chief Minister of Maharashtra inaugurated the bow-string arch bridge**.** • It connects Mumbai's Coastal Road to the Bandra-Worli Sea Link (BWSL). • It uses high-tension chords, which reduce the need for multiple pillars. This makes it ideal for areas with strong waves and minimizes environmental impact.
Enhanced Certificate Of Origin (ECOO) 2.0 System	• The Directorate General of Foreign Trade (DGFT) has launched the enhanced Certificate of Origin (eCoO) 2.0 System. • The **Directorate General of Foreign Trade (DGFT) launched the eCoO 2.0 System to simplify export certification processes,** boost trade efficiency and improve the Ease of Doing Business. • Exporters can authorize multiple users under a single Importer Exporter Code (IEC). • Offers flexibility by allowing exporters to use Aadhaar-based e-signatures alongside digital tokens. • Facilitates issuance for goods not of Indian origin intended for re-export, trans-shipment, or merchanting trade.
When Listed Platform	• The Securities and Exchange Board of India (SEBI) to introduce a "when-listed" platform. • The **"when-listed" platform is a new initiative by the Securities and Exchange Board of India (SEBI)** aimed at reducing grey market activity. • It allows trading of shares between the allotment of shares after an Initial Public Offering (IPO) and their official listing on stock exchanges. • The platform provides a regulated environment for trading unlisted shares during this interim period, ensuring transparency and reducing risks associated with unofficial trading.

3.7 ADDITIONAL TOPICS FOR READING FROM IASGYAN WEBSITE

Topic Name	Uploaded Date
Gold Loan NPAs	2nd January, 2025
How Urea has been an Investment Success Story	11th January, 2025
How India can become the World's Leading Startup Ecosystem	18th January, 2025
China's Moves Must Recast India's Critical Minerals Push	24th January, 2025
Is Poverty Being Underestimated In India?	28th January, 2025
Bureau Of Energy Efficiency Releases Offset Methodologies	30th January, 2025
How Can The Budget Arrest Growth Decline?	31st January, 2025

4. DEFENSE & SECURITY

4.1   SHORT ARTICLES

Ministry of Defence declares 2025 as 'Year Of Reforms'

Context

- The Ministry of Defence declares 2025 as the 'Year of Reforms'. It will lay the foundation for unprecedented advancements in defense preparedness, ensuring India's security & sovereignty amidst the challenges of the 21st century.

Identified areas for targeted interventions

- **Integrated Theater Commands (ITC):** Strengthen Jointness & Integration initiatives to facilitate ITC establishment.
  - ITCs are **tri-service commands comprising Army, Navy and Air Force** units that jointly address security challenges in designated geographic areas.
- **Emerging Technologies and New Domains**: To prepare for future warfare, focus on cyber and space domains, **AI/ML, Hypersonics, etc**.
- **Technology transfer and knowledge sharing**: Will be facilitated through business facilitation and PPPs.
- **Cooperation**: Breaking down forces, promoting civil-military coordination and developing joint operational capabilities through interagency cooperation and training.
- **Defense Exports and R&D**: India's position as a trusted exporter of defense products supports R&D and partnerships.

Defense modernization initiatives

- **Encouraging the participation of private individuals and SMEs**
- Through the **Innovations for Defense Excellence (iDEX)** program and **self-sustaining initiatives through the Joint Actions Portal (SRIJAN)** to facilitate indigenization.

Liberalized FDI Policy

- The **defense FDI limit increased to 74% in 2020** through the automatic route for companies seeking new defense industry licenses and **up to 100% through the government route for those likely to gain access to advanced technologies.**

Armed Forces Tribunal (AFT)

Context

- The Supreme Court on Monday suggested constituting Benches of the Armed Forces Tribunal (AFT) in Jammu and Kashmir and Himachal Pradesh to deal with the growing pendency in defence-related cases from these two areas.

About the Armed Forces Tribunal (AFT):

- The AFT is a military court in India established under the **Armed Forces Act, 2007.**
- It functions under the **Ministry of Defense (MoD).**
- It is responsible for resolving military disputes, including service matters and appeals against decisions of courts-martial.

Adjudication of Disputes

- Resolves disputes and complaints related to commission, appointment, enlistment and service conditions under the **Army Act (1950), Navy Act (1957) and Air Force Act (1950).**

Appeals from Courts-Martial

- Hears appeals arising from orders, findings, or judgments of courts-martial under the mentioned acts.

Dismissal of Appeals

- The tribunal may dismiss an appeal if it finds the court-martial's findings justified.

Matters Connected or Incidental

- Deals with matters related or incidental to the issues arising from the military acts and the appeals.
- Thus, the tribunal has **original jurisdiction in service matters and appellate jurisdiction** in

court-martial matters. Any appeal by a person against a decision made by a tribunal can **only be heard in the Supreme Court.**

- **Benches**: Apart from the main bench in **New Delhi**, AFT has regional benches in **Chandigarh, Lucknow, Kolkata, Guwahati, Chennai, Kochi, Mumbai, Jabalpur, Srinagar and Jaipur.**

Composition:

- Each court consists of a **judicial and an administrative member**.
- **Judicial Members are retired High Court Judges** and Administrative Members are retired members of the Armed Forces with

the rank of Major General/equivalent or above for a period of three years or more.

- The **Advocate General (JAG)** who has been appointed for a period of at least one year is also entitled to be appointed as an administrative member.

Function

- The Tribunal will act in accordance with the **Armed Forces Tribunal (Rules of Procedure) 2008. All proceedings at the tribunal will be in English.** The Tribunal will normally follow the procedure used in the High Courts of India.

National Security Act

About the National Security Act:

Historical Background

Colonial Era Laws

- **Bengal Ordinance III (1818):** Allowed arrests for criminal intent.
- **Rowlatt Acts (1919):** Authorized imprisonment without trial.

Post-Independence

- **Preventive Detention Act (1950):** Expired in 1969.
- **Maintenance of Internal Security Act (MISA, 1971):** Repealed in 1977 by the Janata Party.

NSA Enactment

- Promulgated on 23 September 1980 by Indira Gandhi, aligning it with MISA.

Constitutional Basis

Article 22(3)

- Allows preventive detention for reasons of **national security and public order**.

Article 22(4)

- Limits detention to more than three months only with the approval of an advisory board of **High Court judges.**

44th Amendment Act (1978)

- Reduced detention without **Advisory Board approval** to two months, but this provision is not yet enforced.

Key Provisions of the NSA

Detention Period

- Can be extended up to **12 months with new evidence**.

No Formal Charges

- Charges are not necessary during the detention period.

Permissible Grounds

- Prevent disturbances to public order.
- Ensure essential supplies and services to the community.

Grounds for Detention

Section 3 Provisions

Detention permissible for preventing harm to:

- National defense
- Relations with foreign countries
- National security
- Public order
- Basic supplies and services

Without Charge Period

- Detainees can be held for 10 days without being informed of charges.

Legal Process

- Appeals can be made to an advisory board, but legal representation is not allowed during the trial.

Criticism of the NSA

Abuse of Power

- Authorities are accused of using the NSA as an extrajudicial tool.

Human Rights Concerns

- Detainees are often held without formal charges, raising issues of human rights violations.

Sonobouys

Context

- In a significant development, India and the U.S. announced cooperation on co-production of U.S. sonobuoys for Undersea Domain Awareness (UDA) for the Indian Navy.

About Sonobuoys

- Sonobuoys are **air-launched, replaceable electromechanical sensors** that are effective and affordable for detecting, classifying and engaging enemy submarines and ships.
- They transmit underwater sounds to remote **anti-submarine warfare (ASW) processors. HAASW (High-Altitude Anti-Submarine Warfare)** sonobuoys detect submarines from altitudes of up to 30,000 feet.
- **Used by airborne ASW fighters to track submarines**. Help the navy deliver precision strikes with air-launched torpedoes. Sonobuoys can be deployed on **aircraft, submarines or ships**.
- They are key to protecting aircraft carrier strike groups from submarine attacks and enhancing maritime security.

Importance

- After awareness of the maritime domain, the **UDA became a key area of concern for India and among the Quad.**
- With **China's growing presence** in the region, India has advanced the purchase of US sonobuoys with technology transfer to enhance underwater threat detection capabilities.

- It will be **essential to ensure that this part of the region** remains safe for trade, commerce and prosperity.

Bhargavastra

Context

- India has tested its first indigenous micro-missile system designed to take on the threat of swarm drones.

About Bhargavastra

- Bhargavastra is **India's first micro-missile system** developed in India to counter drone swarm threats.
- **Developed by:** Economic Explosives Ltd.

Features:

- It is an **anti-drone system capable of detecting small aerial vehicles** at a distance of more than 6 km and destroying them using guided **micromunitions**.
- The system can launch more than 64 micro-missiles simultaneously.
- It is **capable of rapid deployment** on a mobile platform and can engage targets at distances exceeding 2.5 km.
- **Designed for operations in various terrains**, including high-mountain areas, the system meets specific military operational requirements.

Scramjet and Hypersonic Weapons Race

Context

- The **Defence Research and Development Organisation (DRDO)** recently demonstrated the scramjet combustor ground test for 120 seconds for the first time in India.
- The **Ministry of Defence (MoD)** has called it a crucial milestone in developing next-generation hypersonic missiles.

About Scramjet Technology Development:

Developed by

- Laboratory of Defense Research and Development (DRDL), Hyderabad.

Focus

- The technology of supersonic combustion with long life (scramjet).

Capability

- Allows hypersonic speeds (higher than Mach 5).

Advantage

- Overcomes traditional air defense systems, making it more difficult to intercept.

Global Context

- Nations like the USA, Russia, China and India are leading in hypersonic weapons development.

Significance of Hypersonic Missiles

- Provides fast, powerful strikes while evading current air defense system.

Key Achievements

Endothermic Scramjet Fuel

- Developed indigenously by DRDL in collaboration with industrial partners.
- Offers dual benefits: significant cooling improvement and easy ignition.

Thermal Barrier Coating (TBC)

- Developed using advanced ceramic technology to endure extreme temperatures beyond melting points.
- Jointly developed by DRDL and DST devices.

Scramjet engine:

- **Improvements over RamJet:** Operates efficiently at hypersonic speeds and enables supersonic combustion.

Function:

- **Air-breathing motor:** operates without moving parts and manipulates supersonic air currents at 1.5 km/s.
- **Flame Stabilization:** Uses innovative techniques to maintain a continuous flame in extreme airflow conditions, likened to "keeping a candle lit in a hurricane".
- **Advanced computational tools:** DRDO used Computational Fluid Dynamics (CFD) simulations to predict engine performance and improve its design.

Central Suspect Registry (CSR)

Context

- In almost three months since the online 'suspect registry' launch, the Centre has declined six lakh fraudulent transactions and saved Rs 1,800 crore.

About Central Suspect Registry:

- It is an initiative to strengthen **fraud risk management** by creating a register of identifiers. Based on the **National Cybercrime Reporting Portal (NCRP),** contains data on 1.4 million cybercriminals involved in financial fraud and various cybercrimes.
- It was developed by **India's Cyber Crime Coordination Center (I4C)** and can be accessed by states and UTs as well as central investigative and intelligence agencies.
- The registry was developed in **collaboration with banks/financial institutions** and was used as a central database with consolidated data on cybercrime suspects.

What is the Indian Cyber Crime Coordination Center (I4C)?

Establishment

- Set up under the Ministry of Home Affairs (MHA) to address cybercrime comprehensively.

Objective

- To address cybercrime issues for citizens and enhance coordination between LEAs and stakeholders.

Location

- New Delhi

Functions

- Acts as a nodal point in the fight against cybercrime.
- Identifies research issues for LEAs and initiates R&D activities for new technologies and forensic tools.
- Collaborates with academia/research institutes in India and abroad.
- Prevents the misuse of cyberspace by extremist and terrorist groups.

How is cyber security an important aspect of national security?

- **Infrastructure Protection**: To protect critical national infrastructure such as power grids, water systems and transportation networks from digital attacks**. e.g. the 2019 Kudankulam nuclear power plant malware attack.**
- **Economic Security**: Protects businesses and financial institutions from cyber threats and helps maintain economic stability. **e.g. the 2017 Wanna Cry Ransomware attack.**
- **National Defense**: To protect military communications, weapons systems and other strategic information. **e.g. the Stuxnet worm attack on Iran's nuclear facilities.**

4.2   SNIPPETS

Topics	Details
INS Sarvekshak	• India and Mauritius held a joint coordination meeting onboard INS Sarvekshak to commence the Joint Hydrographic Survey aimed at enhancing navigational safety in Mauritian waters. **About INS Sarvekshak:** • It is a **hydrographic survey ship of the Indian Navy**. It is based at the **Southern Naval Command in Kochi**. • **She is equipped with state-of-the-art survey** equipment such as **Deep-Sea Multi-Beam Echo Sounder**, Side Scan Sonars and a fully automated digital measurement and processing system. • Additionally, the ship carries an integral Chetak helicopter, which would be heavily

	deployed during the survey.
	• In the past, INS Sarvekshak has also conducted foreign cooperation surveys in Sri Lanka, Mauritius, Seychelles, Tanzania and Kenya.
	What is hydrography?
	• Hydrography is a branch of **applied science** concerned with measuring and describing the physical properties of **oceans**, **seas**, **coastal areas**, **lakes and rivers**, **as well as predicting their change over time.**
Bayraktar Akinci	• Turkey has made a big leap into the field of aerial drone warfare. Turkey has successfully tested the firing of supersonic missile UAV-122 from the Bayraktar Akinci drone.
	About Bayraktar Akinci
	• It is a **long-endurance unmanned combat aircraft (UCAV)** developed by Turkish drone manufacturer Baykar.
	• It was designed to perform a variety of fighter support operations. It is capable of conducting air-to-ground and air-to-air attack missions.
	Features
	Flight Range
	• 25 hours, 7,500 km
	Communication Systems
	• Dual satellite communications systems
	Radar & Systems
	• Air-to-air radar, collision avoidance radar, synthetic aperture radar, electronic support systems
	Flight Control
	• Triple-redundant flight control system
	AI-Powered Avionics
	• Dual AI-powered system for signal processing, sensor fusion and situational awareness
	Weapon Payloads
	• Laser-guided munitions, missiles, long-range remote weapons
	Unique Capability
	• First drone capable of launching air-launched cruise missile (ALCM)
Nilgiri, Surat and Vaghsheer	15 Jan 25 is set to become a landmark day in India's history as the Indian Navy prepares to commission three frontline combatants.
	Nilgiri (Project 17A Frigate)
	Details
	Class
	• Flagship of Project 17A, an advancement over Shivalik-class frigates
	Stealth Features
	• Reduced radar signatures through state-of-the-art technology
	Design & Development
	• Designed by Indian Navy's Warship Design Bureau
	Capabilities
	• Equipped with advanced sensors and weapon packages developed in India and through global collaboration

	Helicopter Operations
	• Operates Chetak, ALH, Sea King, MH-60R helicopters with modern aviation facilities
	Surat (Project 15B Destroyer)
	Details
	Class
	• Successor to Project 15A (Calcutta-class destroyer)
	Design & Development
	• Designed by Indian Navy's Warship Design Bureau
	Capabilities
	• Advanced sensors and weapon packages developed in India and through global collaboration
	Helicopter Operations
	• Operates Chetak, ALH, Sea King, MH-60R helicopters with modern aviation facilities
	Vaghsheer (Scorpene-class Submarine)
	Details
	Class
	• Sixth Scorpene-class submarine under Project 75
	Capabilities
	• Anti-surface warfare, anti-submarine warfare, intelligence gathering, surveillance, special operations
	Armament
	• Wire torpedoes, anti-ship missiles, advanced sonar systems
	Modular Design
	• Allows future upgrades, including Air Independent Propulsion (AIP) technology
Abdali Missile	• Amid rising tensions in India-Bangladesh relations, Dhaka is reportedly mulling to purchase the Abdali Short Range Ballistic Missiles (SRBMs).
	• The Abdali (Hatf 2) is a **short-range, road-mobile**, **solid-propellant ballistic missile**. It is developed by the **Pakistan Space Research Commission (SUPARCO),** the Abdali missile system is designed for quick response scenarios on the battlefield.
HAL ALH	• Recently, an indigenous Advanced Light Helicopter (ALH) Mark-III of the Indian Coast Guard crashed at the Coast Guard Air Enclave in Porbandar, Gujarat.
	Design Overview
	• Designed to replace older helicopter models (Chetak, Cheetah); multi-role focus; development began in 1984.
	Key Features
	• Shakti engines developed with international collaboration; increasing indigenisation over time.
	Crash Investigations
	• Ongoing investigations into flying controls and transmission systems.
	Safety Audits & Groundings
	• Indian Coast Guard grounded ~300 ALH helicopters for checks.
	• Issues with booster control rods prompted replacements.

	Historical Crashes • Includes crashes of ALH Rudra (attack version) due to technical snags; loss of lives noted. **Military Concerns** • **Veterans call for independent inquiries**; concerns about safety record and accountability. **Future Prospects** • HAL focuses on upgrades, R&D for improved variants; **Directorate General of Civil Aviation** (**DGCA**) certification obtained; safety concerns persist.
Indo-Tibetan Border Police	• The Indo-Tibetan Border Police has moved at least 33 border outposts (BOPs) closer to the India-China border as part of its forwardisation plan. **Background** • Established in 1962 after the **Sino-Indian War of 1962.** • Created for deployment along the **India-China border**. **Legal Foundation** • Initially established under the CRPF Act. • The **ITBPF Act was passed in 1992** and its rules were framed in **1994**. **Full Fledged Status** • In 2004, declared a full-fledged central armed police force under the **Ministry of Home Affairs.** **Motto** • "**Shaurya-Dridhata-Karma Nishtha**" (Courage - Determination - Devotion to Duty) **Guarded Area** • The ITBP guards the 3,488 km long India-China border through 197 Border Out Posts (BOPs) located at altitudes ranging from 9,000 feet to 18,750 feet. **Specialization** • Specialized mountain force with most officers and men being professionally trained mountaineers and skiers. **Head of the Force:** Director General, **Nodal Ministry:** Ministry of Home Affairs **Headquarters:** New Delhi
Combat Air Teaming System (CATS)	• Ahead of the Aero India 2025 which is scheduled to be held next month, Hindustan Aeronautics Limited (HAL) has achieved a significant milestone by conducting the engine ground run of a full-scale demonstrator, Combat Air Teaming System (CATS). • HAL's Combat Air Teaming System (CATS) is a cutting-edge defense technology integrating both manned and unmanned aerial vehicles (UAVs). Combat Air Teaming System. • The system improves tracking, precision strikes and target acquisition while reducing human risk in combat. • It primarily combines a mothership (probably HAL Tejas) and an autonomous UAV like the CATS Warrior for mission versatility.
NAG MK 2	• Field Evaluation Trials of indigenously-developed Nag Mk 2, the third-generation Anti-Tank Fire-and-Forget Guided Missile, were successfully conducted recently at Pokhran Field Range in the presence of senior officers of the Indian Army.

	• It is an indigenously developed anti-tank guided missile of the third generation. The missile was developed by the **Defence Research and Development Organisation (DRDO)** under India's Integrated Guided Missile Development Programme (IGMDP). **Features** • It is a **third-generation Fire-and-Forget technology** that enables precise targeting with minimal operator intervention after launch. • **Versatile Performance**: Capable of neutralizing modern armored vehicles equipped with Explosive Reactive Armor (ERA). • **Platform Compatibility**: Successfully integrated with NAMICA, increasing battlefield mobility and deployment flexibility. • **During three field tests, the missile systems** accurately destroyed all targets - maximum and minimum range, thereby confirming their range.
Neptune missile	• During a joint operation of the Security Service of Ukraine (SBU) and the Ukrainian Navy, an ammunition storage depot in the Rostov region, Russia, was hit using the Neptune missile recently. • The R-360 Neptun is a **subsonic cruise missile** developed in **Ukraine**, originally designed as an anti-ship missile and later modified for land attack. • The design of this missile is based on the **Russian Kh-35 guided missile**, which bears the name AS-20 Kayak of the **North Atlantic Alliance (NATO).** • The system entered service with the **Ukrainian Navy in March 2021.** **Features:** • **The missile weighs 870 kg and is 5.05 meters long.** The missile travels at speeds of up to 900 km/h and can fly at heights of 10 to 300 meters, descending to just three meters on final approach to avoid enemy air defenses. • It has a **maximum range of 400 km and a combat weight of 350 kilograms** (150 kg in the anti-ship version). • A **satellite positioning system** was installed to guide the missile during the marching phase of the flight. • In the final part of the flight, the missile is guided by an **infrared guidance system.**
La Peraouse	• The indigenously designed and built guided missile destroyer INS Mumbai is participating in the **fourth edition** of the Multinational Exercise *LA PEROUSE*. • Exercise La Perouse is a multilateral naval drill hosted by France, involving India, the USA, UK, Australia, Canada, Indonesia, Malaysia, Singapore and France, aimed at enhancing maritime security, interoperability and crisis management. • Held in key locations like the Straits of Malacca, it focuses on issues like illicit trade, environmental threats and strengthens cooperation in maritime surveillance and air operations. • The exercise aligns with the commitment to a rules-based order in the Indo-Pacific region.
Trajan gun	• A major defence system, developed jointly by India and France, has bagged an export order from a third nation, showcasing the potential of co-development and Indian low-cost manufacturing. • The Trajan is a 155mm towed artillery gun system jointly developed by India and France, manufactured by Larsen & Toubro (L&T) and KNDS France in India.

	• It features a modular design, automated loading system and a range of over 40 kilometers, with capabilities for diverse terrains. • The system underwent rigorous testing by the Indian Army, meeting all quality standards.
Eurodrone	• India has joined the Medium Altitude Long Endurance Remotely Piloted Aircraft System (MALE RPAS) or Eurodrone program, managed by the Bonn-based Organisation for Joint Armament Cooperation (OCCAR) and led by Taufkirchen-based aerospace company Airbus Defence and Space. • The program, initiated in 2022, is focused on developing a dual-motor UAV designed for intelligence, surveillance, reconnaissance and maritime applications. • With a 2.3-tonne payload and up to 40 hours of endurance, it aims for safe flight in non-segregated airspace. • Scheduled for service entry in 2030, it supports Europe's defense strategy, reducing reliance on American and Israeli platforms. • Participating countries include Germany, France, Italy and Spain.
Typhon Missile System	• The U.S. military has moved its Typhon launchers which can fire multipurpose missiles up to thousands of kilometers - from Laoag airfield in the Philippines to another location on the island of Luzon. • Typhon (Mid-Range Capability - MRC) is a surface-to-surface missile system developed by Lockheed Martin, incorporating SM-6 (surface-to-air, 500 km range) and Tomahawk (cruise missile, 2,500 km range). • It provides the US military with enhanced long-range strike capabilities. • The system includes 4 launchers, command posts and support vehicles mounted on trailers for mobility.
SANJAY Surveillance System	• Raksha Mantri flagged off 'SANJAY - The Battlefield Surveillance System (BSS)' from South Block, New Delhi. • The SANJAY Surveillance System is an automated battlefield supervision solution developed jointly by the Indian Army and Bharat Electronics Limited (BEL). • It integrates ground and air sensors for secure data processing, enhancing intelligence, reconnaissance and surveillance capabilities. • Deployed across Indian Army brigades and divisions by October 2025. • It significantly improves battlefield transparency and command decision-making.

4.3 ADDITIONAL TOPICS FOR READING FROM IASGYAN WEBSITE

Topics	Uploaded Date
Global Cybersecurity Outlook 2025	16TH January 2025
Bharat Ranbhoomi darshan	19TH January 2025
National Advanced Surface-to-Air Missile Systems (NASAMS)	23RD January 2025
It's Russian roulette in the skies	24TH January 2025
National war memorial	28TH January 2025

5. ENVIRONMENT & ECOLOGY

5.1   US WITHDRAWAL FROM PARIS AGREEMENT

Context

- US President Donald Trump decided to withdraw the United States from the Paris Agreement again — having first done so in 2017.

Details

- **Background**: Trump's predecessor (and successor) Joe Biden took the US back into the Paris Agreement in 2021. The **US also did not become a party to the 1997 Kyoto Protocol** by refusing to ratify it after acceding to it.
- **Reasons for Trump's policy:** He believed that international climate change regulations were unfair to the US because similar restrictions were not imposed on China because it was classified as a developing country.

Consequences

- **Emissions targets:** The US has set a target of reducing its emissions by 50-52% by 2030 (from 2005 levels) and by 62-66% by 2035.
  - As of now, the US is not on track to meet its 2030 emissions target – and four years of a Trump administration will ensure it will not be met.
- **The second largest producer of emissions:** The US is the second largest producer of greenhouse gases in the world.
  - The goals of the Paris Agreement cannot be achieved without its full participation in joint efforts to reduce emissions.
- **Increasing fossil fuel production**: Trump was explicit this time about drilling new oil wells and gas fields, which could increase fossil fuel production over the next four years.
- **Climate finance funding**: This will further squeeze the funding available for climate action for developing countries.
  - The US has the greatest influence in mobilizing private and international finance and Trump's policies could see this source dry up as well.
- **Impact on other countries**: Experts fear that other countries, especially China, could use this as an excuse to relax their efforts to reduce carbon emissions.

About Paris Agreement

Aspect	Details
Nature	A legally binding international treaty on climate change
Adoption Year	2015
Adopted at	COP21 to the United Nations Framework Convention on Climate Change (UNFCCC)
Objective	Limit global warming to below 2°C above pre-industrial levels, with efforts to limit it to 1.5°C
Key Feature	Emphasizes nationally determined contributions (NDCs)
NDC Review Cycle	Countries must review and update their NDCs every five years to enhance efforts and increase ambition

Withdrawal Process (Article 28)	A Party can withdraw by giving written notification any time after three years from the Agreement's entry into force for that Party

Way forward

- The world is now **2.3 degrees Fahrenheit (1.3 degrees Celsius) above mid-1800s temperatures**. Global temperatures surpassed the 2.7-degree Fahrenheit warming mark last year, making it the warmest year on record.
- According to the **Global Carbon Project, the US is responsible for nearly 22% of the carbon dioxide** released into the atmosphere since 1950. The US has the largest share of historical emissions and therefore the largest cleanup responsibility.
- The **fires in Los Angeles are the latest reminder that Americans**, like everyone else, are affected by worsening climate change. America could continue to focus on the growth of clean energy and technology sectors to reduce energy costs.

5.2 SHORT ARTICLES

Nitrogen Use Efficiency (NUE)

Context

- Researchers have demonstrated that reducing nitric oxide (NO) levels in plants can significantly improve nitrogen uptake and Nitrogen Use Efficiency (NUE) in rice and Arabidopsis.

About Nitrogen Use Efficiency:

- It is a term used to describe the efficiency of a facility in using **applied or fixed nitrogen for biomass production.**
- It is further defined as **the ratio between crop yield and the amount of nitrogen absorbed** from the soil by roots or from the atmosphere by fixation by bacteria.
- NUE is an important trait in crop breeding programs that aim to improve crop yield while reducing input costs **such as fertilizers while keeping nitrogen out of the environment.**
- Problems with traditional methods It is used to increase NUE, which often involves the application of inorganic nitrogen fertilizers.
  - **These procedures, while effective, have significant drawbacks.**
- **They can lead to increased operating costs for farmers** and contribute to environmental problems such as nitrogen oxide (NOx) emissions from **fertilizer production**.

Excessive use of these fertilizers also contributes to global greenhouse gas emissions.

Blue Flag

Context

- Kerala's famed Kappad Beach in Kozhikode and Chal Beach in Kannur have been bestowed with the coveted Blue Flag certification by the **Denmark-based Foundation for Environmental Education (FEE)** for meeting stringent environmental and safety standards.

About Blue Flag Certification

- It is a globally recognized eco-label awarded by the **Foundation for Environmental Education in Denmark (FEE).**
- The Blue Flag program was launched in **France in 1985 and areas outside Europe in 2001.**
- It is one of the world's most recognized voluntary awards for sustainable tourist beaches, marinas and boats.
- It promotes sustainable development in freshwater and marine areas through four main criteria: **water quality, environmental management, environmental education and safety.**

- Blue Flag's mission is to promote sustainability in tourism through environmental education, environmental protection and other sustainable development practices.
- Other Indian beaches on the blue list are **Shivrajpur-Gujarat, Ghoghla-Diu, Kasarkod and Padubidri-Karnataka, Kappad-Kerala, Rushikonda-Andhra Pradesh, Golden-Odisha, Radhanagar-Andaman and Nicobar, Kovalam in Tamil Nadu and Eden Beach in Puducherry. Minicoy Thundi Beach, Lakshadweep, Kadmat Beach, Lakshadweep.**

Global Plastic Action Partnership (GPAP)

Context

- The Global Plastic Action Partnership (GPAP), an initiative launched by the World Economic Forum, has recently reached a significant milestone by expanding its network to include 25 countries.

About Global Plastic Action Partnership (GPAP)

- **Launched**: At the Sustainable Development Summit 2018 during the impact of WEF 2018.
- **Purpose**: Accelerates the circular economy and supports "Friends of Ocean" events.
- **Current Members**: 25, including Maharashtra (India).
- **Objectives**:
  o Strengthen global response to plastic pollution by uniting governments, businesses and civil society.
  o Promote a circular plastic economy to reduce emissions and protect ecosystems.
- **Key Activities**:
  o Assisting countries in creating national action plans for plastic pollution control.
  o Mobilizing investments in waste management to enhance sustainability.

Asian Waterbird Census-2025

Context

- As per the Asian Waterbird Census, "A record number of 39,725 birds belonging to 106 species have been sighted in the Coringa and adjoining wetlands.

Key highlights of the Census:

- The **bird counting campaign was organized by a team of 35 participants**, divided into five groups.
- Teams created a complex number of birds in places including the Asan Lake, the Yamuna and Asan rivers, the Shivalik mountain range and nearby protected forests.
- **Methodology:** More than 150 volunteers and forest staff explored 23 seats after a predetermined protocol, which calculated water birds and documented other bird species. Observers also recorded the behavior and activities of birds around and their surroundings.
- **Participation**: The Asian census for waterfowl has also occurred on 23 wetlands via Uttarakhand. The initiative was supported by the **Uttarakhand forests and included various NGOs (NGOs).**

About the Asian Waterbird Census:

Program Name
- Civil science initiative for wetland and waterbird conservation.

Objective
- Promotes protection and management of wetlands and waterbirds worldwide.

Part of
- **Global International Waterbird Census (IWC).**

Established
- **1987 in the Indian subcontinent.**

Expansion
- Covers the East Asian-Australasian Flyway and parts of the Central Asian Flyway, from Afghanistan to Japan, Southeast Asia and Australasia.

Occurrence
- Conducted annually.

India's Implementation

- Conducted in early January each year by the **Bombay Natural History Society (BNHS) and** **Wildlife Institute of India (WII).**

National Parks/Sanctuaries/Wetlands in News

Name	Details
Sanjay Gandhi National Park	According to information received from the Disaster Management Unit of the Brihanmumbai Municipal Corporation (BMC), the fire was reported in the National Park. **Name** • Formerly Borivali National Park **Location** • Borivali, northern Mumbai; partly in Thane District and Mumbai Suburban District, Maharashtra **Key Features** • Dense forests, vast birdlife, butterflies, a small population of tigers, Kanheri Caves, two artificial lakes (Tulsi Lake and Vihar Lake), a deer park, a lion safari and the Samadhi of Mahatma Gandhi **Historical Importance** • Kanheri Caves, sculpted by Buddhist monks between the 9th and 1st centuries BCE, served as a Buddhist learning center and pilgrimage site **Flora** • Kadamba, Teak, Karanj, Shisham, Acacia species, Ziziphus, Euphorbias **Fauna** • Mongoose, Four-horned antelope, Sambar, Atlas Moth, Wild boar, Langur, Monkey, Magar, Panthers; 251 species of birds and a large variety of butterflies.
Shendurney wildlife sanctuary	• A four-day faunal survey conducted at the Shendurney Wildlife Sanctuary has added significant findings to the sanctuary's biodiversity records. • It is located in the southern part of the **Western Ghats in the Kollam district of Kerala.** • It covers an area of approximately 172 km2. and forms part of the Agasthyamala Biosphere Reserve. • Most of the Sanctuary area is hilly and riddled with ravines. • **Drainage**: The main rivers are **Shendurney, Kazhuthuruthy and Kulathupuzha which merge to form the Kallada River**. • **Flora:** The vegetation consists mainly of tropical evergreen forests, semi-permanent forests and moist deciduous forests. Species of tree, **Gluta travancorica,** locally **known as 'Chenkurunji'**, which is endemic to the area and abundant in the sanctuary. • **Fauna:** Some of the notable species include the Indian hornbill, Malabar hornbill, Grey-headed bulbul, White-bellied warbler and various species of woodpeckers, flycatchers and raptors.

Umred-Pauni-Karhandla Wildlife Sanctuary	The Bombay High Court criticized safari vehicles for obstructing a tigress and her cubs in Maharashtra's Umred-Pauni-Karhandla Sanctuary on New Year's Eve. **Location** • Spread over Pauni tehsil in Bhandara district and Umred, Kuhi and Bhivapur Taluka of Nagpur district, Maharashtra. **Establishment** • Established in 2013, covering an area of 189 sq. km. **Boundaries** • **Northeast**: Wainganga River and Gose Khurd Dam. **Connectivity** • Connected to Tadoba Andhari Tiger Reserve via forests along the Wainganga River. • Lies 80 km from Pench Tiger Reserve and 50 km southwest of Nagzira Wildlife Sanctuary. **Flora** • Forest comprises teak (60 percent), bamboo, tendu, mahua and other indigenous species. **Fauna** • **Mammals**: Tigers, Leopards, Sloths, Wild Dogs, Indian Gaurs, Sambar Deer and Spotted Deer. • **Birds**: Rich bird population with various endemic and migratory species. • **Reptiles**: Cobras, pythons and other reptiles contribute to biodiversity.
Desert National Park	The Great Indian Bustards were spotted at Desert National Park, near the towns of Jaisalmer and Barmer. **Location** • Near Jaisalmer, Rajasthan, in the Thar Desert. **Climate** • Extremely hot and dry with very low rainfall (<100 mm). **Vegetation** • Sparse vegetation: thorn forest, open grassland, thorn scrub, plantations and dunes. Vegetation mainly falls under the thorn forest type (Champion and Seth 1968). **Flora** • Dhok, ronj, salai and palm. • Khejri (Prosopis cineraria), a revered species protected by local communities, especially the 'Bishnois'. **Fauna** • Wildlife includes chinkara, desert fox, bengal fox, Indian wolf, desert cat, hare, etc. • Endangered Great Bustard found in decent numbers.
Hollongapar Gibbon Sanctuary	The Centre's wildlife panel has approved a proposal to carry out oil and gas exploration in the eco-sensitive zone of the Hollongapar Gibbon Wildlife Sanctuary in Assam's Jorhat district.

	Location
	• Jorhat district, Assam, India
	Significance
	• The only sanctuary in India named after a gibbon, due to its distinction of containing the densest gibbon populations in Assam.
	Altitude
	• Situated at an altitude of 100–120 m (330–390 ft), with topography gently sloping downward from southeast to northwest.
	River
	• The Bhogdoi River creates a waterlogged region along the sanctuary's border, dominated by semi-hydrophytic plants.
	Flora
	• **Upper canopy**: Dominated by Hollong trees
	• **Middle canopy**: Dominated by Nahar trees
	• **Lower canopy**: Comprises evergreen shrubs and herbs
	Fauna
	• **India's only gibbons: Hoolock gibbons**
	• Northeastern India's only nocturnal primate: Bengal slow loris
	• Indian elephants, tigers, leopards, jungle cats, wild boar, three types of civet, four types of squirrels, stump-tailed macaque and northern pig-tailed macaque.
Ranthambhore Tiger Reserve	The flagship river-link irrigation project, which will provide a lifeline to 23 districts in Rajasthan, envisages the submergence of 37 sq km in the Ranthambhore tiger reserve effectively cutting it into two sections.
	Location
	• Sawai Madhopur district, Rajasthan.
	Establishment
	• Established as Sawai Madhopur Game Sanctuary in 1955 by the Government of India
	National Park Status
	• Became a national park in 1980, part of the larger Ranthambore Tiger Reserve
	Geographical Features
	• Located at the junction of the Aravalli and Vindhya ranges; consists of rugged hills, plateaus, open grasslands, dense forests, lakes and rivers
	Notable Landmark
	• Ranthambore Fort (a UNESCO World Heritage Site)
	Flora
	• Dry deciduous forests, grasslands and scrub; dominant tree species include dhok (Anogeissus pendula), banyan, pipal and various species of acacia
Shikari devi WLS	**Fauna**
	• Home to Bengal tigers and a variety of other wildlife including leopards, sloth bears, striped hyenas, sambar deer, chital, nilgai, wild boar and Indian foxes.
	• The Government of India has designated areas around Shikari Devi Wildlife Sanctuary, located in the Mandi district, as eco-sensitive zones (ESZs) to reduce the impact of urbanization and developmental activities on the surrounding protected areas.

	• Shikari Devi Wildlife Sanctuary, located in Mandi district, Himachal Pradesh, spans 7,200 hectares and was declared a sanctuary in 1962. • Named after goddess Shikari Devi, it is a sacred site surrounded by diverse forest types and snow-clad mountains. • The sanctuary hosts rich biodiversity, including goral, Himalayan black bear, snow leopard, monal and Kashmiri flycatcher.
Chincholi Wildlife Sanctuary	• The Kalaburagi district administration and the Forest Department have begun persuading residents ensconced in Sheribikanahalli Tanda (hamlet) located deep inside the dry-land Chincholi Wildlife Sanctuary on the Karnataka-Telangana border. • Chincholi Wildlife Sanctuary, **located in Kalburgi district, North Karnataka, was declared a sanctuary in 2011.** • It is **South India's first terrestrial nature reserve**, also called the "Ooty of Telangana." • The sanctuary features the **Chandrampalli Dam, supports Lambani Tandas** tribal communities and hosts dry and moist deciduous forests with teak, acacia and medicinal herbs. • Its **diverse fauna includes Black Buck, Indian Wolf and over 35 bird species** like the Black Drongo and Flower-headed Parakeet.
Asan wetland	In a significant citizen science effort, a bird counting campaign at the Asan Wetland in the Dehradun district of Uttarakhand has yielded impressive results. **Location** • At the Asan River, Dehradun district, Uttarakhand **Protected Reserve Status** • Declared under Section 36A of the Nature Conservation Act, 1972 (2005) **Ramsar Site Status** • First Ramsar site in Uttarakhand. **Important Bird Area** • Listed by BNHS and BirdLife International. **Bird Watching** • Popular for native and migratory bird watching. **Strategic Location** • Part of the Central Asian Flyways (CAF). **Bird Species** • Critically Endangered: Bald Eagle, Baer's Plover • Endangered: Egyptian eagle, Steppe eagle, Black-bellied tern • Vulnerable: Marbled teal, Common kestrel, Spotted eagle
Dhanauri wetland	**Non-Bird Species** • 49 species of fish, including the endangered Mahseer Putitor • The principal bench of the National Green Tribunal questioned why the UP-forest department needed three months to notify the Dhanauri water body near Jewar airport as a wetland. **Location** • Greater Noida, Gautam Buddha Nagar District, Uttar Pradesh, near Okhla Bird Sanctuary and Surajpur Wetland

	Proximity to Yamuna River • Within 15 km of the Yamuna River. **Wetland Type** • Mostly bog. **Significant Species** • Vulnerable Sarus Crane (*Antigone antigone*). **Other Bird Species** • Teal, Mallard, Northern Plover, Greylag Goose, White-headed Goose, Wattle-necked Stork, Black-necked Stork, Painted Stork, Merganser **Classification** • Important Bird Area (IBA) by BirdLife International.
Nahargarh WLS	• The Forest Department has initiated plans to revise the Nahargarh Wildlife Sanctuary boundaries to resolve existing legal complications. • Nahargarh Wildlife Sanctuary, established in 1980, is located in Jaipur, Rajasthan and spans 50 square kilometers in the Aravalli Hills. • Named after the Nahargarh Fort, it forms part of the Ranthambore Tiger Reserve Corridor. • The sanctuary features dry deciduous forests with diverse flora and fauna, including leopards, hyenas, wild boars and migratory birds, supported by seasonal streams and water sources.
Surajpur wetland	• The Greater Noida authority has prepared a project to help protect and conserve the Surajpur wetland. • Surajpur Wetland, located near Surajpur village in Gautam Buddh Nagar, Uttar Pradesh, spans 308 hectares and serves as an urban wetland in the Yamuna River basin. • Designated as an Important Bird Area, it supports various breeding and migratory birds like the spot-billed duck and red-crested pochard. • The wetland faces threats from pollution due to the discharge of highly polluted wastewater.
Sharavathy Lion-Tailed Macaque Sanctuary	Recently, the State Board of Wildlife gave conditional approval to the environmentalists working to conserve green cover in the Western Ghats, for the Sharavathy Pumped Storage Project in the Sharavathy Lion-Tailed Macaque Sanctuary. **Location** • Sharavathi River Valley, Sagar taluk, Shivamogga District, Karnataka, in the Western Ghats. **Formation** • Created by merging Sharavathi Valley Wildlife Sanctuary, Aghanashini Lion-Tailed Macaque Conservation Reserve and adjacent reserve forests. **Boundaries** • Shares a south western boundary with **Mookambika Wildlife Sanctuary**. **Flora** • Rich in species such as **Dhoopa, Gulmavu, Surahonne, Mavu, Nandi, etc.**

	Fauna • Key habitat for endangered Lion-Tailed Macaque (Macaca silenus), endemic to the Western Ghats. Other mammals include tiger, leopard, wild dog, jackal, sloth bear, spotted deer, sambar, barking deer, mouse deer, wild pig, common langur, bonnet macaque, Malabar giant squirrel, etc.

Species in News

Name	Details
Stellaria	• After a plant species of the genus Stellaria (family Caryophyllaceae) was reported from Kerala earlier this year, researchers have identified another member of the same genus at the Kalimpong district in West Bengal. • It is a new species belonging to the genus Stellaria (family Caryophyllaceae). • It is an **annual herb growing to a height of 15 cm**. Known to occur only in the **Nelliyampathy Hills.** • It differs from other species of this genus in the characteristics of petals, pollen morphology, bracts, sepals and seed architecture. • This is the **first species of the genus Stellaria reported from South India.** • **IUCN STATUS: Critically Endangered**
Amphibious mouse	• According to Conservation International, an "amphibious mouse" with partially webbed feet that eats aquatic insects was among 27 new species discovered during a 2022 expedition to Peru's Amazon. • The amphibious mouse the team discovered is part of the aguajales ecosystem — a swampy area dominated by aguaje palms. • The area is a designated "ecosystem recovery zone," where deforestation for rice farming is a threat to the mouse's unique habitat.
Archean	• The study of archaea a domain of ancient organisms has given scientists clues to the survival strategies of microorganisms by adapting to harsh conditions with the help of their toxin-antitoxin (TA) systems. • They are one of the oldest forms of life on Earth and belong to a group called the third domain of life. • **Archaea (singular archaeon) are a primitive group of microorganisms.** • These slow-growing organisms are also present in the human gut and have a potential relationship to human health. • **They are known for the production of antimicrobial** molecules and for antioxidant activity with applications in ecological wastewater treatment.
Hortus malabaricus	• Dr. K.S. Manilal, the esteemed botanist who brought the ancient botanical treasure Hortus Malabaricus to the modern world, passed away. • **Hortus Malabaricus (translated Garden of Malabar) is a 17th-century** Latin botanical treatise documenting the varieties and medicinal properties of the flora of the Malabar coast. • It is a **twelve-volume encyclopaedia of over 740 plant species** native to the beautiful shores of modern-day Kerala, Karnataka and Tamil Nadu.

Brazilian velvet ant	• Scientists in Brazil discovered an ultrablack velvet ant species, *Trauma mutilla bifurca*, with light-absorbing pigmentation. • Velvet ants are a **group of parasitic wasps** well known for a suite of defensive adaptations including bright coloration and a formidable sting. • **Appearance**: They are wasps, some of which are wingless and are named in part for their exterior. The velvet ant is known for its distinctive black and white markings. • **Habitat**: Found in the bush desert in Brazil called Caatinga.
Pallas cat	• The decline of feline species around the world, including iconic big cats like snow leopards, is a pressing concern for conservationists. **Common Name** • Pallas's Cat (Manul) (Otocolobus manul) **Named After** • Peter Simon Pallas, described in 1776 **Distribution** • Central Asia, Western Iran, Mongolia, China, Russia, Kazakhstan, Kyrgyzstan **Habitat** • Mountain plains, semi-desert foothills **Appearance** • Soft-furred, silver-gray or light brown, high-set eyes, low-set ears, ringed tail with black tip **Protection Status** • **IUCN Red List**: Least Concern, • **CITES**: Annex II
Banded royal butterfly	• Tripura recorded a milestone in biodiversity documentation with the first-ever recording of the Banded Royal butterfly (Rachana jalindra indra), a rare species, in the state. **Scientific Name** • Rachana jalindra **Habitat** • Found in forests near Western Ghats, northeastern India, Sri Lanka, Myanmar, Thailand, Malaysia. Prefers dense vegetation. **Subspecies in India** • R.j. macantia (southwest India to Goa), R.j. tarpina (Andamans), R.j. indra (Odisha to West Bengal, Bangladesh, Assam, Meghalaya, Jharkhand) **Appearance** • Males: Dark purple/bluish sheen with dark brown edges; Females: Brownish with white markings. Underside: Light brown with white stripes.
Golden jackal	**Legal Protection** • Protected under Schedule II of the Indian Wildlife (Protection) Act, 1972. • Golden jackals (Canis aureus), with an estimated population of 80,000 across India, are commonly found in the mangroves lining the Mumbai Metropolitan Region's coastline. **Activity** • Nocturnal in human-inhabited areas, semi-diurnal in less disturbed areas

	Mating • Monogamous, forms lifelong pairs **Diet** • Omnivorous, opportunistic foragers **Habitat** • Valleys, riverbanks, tributaries, canals, lakes, coastal areas, less common in foothills and low mountain areas **Distribution** • Northern and eastern Africa, southeastern Europe, southern Asia (including India) **Protection Status** • IUCN: Least Concern, CITES: Annex III, Wildlife Protection Act 1972 (India): Schedule I **Ecological Importance** • Maintains biodiversity in mangrove and grassland ecosystems
Rabbit fever	According to *The Independent*, "Between 2011 and 2022, there's been a 56 per cent increase in the annual average incidence of tularemia infections compared with previous years from 2001 to 2010. **Common Name** • Tularemia **Cause** • Caused by the bacterium *Francisella tularensis*, affecting both animals and humans, particularly rabbits, hares and rodents **At-Risk Groups** • Children (5-9 years), older men, American Indians and Alaska Natives **Symptoms** • Skin ulcers, eye irritation, difficulty breathing, sore throat, mouth ulcers, high-grade fever **Transmission** • Spread through tick/deer fly bites, contact with infected animals, contaminated water, inhaling aerosols and laboratory exposure **Treatment** • No vaccine available; treated with antibiotics
Black-collared yellow catfish	• Researchers at the Centre for Peninsular Aquatic Genetic Resources, Kochi, of the **National Bureau for Fish Genetic Resources (NBFGR)** claimed to have developed the captive breeding protocol for the endangered black-collared yellow catfish found in the **Chalakudy River.** • It is **endemic to the Chalakudy River in Kerala**.
	• Bladders trap small organisms using trapdoors triggered by sensory hairs. **Trap Mechanism** • When prey touches the hairs, the trapdoor opens within a millisecond, sucks in the prey and closes in about 2.5 milliseconds. **Flowers** • Bisexual and bilaterally symmetrical.

Indian grey wolf	Recently a wolf has given birth to eight pups at the Bankapur Wolf Sanctuary in Koppal district.
	Range
	• Southwest Asia to the Indian subcontinent
	Behavior
	• Travels in smaller packs
	• Less vocal compared to other wolf variants
	• Nocturnal, hunts from dusk to dawn
	Appearance
	• Medium-sized
	• Lies between Tibetan and Arabian wolves in size
	• Lacks a lush winter coat due to living in warmer conditions
	Habitat
	• Dominated by scrub, grassland and semi-arid pastoral agroecosystems
	Distribution
	• Widely distributed from the Indian subcontinent to Israel
	Protection Status
	• **IUCN**: Least Concern
	• **CITES**: Annex 1
	• **Nature Conservation Act 1972**: Schedule I
Indian Bison	• According to wildlife experts, poaching, infection and habitat disturbance by local cattle have been the major reasons for the vanishing of bison from Jharkhand.
	• The Gaur (Bos gaurus), also known as the Indian Bison, is the tallest and largest extant wild cattle species.
	• With an estimated global population of 13,000–30,000, around 85% are found in India, including 2,000 in the Nilgiris (2020).
	• They inhabit evergreen and moist deciduous forests, mainly in the Western Ghats and are listed as Vulnerable on the IUCN Red List and under Schedule I of the Wildlife Protection Act (1972).
Spotted Hyena	• In a new study, Egyptian researchers have discovered a spotted hyena (*Crocutta crocutta*), one of Africa's most abundant carnivores, that appeared in southern Egypt after 5,000 years.
	• The spotted hyena, also known as the laughing hyena, is a carnivorous scavenger and hunter found across sub-Saharan Africa.
	• It has sandy or gray fur with dark spots that fade with age and a matriarchal social structure.
	• Mostly nocturnal, it has excellent night vision and inhabits savannas, semi-deserts and montane forests.
	• Classified as Least Concern by the IUCN.
White-Naped Tit	• A group of bird enthusiasts traced the White-Naped Tit at Kadakola village in the Kappatagudda hills.
	• The White-Naped Tit (*Machlolophus nuchalis*), also known as the Pied Tit, is a vulnerable bird endemic to India, found in disjoint populations across **Gujarat, Haryana, Rajasthan andhra Pradesh, Karnataka and Tamil Nadu.**

	• It inhabits **dry thorn scrub forests** and has a distinct black upper body with a white neck spot and white underparts.
Indian squid	• The species is typically seen in pairs or small groups. • Researchers at the Central Marine Fisheries Research Institute, Kochi, claimed to have decoded the gene expression pattern of Indian squid (Uroteuthis duvaucelii). • The Indian squid (*Uroteuthis duvaucelii*) is a cephalopod with a light **pink**-**gray body, large fins, eight arms and two longer tentacles**. • It inhabits coastal and open sea areas of the Indo-Western Pacific, Indian Ocean and Red Sea, preferring high dissolved oxygen levels. • Known for its **advanced nervous system, problem-solving skills and abilities** in camouflage and jet propulsion, it is classified as Least Concern by the IUCN.

Miscellaneous

Name	Details
Epicoccum Indicum	• A new species of phytopathogenic fungi, **epicoccum indicum (Ascomycota, Didymellaceae), associated with an emerging leaf spot disease in Chrysopogon zizanioides (vetiver),** was discovered by researchers at Banaras Hindu University. • It is a new type of **phytopathogenic fungi** associated with the development of shoes on a cloud in *Chrysopogon zizanioides* **(Vetiver).** • The species has been identified based on morpho-cultural characteristics and molecular phylogenetic analyzes of **multi-legal analyses.**
	• **It creates a different position separate** from other related species, which justifies its classification as a new species. The name of the species concerns India where it was discovered.
Greenland lakes	• According to a new study *Abrupt transformation of West Greenland lakes following compound climate extremes associated with atmospheric rivers*, more than 7,500 lakes in western Greenland have turned brown, begun emitting carbon and suffered a drop in water quality due to extreme weather events that took place in 2022. • Greenland, an autonomous province of Denmark, is located between North America and Europe in the North Atlantic Ocean. • It is part of the North American continent, bordered by the Ice Ocean, Greenland Sea, Northern Atlantic and Davis Strait. • Known for its polar climate, temperatures can drop to -50°C in winter, with summer temperatures rarely exceeding 10–15°C. • Nuuk is the capital and Gunnbjorn's Fjeld is its highest point.
International Zebra Day	• Zebra populations in Africa are generally declining, but conservation efforts have shown promise, especially for the Cape Mountain zebra subspecies, which is experiencing population growth. • International Zebra Day, observed on January 31, raises awareness about the challenges zebras face, including habitat loss and hunting. • It highlights the importance of conservation and protecting their ecosystems, particularly in regions of Africa like Kenya and South Africa.

	• The day emphasizes education and action to safeguard endangered species and maintain healthy grasslands.

5.3 ADDITIONAL TOPICS FOR READING FROM IASGYAN WEBSITE

Topics	Uploaded Date
India's emissions inventory & efforts at mitigation	4th January 2025
India's SO2 control from TPPs	7th January 2025
UN-led treaty to regulate rampant chemical production	10th January 2025
What breaching 1.5°C means	13th January 2025
Freshwater Species Face A Crisis	16th January 2025
Relocating Villages from Tiger Reserves	17th January 2025
The trouble with disposing of Bhopal's Union Carbide waste	21ST January 2025
Karnataka High Court struck down green energy rules	25TH January 2025
YAMUNA	31st January 2025
Algal bloom hotspots	31st January 2025

6. SCIENCE & TECHNOLOGY AND HEALTH

6.1   BLACK PLASTICS

Context

- A Study published in Journal Chemosphere found that household black plastic items release harmful chemicals.

About Black Plastic

- Black plastic is **made from recycled materials**, often from electronic products like old TV casings.
- It is used in household items such as utensils and containers because it is cost-effective and widely available.
- It **contains harmful chemicals** like flame retardants that are not always checked during recycling.
- Black plastics are more harmful because they often **contain brominated flame retardants.** These chemicals, like Decabromodiphenyl Ether (DecaBDE), leach into food or the environment from items like cooking utensils.

What health risks are linked to black plastics?

- Black plastics contain chemicals like DecaBDE and 2,4,6-Tribromophenol, which are **linked to cancer, hormonal imbalances and** damage to nerves and reproductive health.
- These chemicals can also **disrupt thyroid functions and have been detected in breast milk, placenta** and serum, making them a significant health concern.

Why is it difficult to track contamination in black plastics?

- Tracking contamination is challenging because recycling programs often mix different waste materials.
- Harmful chemicals from electronics end up in household items without proper regulation or transparency.

Changes needed to address the risks of black plastics

- **Reduce exposure by replacing black plastic kitchen utensils** with safer alternatives like wooden or stainless-steel ones. Avoid reheating food in black plastic containers and discard chipped or damaged plastic utensils.
- **Need stronger regulations on recycling processe**s and stricter bans on hazardous chemicals in plastics.
- Promoting for better product design and encouraging reusable or refillable items can significantly reduce overall plastic waste and exposure to harmful substances.

Way Forward

- To reduce plastic waste and health risks, it is important to improve transparency in recycling processes, enforce stricter chemical regulations, focus on reusable products and reduce plastic production. Governments and industries should prioritize safe design standards and advocate for bans on hazardous chemicals. A culture of reuse and refill can also significantly reduce plastic waste and health risks.

6.2   GENOME INDIA DATABASE

Context

- India has released a database of 10,000 human genomes, representing 83 population groups, to aid in future disease and drug therapy investigations.

What is the Genome India Project?

- It is a national initiative aimed at mapping the genetic diversity of India's population.
- It was launched by the Department of Biotechnology (DBT) in January 2020.

The project seeks to:

- **Create a genetic database**: It aims to record genetic variations within the Indian population, including common, rare and structural variations. The database will serve as a resource for researchers and clinicians.
- **Develop predictive diagnostics**: It will help to create diagnostic tools for diseases like diabetes, hypertension, cardiovascular disease, neurodegenerative disorders and cancer.
- **Enable precision healthcare**: The project will facilitate the creation of genome-wide arrays for research and diagnostics at affordable costs.
- **Establish a biobank**: The project will establish a biobank for storing DNA and plasma for future research.

What is the Genome India database?

It contains genetic data from 10,000 healthy individuals from India, representing 83 population groups. It includes:
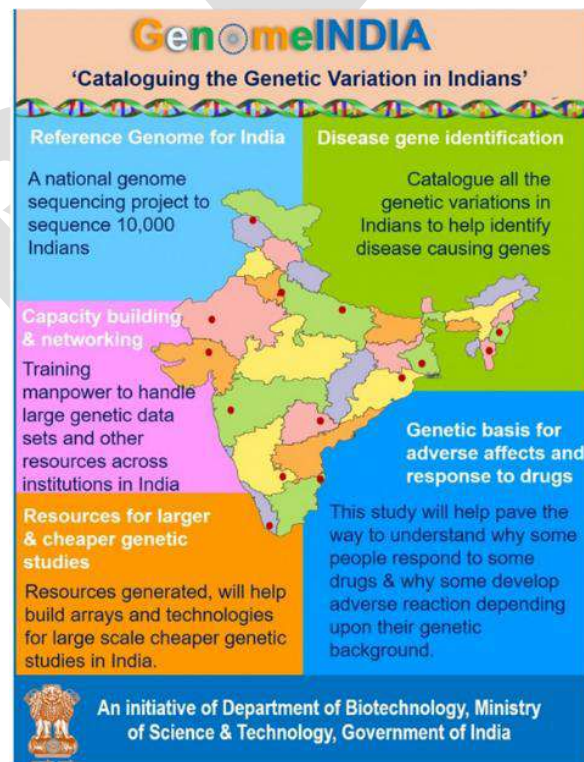
- **Genetic variations**: The database highlights genetic variations unique to the Indian population.
- **Population-specific alleles**: It focuses on different versions of the same gene specific to certain populations.
- **Low-frequency genetic variants**: The database includes 27 million low-frequency variants, 7 million of which are unique.

The database is housed at the Indian Biological Data Centre (IBDC) in Faridabad, Haryana. Researchers worldwide can access it, following data-sharing and privacy guidelines.

How is the data protected and used in the Genome India Project?

The Genome India Project ensures the security and ethical use of genetic data in the following ways:

- **Data anonymization and encoding**: Before being uploaded to the central database, genetic data is anonymized and encoded.
- **Strict protocols for access**: Researchers need to collaborate with the Department of Biotechnology and follow strict protocols to access the data.
- **Storage at the IBDC**: The data is securely stored at the IBDC in Faridabad, which is managed by the Department of Biotechnology.
- **Biotech-PRIDE Guidelines**: These guidelines ensure India's commitment to ethical and secure data sharing practices.

GenomeINDIA — 'Cataloguing the Genetic Variation in Indians'

Reference Genome for India: A national genome sequencing project to sequence 10,000 Indians

Disease gene identification: Catalogue all the genetic variations in Indians to help identify disease causing genes

Capacity building & networking: Training manpower to handle large genetic data sets and other resources across institutions in India

Resources for larger & cheaper genetic studies: Resources generated, will help build arrays and technologies for large scale cheaper genetic studies in India.

Genetic basis for adverse affects and response to drugs: This study will help pave the way to understand why some people respond to some drugs & why some develop adverse reaction depending upon their genetic background.

An initiative of Department of Biotechnology, Ministry of Science & Technology, Government of India

About the Human Genome Project (HGP)

- The Human Genome Project (HGP) was a global research initiative aimed at sequencing the human genome and identifying its genes.
- **It was started in 1990** and was completed in 2003, with the final gapless assembly finished in January 2022. Its goals were:
  - Sequencing the human genome
  - Identifying all the genes in the genome
  - Creating databases to store the sequence data
  - Addressing ethical, legal and social issues related to the project
- The HGP was **funded largely by the US government** through the National Institutes of Health and other global organizations.

What are the applications of genome research?

- **Molecular medicine**: It aids in understanding genetic disorders and developing targeted treatments.
- **DNA forensics**: It improves criminal investigations and identification processes.
- **Agriculture and livestock breeding**: It enhances crop yield and breeding techniques.
- **Energy sources and environmental applications**: Genome research contributes to sustainable energy solutions and environmental conservation.

6.3 SHORT ARTICLES

Plasticisers

Context

- The IIT Roorkee developed bacterial enzymes to break down DEHP, a harmful plasticizer, by using the esterase enzyme from the soil bacterium Sulfobacillus acidophilus.

What are Plasticizers?

- Plasticizers are **chemicals added to plastics and personal care products** like shampoos, soaps and baby toys to enhance flexibility and shine.
- They pose health risks because they can be absorbed through the skin. Their increasing presence has been linked to carcinogenic effects.

IIT Roorkee's research on degrading plasticizers

- The research conducted by the Department of Biosciences and Bioengineering at IIT Roorkee discovered that the **esterase enzyme, derived from the soil bacterium *Sulfobacillus acidophilus*,** can break down diethyl hexyl phthalate (DEHP), a common plasticizer.
- The enzyme effectively degrades DEHP, which is otherwise difficult to break down, thus offering a potential solution to the environmental issue caused by plasticizers.

Inflight WiFi

Context

- Air India has become the first Indian airline to offer Wi-Fi connectivity on both domestic and international flights.

What technologies enable in-flight Wi-Fi connectivity?

- **Air-to-Ground (ATG) Technology**: This system uses antennae on the aircraft to connect to ground-based cellular towers, providing stable internet, except over large water bodies or areas with fewer ground towers.

- **Satellite-based Connectivity**: This method uses antennae on the aircraft to communicate with satellites, offering broader coverage, especially in remote areas like oceans. It is gaining popularity due to its reliability.

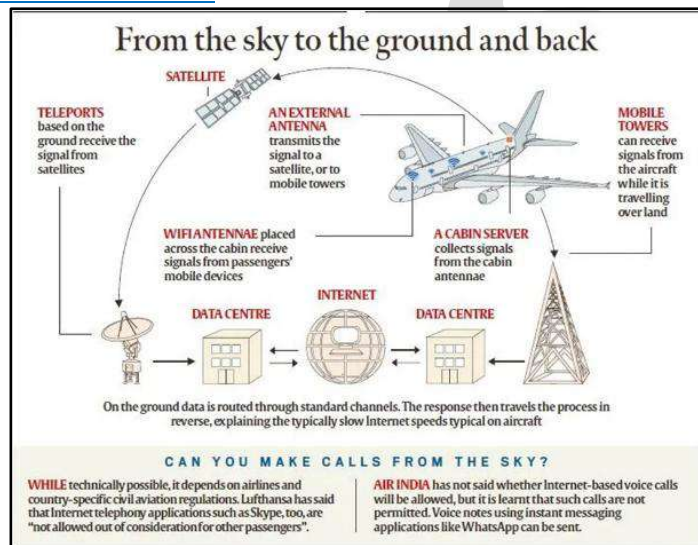## How does in-flight Wi-Fi work?

- In-flight Wi-Fi connects passengers' devices to the Wi-Fi antenna within the aircraft.
- These **antennas send signals to an onboard server**, which transmits them either to a **satellite (for satellite-based systems)** or to **ground-based cellular towers (for ATG systems).**
- The response signals travel back to the aircraft, completing the communication loop.

What challenges does Air India face in installing Wi-Fi on aircraft?

- **In-flight Wi-Fi is slower than ground internet** due to signal transmission limitations and the technology used.
- However, advancements in satellite communication are improving the speed and reliability of in-flight internet services.
- Installing Wi-Fi on aircraft is a complex and costly process. Airlines need to install antennae, which can disrupt operations, particularly when retrofitting older planes.

From the sky to the ground and back

How do global airlines handle onboard Wi-Fi?

- Globally, airlines offer a limited amount of free Wi-Fi before charging passengers for additional data packs. Some airlines provide free Wi-Fi or unlimited access to loyalty members and business class passengers.
- Air India is following a similar approach by offering free Wi-Fi for a limited initial period, but has not yet announced when charges will apply.

Cubic Kilometre Neutrino Telescope (KM3NeT) Projects

Context

- Scientists are deploying two telescopes under the Mediterranean Sea to detect high-energy neutrinos as part of the Cubic Kilometre Neutrino Telescope (KM3NeT) project.

About Cubic Kilometre Neutrino Telescope (KM3NeT)

- It is a **European research infrastructure** that studies neutrinos in the Mediterranean Sea.
- It utilises a range of radiation detectors to measure light emitted when neutrinos interact with seawater. The objective is to study neutrino properties and advance neutrino particle physics.

- It is located in the deepest parts of the Mediterranean Sea, with two detectors:
  - **ARCA**: Located 3,500 meters offshore of Sicily, this telescope covers 87% of the neutrino sky and searches for high-energy cosmic neutrinos.
  - **ORCA**: Located 2,450 meters offshore of the South of France, this detector studies neutrinos created by cosmic rays in the Earth's atmosphere.
- It uses thousands of optical sensors to detect faint light from charged particles created when neutrinos collide with the Earth.

What are Neutrinos?

- Neutrinos are tiny subatomic particles similar to electrons but have no electric charge. They

rarely interact with matter, earning the nickname **"ghost particles."**

- They are fundamental particles and are the **second most abundant in the universe**, with about a billion neutrinos passing through every cubic centimeter of space every second.
- High-energy neutrinos interact weakly with matter, making detection challenging. Despite billions of neutrinos passing through the human body, only one may interact in a lifetime.

Human Metapneumovirus (HMPV)

Context

- A surge in cases of the flu-like human metapneumovirus (HMPV) in China has raised fears of another Covid-style pandemic.

About the Human Metapneumovirus (HMPV)

- It is a **respiratory virus that causes infections similar to the common cold**. It can affect both the upper and lower respiratory tract and is most common in winter and early spring.
- **The virus was first identified in 2001** and belongs to the Pneumoviridae family, which also includes respiratory syncytial virus (RSV).
- **Symptoms:** The symptoms of HMPV are similar to those of the flu or common cold and include: Cough, Fever, Sore throat, Shortness of breath.
- HMPV spreads through contact with an infected person or contaminated surfaces.
- There is no specific antiviral treatment or vaccine for HMPV. Most people recover with rest and over-the-counter medications to relieve fever and pain.

Nimesulide

Context

- India has officially banned Nimesulide, a toxic substance, following scientific research confirming its harmful effects on endangered vultures.

About the Nimesulide

- It is a **non-steroidal anti-inflammatory drug (NSAID) used to relieve pain,** inflammation and swelling. It works by lowering chemical substances in the body that cause these symptoms.
- It is used to treat conditions like fever, menstrual cramps, osteoarthritis and similar conditions.
- **It is toxic to vultures and in January 2025**, India banned the use of nimesulide in veterinary medicine, under Section 26A of the Drugs and Cosmetics Act, 1940.
- Other NSAIDs that are toxic to vultures include ketoprofen, aceclofenac and possibly flunixin. Meloxicam and tolfenamic acid are safe alternatives to diclofenac.

How does Nimesulide impact vultures?

- **It is toxic to vultures, mainly damaging their kidneys.** This leads to conditions like visceral gout, a clear sign of kidney failure.
- Its use in livestock, which indirectly poisons vultures when they feed on treated animal carcasses, resulting in a drastic decline in vulture populations.

IUCN Status
Indian vulture: Critically endangered
White-rumped vulture: Critically endangered
Red-headed vulture: Critically endangered
Slender-billed vulture: Critically endangered
Egyptian vulture: Endangered
Cinereous vulture: Near threatened
Bearded vulture: Near threatened
Himalayan vulture: Near threatened
Griffon vulture: Least concern

Small Language Model

Context

- Small Language Models (SLMs) have emerged as a new AI model approach, as the digital progress of large language models (LLMs) has reached its digital limit.

What are Small Language Models (SLMs)?

- They are a **type of artificial intelligence (AI) designed to process and generate human language.**

- They are smaller, faster and more efficient compared to large language models (LLMs).
- Unlike LLMs, SLMs are trained on smaller, more specific datasets and they focus on performing specialized tasks.
- SLMs are not necessarily better than LLMs; they are more suited for specific tasks. While LLMs handle complex tasks like coding or logical problem-solving, SLMs excel in specialized, smaller tasks.

Application of Small Language Models (SLMs)

- **Fraud detection:** SLMs are used in the financial sector to identify fraudulent activities.
- **Risk assessment:** They assess risks in financial transactions, helping companies make better decisions.
- **Personalized financial advice:** SLMs help deliver tailored financial advice to customers based on their specific needs.
- **Healthcare:** SLMs assist in processing electronic health records, offering diagnoses support and providing personalized health information.

DeepSeek

Context

- The recent emergence of DeepSeek, a Chinese AI startup, has impacted global stock markets, particularly within the technology sector.

About DeepSeek

- It was founded in 2023 by Chinese entrepreneur **Liang Wenfeng**.
- It is known for **cost-effective, high-performance AI models.**

DeepSeek's AI Models

Feature	DeepSeek	ChatGPT (OpenAI)	Gemini (Google)
Founding Year	2023	2015	2023
Cost Efficiency	90-95% more cost-effective than OpenAI models	High training and deployment costs	High training costs, but optimized for Google's infrastructure
Training Cost	Less than $6 million for DeepSeek-V3	Hundreds of millions of dollars	Hundreds of millions of dollars
Specialization	Strong in reasoning, math, and coding	General-purpose, excels in conversational AI	Multimodal, excels in combining text, images, and audio
Market Impact	Disrupted the market with cost-effective models; caused stock market drops	Dominates the conversational AI market	Focused on integrating AI into Google's ecosystem (Search, Cloud)
Geopolitical Context	Operates under U.S. export restrictions on advanced chips	U.S.-based, no hardware restrictions	U.S.-based, no hardware restrictions
Censorship	Avoids politically sensitive topics (Chinese government constraints)	Minimal censorship, but adheres to ethical guidelines	Minimal censorship, but adheres to ethical guidelines

- **DeepSeek-V3**: Uses a **Mixture-of-Experts (MOE)** architecture, where multiple specialized models collaborate to solve tasks, improving resource utilization. Includes **Multi-Head Latent Attention (MLA)**, enhancing efficiency and reducing training costs.
- **DeepSeek-R1**: A reasoning-focused model with **test-time compute capabilities**, excelling in areas like mathematics and coding. **90-95% more cost-effective** than OpenAI's models, offering comparable or superior performance at a fraction of the cost.

How DeepSeek Achieved Cost-Effective AI Development

- **Hardware Optimization**: Uses **NVIDIA H800 GPUs** (less advanced than H100) but maximizes efficiency through **low-level code optimization**.
- **Innovative Training Methods**:
- **Auxiliary-Loss-Free Load Balancing**: Trains only necessary parts of the model, reducing resource consumption.
- Trained 14.8 **trillion tokens** of high-quality data with an investment of less than 6 million, compared to OpenAI's 6 million, compared to OpenAI's 100+ million.

Lessons for India from DeepSeek's Approach

- Focus on **cost-effective AI development** rather than competing in costly AI arms races.
- Strengthen partnerships with the **US and Europe** while maintaining **technological independence** under its **"Sovereign AI" vision**.

- Utilize India's **IT talent** and **computing power** to stay relevant in AI governance.
- Actively participate in international AI policy discussions to shape regulations and avoid being sidelined.

Atomic Energy Commission

Context

- The government reconstituted the Atomic Energy Commission (AEC) and appointed Ajit Kumar Mohanty as its Chairman.

About the Atomic Energy Commission (AEC)

- It was first set up in **1948** under the **Department of Scientific Research.**
- The **Department of Atomic Energy (DAE)** was established on **August 3, 1954**, through a Presidential Order, placing it under the direct charge of the **Prime Minister**.

- The AEC is responsible for **formulating policies** for the DAE.
- It oversees all activities related to atomic energy, including exploration, research, development and applications in power and non-power sectors.
- The **Secretary to the Government of India** in the DAE serves as the **ex-officio Chairman** of the AEC. Other members of the AEC are appointed each calendar year based on the recommendation of the AEC Chairman and approval by the Prime Minister.
- The AEC is headquartered in **Mumbai, Maharashtra.**

6.4   SNIPPETS

Topics	Details
Nanopore Technology	- Researchers at the University of California created nanopore technology for faster and more accurate disease diagnosis. - It **uses electrical signals from individual molecules to detect diseases**, offering faster and more accurate results. - This technology can capture data from molecules as small as one-billionth of a meter, such as DNA or proteins. - It **works by using tiny openings, called nanopores and** the sensors can detect infections within 24 to 48 hours. - Nanopores can detect small changes in protein structures.
Tidal Tails	- Indian Institute of Astrophysics researchers discovered an ultra-diffuse galaxy at the end of Galaxy NGC 3785's longest tidal tail, 430 million light-years from Earth in the Leo constellation. - Tidal tails are thin, elongated regions of stars and interstellar gas that extend into space from galaxies. **They form when galaxies experience close encounters or mergers**, with the mutual gravitational pull stripping gas and stars from their outer regions. - These tails can remain long after merging and are considered a signature of recent merger activity. **Most tidal tails are slightly curved** due to the galaxies' rotation, though straight tails may appear straight if viewed edge-on.
Willow Chip	- Google's new quantum chip, called Willow, is a major step toward building a useful, large-scale quantum computer. - Willow can perform a computation in under five minutes that would take the world's fastest supercomputer 10 septillion years.

	• **It has 105 physical qubits.** A qubit can exist in both states simultaneously, thanks to a quantum principle called superposition, which means that a single qubit can represent a greater amount of information than a single classical bit. • It has the potential to revolutionize fields like medicine, energy and AI.
Anemiaphone	• The Cornell University researchers have transferred AnemiaPhone to the Indian Council of Medical Research (ICMR). • AnemiaPhone is a technology that can quickly, accurately and cheaply assess iron deficiency. • **It works by using a small finger stick to collect a drop of blood,** which is placed on a test strip, which is analyzed by a portable reader. • According to the National Family Health Survey 5 (2019–21), the **prevalence of anemia in India is 25% in men (15–49 years), 57% in women (15–49 years).**
New Glenn	• The New Glenn rocket is a revolutionary heavy-lift launch vehicle developed by Blue Origin, a company owned by Jeff Bezos. • New Glenn is named after John Glenn, the NASA astronaut who became the first American to orbit Earth in 1962. • Its partially reusable first stage, designed for at least 25 flights, reduces costs and increases launch efficiency, similar to SpaceX's Falcon 9. • **The rocket uses BE-4 engines**, which represent a breakthrough in LNG-fueled, oxygen-rich staged combustion technology. Its reusable design supports frequent, cost-effective launches.
Hydrogel	• Researchers from IIT-Guwahati and Bose Institute, Kolkata have developed an advanced injectable hydrogel for localized breast cancer treatment. • **Hydrogels are three-dimensional, hydrophilic polymer** networks that can absorb and retain significant amounts of water or biological fluids. • **Hydrogels can contain up to 99% wate**r, providing a soft, gel-like consistency resembling natural tissue. They are generally biocompatible, reducing the risk of adverse reactions in medical applications. • Biomedical applications include wound care, drug delivery, tissue engineering, agriculture, water purification and consumer products like soft contact lenses.
Melatonin	• Researchers have discovered that a nano-formulation of Melatonin may be a potential treatment for Parkinson's disease. • **Melatonin is a neurohormone secreted by the pineal gland in the brain,** primarily in response to darkness and plays a crucial role in regulating sleep-wake cycles. As night approaches, melatonin levels rise, signaling the body that it's time to rest. • **Researchers have found that nano-formulated melatonin has improved antioxidative and neuroprotective propertie**s, making it a promising therapeutic option for treating Parkinson's disease (PD). • **Parkinson's disease is a neurological disorder** that impacts the nervous system and leads to movement problems, mental health issues and other health complications.
Methylcobalamin	• The Food Safety and Standards Authority of India has clarified the use of methylcobalamin, a form of Vitamin B12, in health supplements, medical purposes and nutraceutical products.

	Methylcobalamin is a naturally occurring form of vitamin B12, found in fish, meat, eggs, milk and dairy products. - It is a **water-soluble vitamin responsible for DNA synthesis, red blood cell production and neurological function.** A deficiency can lead to severe health issues and requires supplementation. **It plays a key role in creating red blood cells,** preventing anemia, ensuring proper erythrocyte synthesis and preventing and treating neurological diseases. - It also contributes to the production of neurotransmitters like serotonin and dopamine, essential for mood regulation.
Trichophyton Indotineae	- Dermatologists from India and 13 other countries, including Germany, object to the region-specific name Trichophyton indotineae, as it links the fungus to India. - Japanese dermatologists named Trichophyton indotineae in 2020 after identifying the fungus in patients from India and Nepal. However, the origin of T. indotineae is unknown, making the name unjustified. - It is a **fungal pathogen that causes dermatophytosis, a skin infection and is resistant to antifungal drugs**. It causes intense itching and varies in severity. - Common oral treatments include itraconazole, fluconazole, terbinafine and griseofulvin, with results usually seen within a few weeks.
Docking	- The Indian Space Research Organisation (ISRO) launched the "Space Docking Experiment" (SpaDeX) from the Satish Dhawan Space Centre (SDSC) in Sriharikota. - The **objective of the SpaDeX mission is to develop and demonstrate technology** for rendezvous, docking and undocking of two small spacecraft. - Two small spacecraft, SDX01 (the Chaser) and SDX02 (the Target), will be docked in a 476-km low-Earth circular orbit. Each satellite weighs about 220 kg and the PSLV-C60 launch vehicle will carry them into orbit. **This mission will make India the fourth country in the world**, after the USA, Russia and China, to achieve successful docking technology.
Indigenous Conductive Ink Manufacturing Technology	- The National Institutes of Technology (NIT) Warangal has transferred Indigenous silver nanowire-based conductive ink technology to two startups. - The technology developed under a project **funded by the Ministry of Electronics and Information Technology (MeitY)** is used in various electronic devices such as flexible electronics, wearable devices, solar panels, RFID tags and windshield defrosters. **India currently imports conductive ink worth $15.72 million annually**, with the US, China, the Netherlands, the UK and Taiwan as major exporters. - The global market for silver nanowire-based conductive ink is expected to grow to over $16.87 billion by 2032.
Guillain-Barre Syndrome (GBS)	- Sudden increase in Guillain-Barré Syndrome (GBS) cases in Pune, Maharashtra. - It is a **rare autoimmune disorder where the body's immune system mistakenly attacks the nervous system**, leading to muscle weakness, numbness and, in severe cases, paralysis. - While the exact cause of GBS is unknown, it is often triggered by infections

	(viral/bacterial), vaccinations, or surgery.
	• There is **no cure**, treatments focus on halting immune damage and supporting recovery.
Stargardt Disease	• A research team from Switzerland has developed a technique to edit genes to cure Stargardt disease.
	• Stargardt disease is caused by mutations in the ABCA4 gene, which disrupts Vitamin A metabolism in the retina, leading to the accumulation of toxic lipofuscin in the macula.
	• The team utilized an **adenine base editor**, a precise gene-editing tool, to target and correct mutations in the **ABCA4 gene**.
Mission Scot	• The Prime Minister praised Indian space startup Digantara for its success in Mission SCOT.
	• **Mission SCOT (Space Camera for Object Tracking) is Digantara's first mission** dedicated to **space surveillance.**
	• It was launched aboard **SpaceX's Transporter-12** from **Vandenberg Space Force Base, California, USA**.
	• Specifically designed to track **Resident Space Objects (RSOs)** in **Low Earth Orbit (LEO)** with **higher accuracy** and **more frequent revisit rates** than current systems.
	• It is capable of detecting objects as small as **5 cm** in orbit—a capability **not offered by traditional systems**.
Rhodamine B	• Rhodamine B are banned in the food sector due to their carcinogenicity.
	• Rhodamine B is a **synthetic dye recognized for its pink color and fluorescent properties,** making it popular in industries such as textiles, paper and leather, as well as in scientific research.
	• Its use in consumable products, particularly food, has raised health concerns due to its potential carcinogenic effects.
Firefly	• Pixxel recently launched India's first private earth imaging satellite constellation, named 'Firefly'.
	• Pixxel, a Bengaluru-based space-tech startup, launched India's first private earth imaging satellite constellation, named **Firefly**.
	• It is the **world's highest-resolution hyperspectral satellite constellation,** setting a new benchmark in Earth observation technology.
	• The satellites capture data across; Vegetation health, Water quality, Pollution levels, Soil health.
	• The first batch of Firefly satellites was launched via **SpaceX's Transporter-12 mission** from Vandenberg Space Force Base, California.
Fentanyl	• US President Donald Trump has threatened to impose a 10% punitive duty on Chinese imports of fentanyl.
	• Fentanyl is a potent synthetic opioid approved by the United States Food and Drug Administration (FDA) for use as a pain reliever and anesthetic.
	• It is about **100 times more potent than morphine and 50 times more potent than heroin.**
	• Overdoses can cause stupor, changes in pupil size, clammy skin, cyanosis (blue skin), coma and respiratory failure leading to death.

	• China is a primary source of fentanyl and its precursor chemicals.
Indian National Science Academy (INSA)	• The Indian National Science Academy (INSA) has broken from tradition by including renowned Indians who are not professional scientists in its annual list of Fellows. • INSA was established in 1**935 in Calcutta** with the goal of promoting science in India and harnessing scientific knowledge for humanity and national welfare. • The Academy's headquarters were located at the **Asiatic Society of Bengal** until 1951, after which it shifted to Delhi. • It awards medals, prizes and provides financial support to outstanding young scientists, engineers and technologists. • It promotes exchange programs with overseas academies.
Intravenous Fluids (IV Fluids)	• The West Bengal government has suspended 12 doctors for medical negligence following the death of a woman and newborn at Medinipur Medical College due to expired IV fluids. • IV fluids are specially formulated liquids injected into a vein to prevent or treat dehydration. • They are used for people of all ages who are sick, injured, dehydrated, or undergoing surgery. • IV fluids contain **water**, **glucose (sugar)** and **electrolytes** (such as potassium, sodium and chloride). • They can also include medications or nutrients, depending on the patient's needs.
Dark Oxygen	• Scientists have discovered metal nodules on the dark seabed produce oxygen through electrochemical activity, leading to plans for a "dark oxygen" mission to study Earth's oceans. • Scientists have discovered that **polymetallic nodules** on the deep seabed produce **oxygen through electrochemical activity**, challenging the belief that oxygen generation requires sunlight. This phenomenon, termed **"dark oxygen,"** occurs as metals like **manganese, cobalt and nickel** in the nodules act as catalysts, splitting water molecules through **redox reactions**. The upcoming **Dark Oxygen Mission** aims to explore this process, which has significant implications for **oxygen cycles, marine ecosystems and potential extraterrestrial life** in dark, oxygen-rich environments. The discovery also raises interest in **deep-sea mining**, as these nodules contain **valuable metals** used in modern technology.

6.4   ADDITIONAL TOPICS FOR READING FROM IASGYAN WEBSITE

Topics	Uploaded Date
Satellite Launchpads	18th January, 2025
How is TRAI and the Government combating Spam?	21st January, 2025
National Health Mission (NHM) Achievements	24th January, 2025
India's Winding Road To Ending Tb	25th January, 2025

7. CULTURE AND HISTORY

7.2 SHORT ARTICLES

Temples in News

Name	Details
Sri Ranganathaswamy Temple	• Amid heavy turnout of devotees to Sri Ranganathaswamy temple, residents of the temple town of Srirangam have sought installation of lights on the passages beneath the outer gopurams around the shrine as a safety measure. • The Temple is a Hindu temple dedicated to **Ranganatha (a form of Vishnu)** located in **Srirangam, Tiruchirapalli, Tamil Nadu, India.** • The temple has the unique distinction of being the first among the **108 Divya Desams** dedicated to **Lord Vishnu**. • **Srirangam Temple is the largest temple complex** in India and one of the largest religious complexes in the world. • In **2017, the temple received the UNESCO Asia Pacific Award of Merit for Cultural Heritage Conservation for the year 2017**, making it the first temple in Tamil Nadu to receive an award from UNESCO.
Srisailam Temple	• The Archaeological Survey of India (ASI) has made a significant discovery at the Srisailam Temple in Andhra Pradesh, uncovering several copper plates and other ancient inscriptions in the temple's Ghantamandapam. • The Srisailam Temple, dedicated to Lord Shiva as Mallikarjuna Swamy and Goddess Shakti as Bramarambha, is located in Andhra Pradesh's Nallamala hills. • A revered Jyotirlinga, it showcases exquisite Dravidian and Vijayanagara architectural styles. • The temple's unique combination of Jyotirlinga and Mahasakthi in one complex is rare and it is believed that Aadi Sankara composed the Sivananda Lahiri here.

Festivals in News

Name	Details
Makaravilakku	• Amid an unprecedented rush of devotees who had been camping in and around the Sabarimala Ayyappa temple, the Makaravilakku festival was celebrated at the hill shrine. • Makaravilakku, celebrated on Makara Sankranti at Sabarimala Temple in Kerala, marks the end of the annual pilgrimage. • The highlight is the divine Makarajyothi light, believed to be a manifestation of Lord Ayyappa, visible from Ponnambalamedu. • The festival lasts seven days, concluding with the Guruthi ritual to honor the wilderness deities

News in Short

Name	Details
Winter Char Dham	The Uttarakhand government inaugurated the winter Char Dham circuit, aimed at drawing tourists to the state in the off-season winter months.

	About Char Dham
	 • Char Dham is located in the Garhwal Himalayas of Uttarakhand and includes Gangotri, Yamunotri, Kedarnath and Badrinath. These shrines attract thousands of pilgrims every year from May to November, contributing significantly to the economy of the state.
	    o Gangotri: Mukhba, Uttarkashi
	    o Yamunotri: Kharsali, Uttarkashi
	    o Kedarnath: Omkareshwar Temple, Ukhimath, Rudraprayag
	    o Badrinath: Pandukeshwar, Chamoli

World Braille Day	Recently, the World Braille Day was observed on January 4th. **About Day** • It is observed on **4 January 2025, celebrating the birth anniversary of Louis Braille**, the inventor of the tactile reading and writing system that revolutionized access to education and communication for visually impaired individuals worldwide. **What Is Braille?** • Braille is a tactile code system that uses raised dots to represent **letters, numbers, punctuation marks and even entire words**. It allows visually impaired individuals to read and write using their sense of touch.
Kokborok language	• The Twipra Student Federation staged a protest in Agartala, demanding the adoption of the Roman script for the Kokborok language. • Kokborok, spoken by around 8.8 lakh people in Tripura, is a Sino-Tibetan language of the Borok people. • Declared one of Tripura's official languages in 1979, its roots date back to at least the 1st century AD, with early records appearing in the Raj Ratnakar and the term "Kok-boro" emerging in 1897.
Kalaripayattu	• The Indian Kalaripayattu Federation has accused the Indian Olympics Association (IOA) of "relegating" the martial arts to the demonstration section of the event. • Kalaripayattu, originating in Kerala and founded by warrior sage Parasurama, is an ancient martial art known for its distinct styles—northern and southern—focusing on weaponry and combat techniques inspired by animals. • It has evolved into a competitive sport, with athletes winning 22 medals, including 19 gold, at the 2023 National Games.
Ratnagiri	• Odisha's links to Buddhism date back to Mauryan Emperor Ashoka's invasion of the ancient kingdom of Kalinga. • The Ratnagiri Buddhist Site, located in Odisha's northeast between the Birupa and Brahmani rivers, was a significant center of Mahayana and Tantrayana Buddhism from the 5th to the 13th centuries.

	Known for its colossal Buddha head and inscribed relics, it was visited by the Chinese monk Hiuen Tsang in AD 638-639 and was first documented in 1905.
Rakhigiri	• A reservoir unearthed last month in Haryana's Rakhigarhi is not just a marvel of Harappan engineering but also advances evolving research on the Saraswati River.
	• Rakhigiri, located in Haryana's Ghaggar-Hakra river region, is one of the oldest and largest cities of the Indus Valley Civilization, dating back to around 6500 BCE. • Key findings include planned neighborhoods, red ware ceramics, animal sacrifice pits and a notable cylindrical seal, shedding light on Harappan rituals and early urban planning.
Etikoppaka Toys	• As the nation celebrated its 76th Republic Day, a particularly captivating tableau from Andhra Pradesh made its way down New Delhi's Kartavya Path, earning applause from onlookers. • Etikoppaka Toys, originating from a 400-year-old tradition in Andhra Pradesh, are handcrafted from lightweight Ankudu wood and dyed with natural, non-toxic plant-based colors. • Known for their cultural significance, depicting mythological figures and ancient motifs, they received a GI tag in 2017 and are celebrated globally for their eco-friendly craftsmanship.
Lezim Dance	• A scene from the trailer of the upcoming Bollywood film Chhava, based on the life of Maratha ruler Chhatrapati Sambhaji Maharaj, has led to controversy in Maharashtra. • Lezim, a folk dance from Maharashtra, is characterized by vigorous physical drills performed in formations, with dancers using a wooden stick with jingling cymbals (Lezim) as the main instrument. • The dance is accompanied by percussion instruments like the Dholki and Dhol and while traditionally used in various folk dances, the Lezim is now mainly featured in Ganesha processions.

7.3   ADDITIONAL TOPICS FOR READING FROM IASGYAN WEBSITE

Topics Name	Uploaded Date
Evolution of the tabla and its various gharanas	10TH January 2025
Kuka Martyrs day	19TH January 2025
Iron age	27th January 2025
Sambhaji Maharaj	29th January 2025
Pallava dynasty	22ND January 2025
Nagoba Jatara	30th January 2025

8. GEOGRAPHY AND DISASTER MANAGEMENT

8.1 HOW CLIMATE CHANGE IS AFFECTING EARTH'S WATER CYCLE

Context
- The water cycle is crucial as it not only enables the availability of water for all living organisms but also regulates weather patterns on the Earth.

Background
- Climate change is wreaking havoc on the planet's water cycle with serious consequences for ecosystems and human populations.
- The **Global Water Monitor Report 2024** highlights the alarming impacts of climate change on water distribution and availability.
- **Researchers from various countries**, including Australia, Saudi Arabia, China and Germany, compiled the report using data from ground stations and satellites.
- The findings suggest that the water cycle is **becoming more erratic, affecting billions of people around the world.**

What is the water cycle?
- The **water cycle is the constant movement of water in all its phases** — solid, liquid and gas — on the ground, inside the ground and in the atmosphere.
- **Most water cycles** through the planet because of the energy from the Sun and changes in temperatures.
  - **For example**, water on the ground or in bodies of water escapes into the atmosphere as water vapor through a process called evaporation.
- Some water is taken up by plants from the **soil and released as water vapour**, a process known as **transpiration**.

How is climate change impacting the water cycle?
- **Climate change has intensified the water cycle**. As global temperatures rise, more water evaporates into the atmosphere.
- The ability of warmer air to hold moisture increases by **approximately 7% for every 1-degree Celsius increase in temperature**. This leads to stronger storms, increased rainfall intensity and ultimately catastrophic flooding in various regions.

Regional variability in weather patterns
- The **impact of climate change** on the water cycle is not uniform. Some areas experience more frequent and intense storms, while others suffer from prolonged drought.
- As **evaporation rates increase**, soil moisture decreases, exacerbating drought conditions.
- **When rain does occur**, it often runs off hard, dry ground and cannot adequately replenish water sources.

Future projections for the water cycle
- If greenhouse gas emissions are not controlled, global temperatures could rise by 2**.6 to 3.1 degrees Celsius this century.**
- Such an increase is expected to make the water cycle even more unbalanced. A study published in 2022 showed that climate change has already intensified the **global water cycle by up to 7.4%.**

- The **Intergovernmental Panel on Climate Change (IPCC)** has warned of long-term changes to the water cycle, predicting more frequent and intense droughts and extreme rainfall.

What are the findings of the latest report?
Water-Related Disasters (2024)

- 8,700+ fatalities, 40 million displaced, $550 billion in economic losses

Record-Dry Months (2024)

- 38% more than the 1995-2005 baseline

Record High Rainfall (2024)

- Monthly rainfall records set 27% more often, daily rainfall records set 52% more frequently

Terrestrial Water Storage (TWS)

- Ongoing low values in dry regions; increases in western, Central and Eastern Africa

Drought Forecast (2025)

- Potential worsening in northern South America, southern Africa and parts of Asia

Flood Risks (2025)

- Increased in wetter regions like the Sahel and Europe

8.2 SHORT ARTICLES

Ground Water Report of the Country for the Year 2024

Context

- The Union Minister of Jal Shakti has released the 2024 Annual Ground Water Quality Report for the entire country.

About groundwater recharge

- In a general sense, groundwater recharge refers to the process of downward flow of water through the soil into the groundwater.
- Water flow can be caused by rain or precipitation, melting snow that has percolated down through unsaturated zones.

Key details

Parameter	Details
Monitoring Sites	More than 15,200 monitored sites; 4,982 trending stations evaluated for targeted studies.
Cation Chemistry	Calcium is dominant, followed by sodium and potassium.
Anion Chemistry	Bicarbonate is the most common, followed by chloride and sulfate.
Water Type	Calcium-bicarbonate type prevails throughout the country.
Contamination Problems	Sporadic presence of nitrates, fluorides and arsenic in some areas.

Parameter	Details
Total Annual Groundwater Recharge	446.90 BCM
Annual Extractable Groundwater	406.19 BCM
Annual Groundwater Extraction	245.64 BCM
Stage of Groundwater Extraction	60.47%

Assessment Units Classification

Category	Units (No.)	Percentage (%)	Details
Safe	4951	73.4	Groundwater use is within sustainable limits.
Semi-Critical	711	10.5	Moderately stressed; requires monitoring.
Critical	206	3.05	High stress; significant interventions required.
Over-Exploited	751	11.1	Groundwater use exceeds recharge; urgent corrective action needed.
Saline	127	1.8	Predominantly brackish/saline groundwater.

Trends and Observations

Parameter	2024	2023	2017	Remarks
Total Annual GW Recharge (BCM)	446.90	Slight reduction	Increased by 15 BCM	Increase attributed to recharge from tanks, ponds and conservation structures.
Recharge from Tanks, Ponds & WCS	25.34	24.95	13.98	Increased by 11.36 BCM since 2017.
Percentage of Safe Units	73.4	73.14	62.6	Shows improvement in groundwater conditions.
Percentage of Over-Exploited Units	11.13	11.23	17.24	Decline reflects better groundwater management practices.

Improvements in Groundwater Conditions

Category	Details
Recharge Improvement	Increase of 0.39 BCM in recharge from tanks, ponds and WCS in 2024 compared to 2023.
Decrease in Stress Levels	Reduction in over-exploited, critical and semi-critical units compared to 2023.
Assessment Units Improved	Groundwater conditions improved in 128 units compared to 2023.

Polavaram project

Context

- The Telangana government has decided to rope in experts from the Indian Institute of Technology, Hyderabad (IIT-H), to study the impact of the construction of the Polavaram major irrigation project on the Godavari River in Telangana.

About Polavaram project

- The Polavaram project is a **multipurpose irrigation project**. The dam across the Godavari River is under construction and located in the **West Godavari and East Godavari districts of Andhra Pradesh** state and its reservoir also spans parts of **Chhattisgarh and Orissa states**.

- The **project is a multi-purpose terminal reservoir project** on the **Godavari River** for the development of irrigation, hydropower and drinking water facilities in East Godavari, Vishakhapatnam, West Godavari and Krishna districts of Andhra Pradesh.

- The Polavaram project was given national status in 2014 in the Andhra Pradesh Bifurcation Act and its design was changed.

Objectives of the Polavaram Project

- The project envisages the construction of an Earth-cum-Rock dam across the Godavari River.

- **This project will supply 23.4 TMC drinking water** to Visakhapatnam city and also to the Vizag steel plant through the left channel
- It will also facilitate the inter-basin movement of 80 TMC per annum to the Krishna River Basin through its Right Canal.
- It will also provide indirect benefits such as the development of fisheries, tourism and urbanization.

Features:
- The project envisages the construction of an Earth-cum-Rock dam across the Godavari River.
- The maximum height of the dam is 48 m.

Benefits for other states:
- Odisha and Chhattisgarh will receive 5 **TMC and 1.5 TMC of irrigation water,** respectively.

- Odisha and Chhattisgarh can develop and operate fish farming and boating facilities in their territories.
- **80 TMC of water in the Krishna River** will be saved due to the diversion of the same amount from the Godavari River.
- Water saved in the Krishna River will be shared between **Andhra (45 TMC), Karnataka (21 TMC) and Maharashtra (14 TMC).**

Significance to Andhra Pradesh:
- It irrigates nearly 3,00,000 ha of land, generates hydel electricity with an installed capacity of 960 MW and provides drinking water facilities to 540 villages en route covering a population of 25 million.

Artesian condition

Context
- Recently the Hydro-Geologist at the Rajasthan State Ground Water Department, attributed the incident to an "artesian condition.

What is an artesian condition?
- According to the **United States Geological Survey's website** an artesian aquifer refers to water stored under pressure, between layers of sediments and soil below the earth's surface. It is also described as "confined" water because of hardy materials above and below it.

Factors leading to artesian condition:

Factor	Description
Confined Aquifer	Water is trapped between layers of impermeable rock, making it difficult for it to escape.
Pressure Gradient	Natural geologic pressure from overlying rock layers creates internal pressure in aquifers.
Bursting or Drilling	Breaching the confining layer (e.g., through drilling) releases built-up pressure, forcing water upward.

How does it work?
- Once the upper impermeable layer is breached, artesian water naturally flows to the surface, driven by the internal pressure of the aquifer. Depending on the depth and pressure in the aquifer, water can erupt violently.

Global examples:
- **Artois, France**: Artesian wells in this area were among the first documented during the Middle Ages.
- **Australia**: Artesian wells are common in arid central regions and help support agriculture in otherwise arid regions.
- **Africa**: Some areas of Africa, especially in desert areas, rely on artesian wells to access groundwater.

Importance:

- **Artesian wells are especially important** in desert and arid regions where water is scarce. The natural flow of artesian water can provide a reliable source of water without the need for energy-intensive pumps.
- **Artesian wells allow irrigation** in places with limited access to surface water, allowing crops to be watered without the need for machinery.

Blue Carbon
Context
- A report titled Blue Carbon and its Role in Carbon Sequestration published in 2024 revealed that mangroves alone can store more than 1,000 tons of carbon per hectare.

About Blue Carbon:
- Blue carbon is carbon captured by the world's ocean and coastal ecosystems. World mangroves, seabed and salt swamps include **"blue carbon ecosystems".**
- **They are the most effective carbons of nature**. Coast ecosystems such as mangroves, tidal swamps and marine meadows, sequences and deposit more carbon on a unit of areas than earthly forests and now recognize their role in mitigating climate change.
- **Activities cause loss of ecosystems of coastal blue carbon:** The main causes of transformation and degradation of blue carbon ecosystems vary all over the world but are largely driven by human activities.
- **Joint drivers are aquaculture, agriculture, mangrove forest exploitation**, earthly and marine sources of pollution and industrial and urban coastal development.

Wetland Accredited Cities
Context
- Indore and Udaipur have become the first two Indian cities that made it to the global list of accredited wetland cities under the Ramsar Convention.

Key Highlights of the Cities Nominated for WCA:
- **INDORE**: Lake Sirpur (instead of Ramsar) is recognized as a **gathering of water birds** and evolving as a shrine of birds.

- **UDAIPUR**: surrounded by five main wetlands, namely **Pichola, Fateh Sagar, Rang Sagar, Swaroop Sagar and Doodh Talai.**

About Wetland Accredited Cities (WCA)
System Type
- Voluntary accreditation

Approval
- Approved during Ramsar COP12 Convention (2015)

Objective
- Promote protection and wise use of urban and suburban wetlands, ensuring sustainable socio-economic benefits for local populations.

Accreditation Validity
- Valid for 6 years; renewal required if the city continues to meet all 6 criteria.

Recognition
- Recognizes cities that have taken exceptional steps to ensure the protection of city wetlands.

Wetland Importance
- Acknowledges the importance of wetlands in urban and suburban environments and promotes their protection.

Criteria for Accreditation
- Must meet international standards for each of the 6 criteria outlined in Ramsar WCA operating instructions.

Official Recognition
- As of Ramsar COP13, 74 cities from 17 countries have been officially recognized as "wetland cities".

The importance of WCA
- **Support the protection and wise use** of urban and suburban wetlands as well as sustainable socio-economic benefits for local populations.
- **Encourage narrow and dependent** cities, especially wetlands of international

importance, to strengthen the positive relationship with these valuable ecosystems.

* Assistance in implementing **the AMRIT DHARAHAR of Ministry of Environment, Forest and Climate Change of India**.

Ramsar Convention:

* It is an **intergovernmental contract** that provides a framework for the protection and wise use of wetlands and their resources.
* **Adopted in 1971 and entered into force in 1975.**
* There are currently 85 Ramsar seats in India.

Places in News

Name	Details
Trinidad and Tobago	• The government of Trinidad and Tobago declared a state of emergency in the Caribbean dual-island nation. • Trinidad and Tobago is a **two-island nation located in the southern Caribbean, near the northeast coast of Venezuela**. It is the southernmost island country in the Caribbean. • It is an active member of **CARICOM**, the **Organization of American States (OAS) and the Commonwealth of Nations.** • Trinidad is a larger and more populated island. Tobago is a smaller island located northeast of Trinidad.
The World's largest dam on the Tsangpo	• China recently approved the construction of the world's largest hydropower project on the Yarlung Tsangpo River (also known as the Zangbo River), located in Tibet. • The dam has **more than three times the capacity of the Three Gorges Dam (currently the largest in the world, in central China).** • **Project Overview** • **Location**: The lower reaches of the Yarlung Zangbo River (the Tibetan name for the Brahmaputra) in a huge gorge in the Himalayas where the river flows into Arunachal Pradesh. • **Stated Purpose**: To support China's carbon neutrality goals, support industry and create jobs in Tibet.
Great Nicobar Island	An international cruise terminal to facilitate a "global" port-led city, "high-end" tourism infrastructure and a ship-breaking yard are among the new additions to the ₹72,000 crore mega-infrastructure project in Great Nicobar Island proposed by the Union Shipping Ministry. **Location** • Southernmost tip of the Nicobar archipelago (520 km from Port Blair). **Headquarters** • Campbell Bay. **Ecological Properties** • **Forests**: Tropical moist evergreen forests. • **Mountain Ranges**: Mt. Thullier (642 m) • **Flora:** Cyathea albosetacea (tree fern), Phalaenopsis speciosa (orchids), gymnosperms, bryophytes, lichens.

	• **Fauna:** Edible Macaque, Nicobar Shrew, Dugong, Nicobar Megapod, Serpent Eagle, Saltwater Crocodile, Sea Turtles. **UNESCO Recognition** • Included in the World Network of Biosphere Reserves in 2013.
Kalpeni island	A group of divers exploring marine life near Kalpeni island in the Lakshadweep archipelago stumbled upon the wreck of what, it appeared, had been a warship. **Location** • Located in the Lakshadweep archipelago in the Arabian Sea from Kochi, Kerala. **Geographical Position** • Southeast of Kavaratti Island, midway between Androth and Minicoy. **Atoll** • Part of a single atoll, together with Tilakkam and Pitti islets and the uninhabited island of Cheriyam in the north. **Natural Features** • Famous for coral reefs, crystal clear water and powdery white beaches. **Lagoon** • The lagoon stretches approximately 2.8 kilometers at its widest point, oriented north-south. **Coral Reef System** • Surrounded by an extensive coral reef system, rich in marine life and ideal for snorkeling and diving. **Climate** • Similar to Kerala's tropical climate.
Gulf of Mexico	• US President-elect Donald Trump that he will change the name of the Gulf of Mexico to "Gulf of America". • The Gulf of Mexico, the world's largest gulf, lies at the southeastern edge of North America, bordered by Mexico, the U.S. and Cuba. • Formed around 300 million years ago due to tectonic subsidence, it connects to the Caribbean via the Yucatán Strait and to the Atlantic via the Florida Strait. • It has a tropical to subtropical climate, experiences hurricanes and houses major oil and gas reserves, contributing significantly to the U.S. energy sector.
Ring of fire	• Japan's position along the "Ring of Fire", a string of hundreds of volcanoes and earthquake sites in the Pacific Ocean, makes it vulnerable to frequent earthquakes. • The Ring of Fire, also known as **the Circum-Pacific Belt**, is a chain of numerous volcanoes and earthquake-prone areas that runs along the Pacific Ocean. • It forms a **horseshoe-shaped semicircle** with a length of approximately 40,250 kilometers. • The Ring of Fire marks the boundaries between several tectonic plates such as **the Pacific, Juan de Fuca, Cocos, Indo-Australian, Nazca, North American and Philippine plates.** • It passes through 15 other countries, including the **USA, Indonesia, Mexico, Japan, Canada, Guatemala, Russia, Chile, Peru and the Philippines.**

Neduntheevu island	• According to police sources, the registered boats, belonging to P. Selvam and S. Uyirtharaj, of Thangachimadam, had set out from the fish landing centre at Rameswaram. • Neduntheevu (Delft Island) is the largest island in the Palk Strait, northern Sri Lanka, covering 50 sq. km. • It is a flat, wind-blown island with semi-arid vegetation and no natural streams, relying on surface water collection. • Home to 4,800 Tamils, it features a historic Dutch fort built from coral.
Diego Garcia island	• As many as 15 fishermen who ventured into the sea from the Thengapattinam fishing harbour in Kanniyakumari, Tamil Nadu, were reportedly detained near Diego Garcia Island. • Diego Garcia, the largest atoll in the Chagos Archipelago, is part of the British Indian Ocean Territory. • Leased to the US in 1966, it serves as a key military base. Native inhabitants were forcibly displaced for defense infrastructure. • In 2019, the ICJ deemed British control unlawful, with the UN calling for its return to Mauritius.
Cabo Verde	• The World Bank's Country Climate and Development Report estimates Cabo Verde will need to invest $842 million from 2024-2030, or $140 million annually, to tackle climate and development challenges. • Cabo Verde, an African archipelago in the Atlantic Ocean, consists of 10 volcanic islands. • Located near Senegal, it has a moderate climate with extreme aridity. • The population is mostly of mixed European and African descent, with Portuguese and Cape Verdean Creole as the main languages. Praia is the capital.
Siachen glacier	Reliance Jio announced that it had extended its 4G and 5G services to Siachen Glacier, known as the world's highest battlefield, a day before the Army Day. **Type** • Foothill Glacier **Location** • Karakoram Mountains **Region** • Heavily glaciated Himalayan region, known as the "Third Pole" **Freshwater Significance** • Contains more freshwater than anywhere else on Earth except the polar glaciers **Boundaries** • Lies between the Saltoro Ridge (west) and the main Karakoram Range (east) **Length** • Second longest non-polar glacier in the world (after Fedchenko Glacier in Tajikistan) **Origin** • Base of Indira Col West, a saddle on Indira Ridge **Strategic Location** • Dominates Shaksgam Valley (ceded to China by Pakistan in 1963); controls routes from Gilgit Baltistan to Leh; commands the Karakoram Pass

	Main River Source • Nubra River, a major tributary of the Shyok River
Abd al-Kuri Island	• A mysterious airstrip being built on a remote island in **Yemen** is nearing completion, satellite photos analysed by The Associated Press show. • Abd-al-Kuri Island, located 65 miles southwest of Socotra in the Indian Ocean, is part of Yemen's Socotra Archipelago. • With a population of under 500, the island's residents primarily rely on fishing. • It is home to unique flora, including Euphorbia abdalkuri, known for its toxic sap and features Mount Jebel Saleh as its highest point at over 700 meters.
Lake Victoria	• An international team of researchers from North America and Kenya has completed a genetic survey of cyanobacteria — photosynthetic microscopic organisms also called harmful algal blooms — in the Winam Gulf of Lake Victoria, Kenya. • It is the **second-largest freshwater** lake in the world. • It is Located in East Africa on the border with **Tanzania, Uganda and Kenya.** It is also called Victoria **Nyanza in Kenya, Nalubaale in Uganda and Ukerewe in Tanzania**. • It is the source of the White Nile River, which flows north and eventually joins the Blue Nile in **Sudan to form the Nile River**. • The lake supports the **largest freshwater fishery in the world,** producing 1 million tons of fish annually.
Mount Ibu	• **Indonesian officials called for the evacuation of 3,000 people living in six nearby villages due to the eruption of Mount Ibu volcano.** • Mount Ibu is a stratovolcano located on Halmahera Island, Indonesia, characterized by its steep conical shape formed from layers of lava, ash and debris. • Situated along the Pacific Ring of Fire, Indonesia faces high vulnerability to volcanic eruptions due to its geotectonic setting. • Other notable Indonesian volcanoes include Mount Lewotobi Laki-Laki and Mount Ruang, both with histories of explosive eruptions.

Rivers in News

Name	Details
Gomti River	The Territorial Army established a new task force dedicated to the rejuvenation and protection of the Gomti River. **Tributary Of** • Ganga River **State** • Uttar Pradesh **Origin** • Gomat Taal (Fulhaar Jheel) near Madho Tanda, Pilibhit district, Uttar Pradesh **Drainage Area** • Area between the Ramganga and Sharda rivers

	Course • Flows south through Lucknow, Barabanki, Sultanpur, Faizabad and Jaunpur before joining Ganga River **Flow Characteristics** • Perennial rivers with slow flow, except during monsoon when heavy rainfall causes a significant increase in runoff. **Major Tributaries** • Sai River, Chowka River, Kathina River and Saryu River
Alakananda River	According to a recent study conducted by IIT Roorkee researchers Alaknanda River flowing through the Garhwal region has been identified as 'most vulnerable to landslide-induced natural dams. **Main Tributary** • One of the two main tributaries of the Ganga (along with Bhagirathi River) **Origin** • Melting waters of the Satopanth and Bhagirath Kharak glaciers in the Garhwal Himalayas, Uttarakhand. **Major Confluences** • **Vishnuprayag**: Alaknanda meets Dhauliganga River • **Nandprayag**: Alaknanda meets Nandakini River • **Karnaprayag**: Alaknanda meets Pindar River • **Rudraprayag**: Alaknanda meets Mandakini River • **Devprayag**: Alaknanda meets Bhagirathi. **Ganga Formation** • The Alaknanda contributes more significantly to the Ganga's flow than the Bhagirathi at the time of formation **Char Dham Yatra** • Includes Badrinath, Kedarnath, Gangotri and Yamunotri, with Alaknanda being a significant part of the route.
Pavana river	The National Green Tribunal's western bench in Pune earlier this month directed the state-appointed rejuvenation committee to convene a meeting of stakeholders to set a new timeline for implementing the action plan that would tackle pollution in the Pavana River. **Location** • Located in the west of **Maharashtra**, Pune district, passing through the city of Pune, dividing Pune and Pimpri-Chinchwad region. **Origin** • Originates from the **Western Ghats,** about 6 km south of **Lonavala**. **Course** • Flows east initially, turns south, passing through De**hu, Chinchwad, Pimpri and Dapodi** before merging with the **Mula River near Pune city**. **Confluence** • **Mula River joins the Mutha River** to form the **Mula-Mutha River**, which eventually flows into the **Bhima River (a major tributary of the Krishna River).**

Bharathapuzha	Recently, A family of four drowned in the Bharathapuzha at Painkulam, near Cheruthuruthy. **Origin** • Small streams in various parts of the Western Ghats near the Anamalai range in Tamil Nadu. **Flow Path** • Flows west through the Palakkad Gap (Palghat Gap), through the Palakkad and Malappuram districts of Kerala, with many tributaries joining it. **Tributaries** • Tirur River (major), Gayathripuzha, Kalpathipuzha and Pulanthode. **Water Flow** • Lower compared to other long rivers in Kerala due to a significant portion of the catchment being in dry areas (Tamil Nadu and Palakkad Gap). **Temperature** • Varies by season as the basin lies in the tropical zone. **Reservoirs/Dams** • 13 structures, including Aliyar Dam, Thirumurthi Reservoir, Malampuzha Reservoir (largest), Walayar Dam, Mangalam Dam, Pothundi Dam and others.
Krishna River	The Telangana government has welcomed the order of the Krishna Water Disputes Tribunal-II (KWDT-II), chaired by Justice Brijesh Kumar, to adjudicate the matter of water allocation between Telangana and Andhra Pradesh. **Source** • Originated near Mahabaleshwar (Satara) in Maharashtra. **Length and Flow** • The second largest river in Peninsular India after the Godavari River. **Drainage** • Flows through Maharashtra, North Karnataka, Telangana and Andhra Pradesh. **Tributaries** • **Right Bank:** Ghatprabha, Malprabha, Tungabhadra. • **Left Bank:** Bhima, Musi, Munneru. **Hydropower Plants** • Major projects include Koyna, Tungabhadra, Srisailam, Nagarjuna Sagar, Almatti, Narayanpur and Bhadra.
Vaigai River	• Madras High Court on Monday directed the local bodies in Madurai, Theni, Dindigul, Sivaganga and Ramanathapuram districts to file an action plan with a timeline to prevent pollution in the Vaigai River. • The Vaigai River originates in the Varusanadu and Megamalai hills of the Western Ghats and flows through Tamil Nadu, draining into the Palk Strait near Pamban Bridge. • It serves as a vital water source for five districts and is historically significant in Sangam literature, with cultural ties to the ancient Pandya kingdom's capital, Madurai. • Its main water source is the Periyar Dam in Kerala.

Teesta River	• The Union Ministry of Environment, Forest and Climate Change (MoEF&CC) has approved the proposal for rebuilding the Teesta-III dam, despite concerns over its design and stability.
	• The Teesta River, originating from the Chhombo Chhu in Sikkim, flows through India and Bangladesh.
	• It initially emptied into the Padma River but changed course in 1787 to join the Jamuna River.
	• Major tributaries include Lachung Chhu, Zemu Chhu and Rangit River.
	• It cuts through the Siwalik Hills and flows into the plains via Sivok Khola.

Passes/Tunnel/Bridge/Projects in News

Name	Details
Banihal Pass	• Union Minister for Road Transport and Highways announced the completion of a 4-lane, 2.35 km Banihal Bypass on NH-44.
	• It is the 2.35 km four-lane Banihal Bypass in Jammu and Kashmir, a stretch that is riddled with chronic traffic jams.
	• Strategically located on the Ramban–Banihal section of NH-44, the bypass is effectively addressing the ongoing bottleneck caused by roadside markets and shops.
	• This critical infrastructure ensures unrestricted traffic flow, significantly reducing travel time and traffic congestion for tourists as well as defense vehicles en route to the Kashmir Valley.
Z Morh tunnel	• The Z-Morh tunnel is set to become the first major milestone in the effort to build a strategic corridor between Kashmir and Ladakh which is open all through the year.
	• The Z-Morh Tunnel in Ganderbal, central Kashmir, ensures year-round access to Sonamarg, overcoming winter snow and avalanche blockages.
	• Located under Thajiwas Glacier, it enhances connectivity by bypassing hazardous areas and integrating an intelligent traffic system.
	• Spanning 6.5 km with a dual carriageway, it links to the Zojila Tunnel, significantly reducing travel time to Ladakh.
	• The tunnel is expected to boost tourism and regional development.
Anji Khad bridge	• The bridge, about 80 km from Jammu, spans a total length of 725.5 meters and features a main pylon standing at 193 meters above its foundation, towering 331 meters above the riverbed.
	• It is the **smaller of the two main bridges on the line with a central cable span of 290 met**res. The largest – across the **Chenab River** – will be the **tallest arch railway bridge ever** built at 321 metres.
	• **Located in Reasi district, Jammu and Kashmir**, it is part of the **Udampur-Srinagar-Baramulla Rail Link (USBRL) project.**
	• It will **connect Katra and Reasi and enhance connectivity** between the Jammu region and the Kashmir Valley. It is built over the **Anji River, a tributary of the Chenab River.**

	• **Indian Railways collaborated with IIT Roorkee and IIT Delhi** for detailed site-specific surveys aimed at ensuring stability and safety of the bridge.
Punatsangchhu-II Hydroelectric Project (PHEP-II)	• BHEL commissions first two units of mega Bhutan hydroelectric project. • The Punatsangchhu-II Hydroelectric Project (PHEP-II) is a greenfield project in Wangdue, Western Bhutan, developed under a bilateral agreement between India and Bhutan. • Funded by India (30% grant, 70% loan at 10% interest), it aims to meet Bhutan's energy needs while exporting surplus power to India, enhancing regional energy security. • Executed by BHEL's Power Sector Eastern Region, it supports India's clean energy diversification.
Upper Karnali Hydro project	• The Indian Renewable Energy Development Agency Ltd. (IREDA) has entered into a Joint Venture Agreement with SJVN Ltd., GMR Energy Ltd. and Nepal Electricity Authority (NEA) for the development of the 900 MW Upper Karnali Hydro-electric Project in Nepal. • The 900 MW run-of-river hydropower project on the Karnali River in Nepal is being developed by GMR Upper Karnali Hydro Power Limited (73%) and Nepal Electricity Authority (27%). • It will supply electricity to Nepal, India and Bangladesh, generating approximately 3,466 million units annually and offsetting about two million tons of greenhouse gases. • Construction is set to begin in 2027, with commercial operations expected by 2031.
Pangsau Pass	• The Pangsau Pass International Festival is set to return to Nampong, Arunachal Pradesh, marking its comeback after a four-year hiatus. • Pangsau Pass is located on the Patkai Hills along the India-Myanmar border, named after the nearby Burmese village of Pangsau.
	• Historically significant, it was a key route for the Shan tribe's invasion into Assam in the 13th century and a major obstacle for General Stilwell's Road to China during World War II. • It connects the Assam Plains to Burma and offers a view of the Lake of No Return, earning nicknames like "Hell Gate" due to the difficult terrain.

Tribes in News

Name	Details
Mannan tribe	• Raman Rajamannan, the king of the Mannan community and the only tribal king in Kerala, will participate in the Republic Day parade in Delhi. • The community predominantly resides in Idukki district, Kerala, with cultural roots from Tamil Nadu. • They speak a Tamil-based dialect and follow a matrilineal descent system. • Traditionally agricultural, they engage in coconut and herb harvesting and celebrate festivals like Kalavoot and Meenoot. • Their unique ritual art form, Mannankoothu, is performed during worship, harvest and weddings.

Shompens	• Prof. Vishvajit Pandya, Director of ANTRI, presented key findings from his report on the Shompens, an indigenous community of Great Nicobar Island.
	• The Shompens are one of the most isolated and least studied Particularly Vulnerable Tribal Groups (PVTG) of India, residing in the dense tropical rainforests of Great Nicobar Island.
	• They are nomadic hunters with a diet based on rainforest plants, primarily Pandanus fruit.
	• They speak a language with multiple dialects, live in nuclear families and follow a patriarchal structure.
	• Their beliefs center around worshiping the moon as their goddess.

Miscellaneous

Name	Details
India Meteorological Department (IMD)	• IMD is one of the earliest government departments created for systematic observation, regular reporting and scientific forecasting of weather in the Indian subcontinent.
	• The IMD was **established in 1875**. It is the country's national meteorological service and the main government agency in all matters relating to meteorology and allied subjects.
	• It **functions as an agency of the Department of Earth Sciences, Government of India.**
	• Its **headquarters are in New Delhi.**
	• The IMD is also one of six regional specialized meteorological centers of the **World Meteorological Organization**.
Mucuna bracteate	• The Forest Department, in collaboration with a Kanniyakumari-based NGO, is conducting a pilot project to remove the invasive Mucuna bracteata from rubber plantations and forest areas.
	• Mucuna bracteata, an **invasive leguminous vine**, was introduced in rubber plantations for weed control and nitrogen fixation but has spread aggressively in the Western Ghats.
	• It **overpowers rubber and native trees**, affecting growth and extensively covers the Kodayar region.
	• Its spread near the **Kalakkad-Mundanthurai Tiger Res**erve raises ecological concerns, alongside other invasives like Lantana and Parthenium.
	• It thrives in Kanniyakumari's abandoned rubber plantations.
Santa Ana winds	• Multiple wildfires have destroyed homes and businesses and covered cities and highways in smoke in Southern California, the United States.
	• Santa Ana winds are strong, dry winds that blow from the Great Basin toward the California coast due to high pressure inland and low pressure over the Pacific.
	• As they descend over mountains, they warm and dry out, reducing humidity below 10%, increasing wildfire risks.
	• These winds occur mainly from October to January.

Garudakshi	• Karnataka's forest department launched a system to register FIRs online in cases related to wildlife and forests called Garudakshi. • The Garudakshi Portal is an initiative to curb forest crimes in Karnataka by enabling online FIR registration and case resolution. • Piloted in select divisions, it features modules for legacy case management, investigation and reporting. • Developed with the Wildlife Trust of India (WTI), it promotes public participation and automation while streamlining enforcement under forest and wildlife protection laws.
Cowpea	• The Vikram Sarabhai Space Centre (VSSC) sent eight cowpea seeds for the Compact Research Module for Orbital Plant Studies (CROPS) experiment to study plant growth in microgravity. • Cowpea (Vigna unguiculata) is an annual pea family (Fabaceae) plant. • It is a long-stalked legume crop producing black, white, or red-colored seeds that is widely used in various food preparations. • It originated and domesticated in southern Africa and was later translocated to eastern and western Africa and Asia. • It is also known as black-eyed pea, southern pea, etc. • Cowpeas are typically climbing or trailing vines that bear compound leaves with three leaflets. • Cereals contain 25% protein and several vitamins and minerals.
Mission Mausam	• IMD Mission Mausam: The mission will aim to upgrade the capabilities of India's weather department in forecasting, modeling and dissemination. • Mission Mausam aims to enhance India's weather and climate research, making the country "weather-ready and climate-smart."
	• With a Rs 2,000 crore budget, it is implemented by IMD, IITM and NCMRWP, focusing on advanced weather monitoring, high-resolution observations and next-gen forecasting technologies. • It improves forecast accuracy, aids climate change adaptation and benefits citizens with real-time weather data and disaster preparedness.
Sunken Worlds	• Scientists have discovered potential patches of Earth's ancient crust, sometimes called the "sunken worlds", deep within the mantle. • Sunken Worlds refer to submerged portions of the Earth's crust, often linked to tectonic activity and subduction. • These lost continental fragments, like Zealandia, provide valuable geological insights into Earth's structure and history. • Advanced geophysical tools help map and study these regions, aiding in understanding past continental formations, ocean circulation and geodynamic processes.
SADA	• The Konkan region located between the Arabian Sea on one side and the Western Ghats on the other is most well-known for its beaches and temples. • It is a flat peak formed due to centuries of erosion, locally called **sada**, which means a vast flat area. It is located in the **Konkan region of Maharashtra**. • They are similar to the plateaus, locally called **patar**, in the Satara district of **Maharashtra**, a well-known example being the **Kaas plateau**.

	Characteristics • The **orchards** are **barren** most of the year but change during the monsoons. • They are **rocky and harbor a unique endemic flora** that covers them in the monsoon season. Because it consists of a highly weathered **lateritic layer of soil** on the surface that acts as a rainwater catchment and recharges the groundwater.
Mud volcano	• According to NASA's Earth Observatory, the island was a result of the powerful eruption of the Kumani Bank mud volcano, which lies about 25 kilometers (15 miles) off the eastern coast of Azerbaijan. • Mud volcanoes are small cones made of mud and clay, typically formed by the release of gas, water and chemicals from underground sources like hot springs or oil fields. • They are usually less than a few meters high and may erupt with boiling mud. • Found globally in areas like Europe, Asia and the Americas, they are less dangerous than true volcanoes but can cause significant local damage when large.
KaWaCHaM	• KaWaCHaM is an advanced disaster warning system that integrates alerts, sirens and global weather models to improve the state's early disaster preparedness and public safety. • KaWaCHaM means Kerala crisis warning and risk management system and the word **Kavacam in Malayalam is reflected in the 'shield' symbolizing protection.**
	• It is an **advanced disaster warning system** that integrates warnings, sirens and global weather models to improve early disaster preparedness and public safety. • **Funding**: It is being developed with funding from the **National Disaster Management Authority and the World Bank** under the **National Cyclone Risk Mitigation Project.**
Subhash Chandra Bose Aapda Prabandhan Puraskar	• The Indian National Centre for Ocean Information Services (INCOIS) has been selected for the Subhash Chandra Bose Aapda Prabandhan Puraskar-2025, in the Institutional Category, for its excellent work in Disaster Management. • The National Disaster Management Award, announced on January 23rd (Subhash Chandra Bose's birth anniversary), recognizes individuals and organizations for their exceptional contributions to disaster management in India. • Eligible candidates include Indian nationals and institutions involved in prevention, mitigation, preparedness, rescue, relief, rehabilitation, research and innovation. • Winners receive certificates and cash prizes—₹51 lakhs for institutions and ₹5 lakhs for individuals.
WASP 127 b	• Scientists have detected 'supersonic winds' travelling at a speed of 33,000 km per hour on a giant gaseous planet named WASP-127b. • WASP 127 b is a hot Jupiter exoplanet located about 520 light-years away in the Milky Way, orbiting a star similar to the Sun.

	• It has a diameter 30% larger than Jupiter, with a mass just 16% of Jupiter's and extreme equatorial winds. • The planet experiences tidal locking, with one side always facing its star and temperatures reach around 2,060°F (1,400 K).

8.5 ADDITIONAL TOPICS FOR READING FROM IASGYAN WEBSITE

Topics	Uploaded Date
Banana cultivation in India	4th January 2025
Why is the Himalayan zone seismically active?	9TH January 2025
Global Risks Report 2025	19TH January 2025
National Mineral Development Corporation (NMDC)	24TH January 2025
National Disaster Response Force (NDRF)	22ND January 2025

8. GOVERNMENT SCHEMES

8.1   SHORT ARTICLES

Bharatpol

Context

- The Union Home Minister launched the BHARATPOL Portal.

About the BHARATPOL Portal

- It is **developed by the Central Bureau of Investigation (CBI)** to simplify the processing of international requests for assistance, including the issuance of Red Notices and other color-coded INTERPOL notices.

- It will provide Indian law enforcement agencies with real-time information, thus improving their ability to deal with international crimes.

- **It will facilitate faster access to international police assistance,** helping in the speedy processing of requests related to transnational crimes, including cybercrime, drug trafficking and human trafficking.

TYPES OF INTERPOL NOTICES

RED NOTICE: To seek the location and arrest of wanted persons with a view to extradition or similar lawful action.

YELLOW NOTICE: To help locate missing persons, often minors, or to help identify persons who are unable to identify themselves.

BLUE NOTICE: To collect additional information about a person's identity, location or activities in relation to a crime.

BLACK NOTICE: To seek information on unidentified bodies.

GREEN NOTICE: To provide warnings and intelligence about persons who have committed criminal offences and are likely to repeat these crimes in other countries.

ORANGE NOTICE: To warn of an event, a person, an object or a process representing a serious and imminent threat to public safety.

INTERPOL-UN SECURITY COUNCIL SPECIAL NOTICE: Issued for groups and individuals who are the targets of UN Security Council sanctions committees.

PURPLE NOTICE: To seek or provide information on modus operandi, objects, devices and concealment methods used by criminals.

Source: www.interpol.int   NATION GRAPHICS

About the Central Bureau of Investigation (CBI)

- The CBI was established in 1963 and it is **not a statutory body.**
- It operates **under the Ministry of Personnel, Public Grievances and Pensions.**
- As the **National Central Bureau (NCB) for INTERPOL in India**, it promotes international cooperation in criminal matters and supports law enforcement agencies across the country.
- It coordinates international cooperation in criminal matters by linking with various law enforcement agencies at the Central, State and Union Territory levels.
  - This coordination is done through INTERPOL Liaison Officers (ILOs) who communicate with Unit Officers (UOs) in the police force.

Seed Scheme

Context

- The distress among denotified tribes is increasing due to inadequate recognition and support.

About the SEED Scheme

- It is a program **launched by the Department of Social Justice** to support the development and welfare of Denotified Tribes (DNTs).
- It was **launched in 2022** to provide competitive exam coaching, health insurance, livelihood initiatives, financial assistance for house construction, financial support to the

National Rural Livelihood Mission (NRLM) and poverty eradication.

- The State Government or Union Territory (UT) identifies beneficiaries and issues necessary certificates for accessing benefits.
- However, the SEED scheme took over two years to launch due to challenges such as delayed implementation, lack of awareness and insufficient issuance of community certificates.

About Denotified Tribes (DNTs)

- Denotified Tribes (DNTs) are communities that were **once labeled as "born criminals" under the British colonial regime**. The Criminal Tribes Acts were passed in 1871 to control nomadic communities and those opposed to British expansion.
- **DNTs make up about 10% of India's population and have around 150 tribes**, including the Sansis, Pardhis and Kanjar Bhat.
- DNTs face social ostracization and stigma, making them vulnerable and deprived.
- **To empower DNTs:** Provide culturally sensitive healthcare, implement skill development programs, enact legislation to protect land rights and promote political representation.

About the Idate Commission

- It was formed in 2014 under Bhiku Ramji Idate to recommend welfare measures for DNTs.
- It **suggested the government repeal the Habitual Offenders Act 1952**, appoint a representative and formulate specific policies for them.
- It recommended protection for DNTs under the Atrocities Act, calling them the poorest, most marginalized and most downtrodden.
- It **suggested a constitutional amendment to add Scheduled NT/DNT/SNT as a third category** after Scheduled Castes and Scheduled Tribes.

Cashless Treatment Scheme for Road Accident Victims

Context

- The Union Minister for Road Transport & Highways has introduced a nationwide cashless treatment scheme for road accident victims.

About the Cashless Treatment Scheme for Road Accident Victims

- The scheme offers free medical treatment to all road accident victims across India.
- **Treatment Costs:** The government will bear the treatment costs if the police are informed about the accident within 24 hours.
- **Health Coverage:** Victims can receive health benefits for trauma and polytrauma cases at hospitals accredited under the Ayushman Bharat Pradhan Mantri-Jan Arogya Yojana (AB PM-JAY).
  - **Coverage can reach up to Rs 1.5 lakh per incident,** with the treatment duration limited to seven days.
- The National Health Authority (NHA) is collaborating with police, hospitals and state health authorities to implement a scheme for **victims of fatal hit-and-run accidents to provide ₹2 lakhs in compensation to their families.**

Scheme for Good Samaritans

- It was **launched by the Union Ministry of Road Transport and Highways (MoRTH) in 2021** and is effective until March 2026.
- Under this initiative, individuals who assist road accident victims by transporting them to a hospital or trauma care center within the 'golden hour'—the critical first hour after the accident—are rewarded with ₹5,000 per incident.

Svamitva

Context

- The Prime Minister distributed over 65 lakh property cards to property owners in 50,000 villages via video conferencing under the SVAMITVA Scheme.

About the SVAMITVA Scheme

- The **SVAMITVA (Survey of Villages and Mapping with Improvised Technology in Village Areas) Scheme** was launched in April 2020.
- It uses drone technology to survey rural land, issue property cards and grant legal ownership rights to rural households, empowering them economically.
- **Stakeholders in implementing SVAMITVA**
  - The **Ministry of Panchayati Raj (MoPR)** acts as the nodal ministry.
  - **State Panchayati Raj and Revenue Departments** coordinate at the state level.
  - The **Survey of India** conducts drone-based surveys.
  - **Gram Panchayats** and local authorities facilitate ground-level implementation.

Main objectives of SVAMITVA

- Empower rural households by granting **legal land ownership rights**.
- Enable property use as **financial assets** for loans and credit.
- Create **accurate land records** for rural planning and tax resolution.
- Reduce property disputes and improve legal clarity.
- Support **GIS-based Gram Panchayat Development Plans (GPDP)**.

How does SVAMITVA empower rural households economically?

- By granting legal property rights, the scheme allows owners to use their land as collateral for loans, access credit and invest in income-generating activities. It also reduces disputes, freeing resources for development.

Pradhan Mantri Fasal Bima Yojana (PMFBY)

Context

- The Union Government extended the coverage of the PM Fasal Bima Yojana (PMFBY) to include crop damage by animals.

About Pradhan Mantri Fasal Bima Yojana (PMFBY)

It was **launched in 2016 by the Ministry of Agriculture & Farmers welfare** with the aim to:

- Stabilize farmers' incomes and ensure farming continuity.
- Promote modern agriculture and crop diversification.
- Protect farmers from natural disasters, pests and diseases.
- Enhance credit access and sectoral growth.

Who is eligible to benefit from the PMFBY scheme?

- **Loanee farmers**: Mandatory coverage for those taking agricultural loans.
- **Non-loanee farmers**: Voluntary enrollment.
- **Others**: Sharecroppers/tenant farmers with land documents.
- Exclusions apply if compensation comes from other sources.

What benefits do farmers receive under PMFBY?

- **Subsidized premiums**: 2% (Kharif), 1.5% (Rabi), 5% (horticulture).
- **Comprehensive coverage**: Natural disasters, pests, post-harvest losses.
- **Timely payouts**: Claims settled within two months of harvest.
- **Tech-driven transparency**: Satellite and geotagging tools minimize disputes.

Recent change introduced to the PMFBY

- The Union Government expanded the PMFBY to cover crop damage caused by animals such as stray cattle, wild boars and elephants.
- States now notify such damage on a case-by-case basis as an add-on insurance cover.
- The government also integrated ISRO tools like the YES-TECH app to accelerate damage assessments and claim settlements.

Internet Governance Internship and Capacity Building Scheme

Context

- The National Internet Exchange of India (NIXI) has launched the Internet Governance Internship and Capacity Building Scheme.

About the Internet Governance Internship and Capacity Building Scheme

- It is an initiative by the **National Internet Exchange of India (NIXI)** to increase awareness and build expertise in Internet governance among Indian citizens.
- **The program offers a bi-annual internship with two tracks:**
  - **Six-Month Internship:** Provides in-depth exposure to Internet governance.
  - **Three-Month Internship:** Offers a shorter, intensive learning experience.
- Interns receive guidance from experts affiliated with global organizations, retired government officials and academic faculty.

- Interns are paid ₹20,000 per month.

About the National Internet Exchange of India (NIXI)

It is a not-for-profit organization established in 2003 under the **Ministry of Electronics and Information Technology**. Its key functions include:

- Promoting wider Internet access across India.
- Overseeing critical services like Internet Exchange Points (IXPs).
- **Key Services Provided:**
  - **Internet Exchange Points (IXPs):** Facilitate efficient Internet traffic exchange.
  - **IN Registry:** Manages India's .in domain digital identity.
- Promotes the adoption of IPv4 and IPv6 addresses.

Pradhan Mantri Fasal Bima Yojana (PMFBY) and Restructured Weather-Based Crop Insurance Scheme (RWBCIS)

Context

Production of some key minerals in the country has continued to witness strong growth during FY 2024-25, after reaching record production levels in FY 2023-24.

Features of the Pradhan Mantri Fasal Bima Yojana (PMFBY)

Parameter	Details
Launched	2016
Ministry	Ministry of Agriculture and Farmers Welfare
Replaced Schemes	National Agricultural Insurance Scheme and Modified National Agricultural Insurance Scheme
Theme	One Nation One Scheme
Objectives	Provide insurance coverage for crop failure due to natural calamities pests and diseases Stabilize farmer incomes Promote modern agricultural practices Ensure credit flow to agriculture
Premium Rates	2 percent for Kharif crops 1.5 percent for Rabi crops 5 percent for annual commercial and horticultural crops
Implementation	Area-based approach with Notified Area defined for each crop

Features of the Restructured Weather-Based Crop Insurance Scheme (RWBCIS)

Parameter	Details
Launch Year	2016

Objective	To safeguard farmers against financial losses caused by adverse weather conditions.
Coverage	Rainfall, temperature, wind, humidity; includes food crops, oilseeds, commercial and horticultural crops.
Perils Covered	Drought, flood, cyclone, hailstorm and other adverse weather conditions.
Eligibility	All farmers, including sharecroppers and tenant farmers, growing notified crops in notified areas.

8.2   SNIPPETS

Topics	Details
RoDTEP Scheme	• The industry is requesting the government to extend the Remission of Duties and Taxes on Exported Products (RoDTEP) scheme for export-oriented units and special economic zones until September 2025. • It was launched in **January 2021 by the Union Ministry of Commerce and Industry** to refund taxes and duties on exported products. • It provides refunds for duties and taxes that were previously non-refundable. This includes taxes like VAT, Mandi tax, Coal cess and Central Excise duty on fuel. • It provides E-commerce support, monitor and audit mechanisms are used to ensure accurate records. • It is **available to all exporters of goods manufactured in India with no minimum turnover criteria** or threshold limits. • Goods exported through e-commerce platforms are eligible. • **Re-exported products are not eligible.**
ICEGATE	• The Union Commerce and Industry Ministry has stated that an error caused an overestimation of gold import figures from April to November 2024. • The Indian Customs Electronic Gateway (ICEGATE) is a national portal that provides electronic services for customs-related documents and information. • It was established in 2007 and is **operated by the Central Board of Indirect Taxes and Customs (CBIC).** • It is linked to partner agencies like the RBI, banks and the Ministry of Steel, enhancing customs clearance speed.
Project VISTAAR	• IIT Madras and the Agriculture Ministry are collaborating on Project VISTAAR to digitize agricultural extension services. • The Project VISTAAR (Virtually Integrated System to Access Agricultural Resources) aims **to improve the agricultural system by digitizing it,** making it more efficient and accessible for farmers. • It will **integrate information about over 12,000 start-ups in agriculture and allied sectors into the VISTAAR platform,** allowing farmers to access technologies and services to enhance productivity and efficiency. • It will provide farmers with timely and accurate information on crop production, marketing, value addition and supply chain management.
Baanknet	• The Secretary of the Department of Financial Services (DFS) has launched a revamped e-auction portal called 'Baanknet'. • Baanknet is an **e-auction portal that consolidates information about properties** put

	up for auction by public sector banks (PSBs).
	• It offers a one-stop destination for buyers and investors, listing various types of properties, including residential, commercial, industrial, agricultural and vehicles.
	• It **benefits PSBs by assisting in the recovery of distressed assets,** improving their balance sheets and enhancing credit availability to businesses and individuals.
Entity Locker	• The National eGovernance Division (NeGD), under the Ministry of Electronics and Information Technology (MeitY) has developed Entity Locker.
	• **Entity Locker** is a secure, cloud-based platform designed to simplify document storage, sharing and verification for organizations like corporations, MSMEs, trusts, startups and societies. It supports India's digital governance vision by integrating with government systems, offering real-time document verification and ensuring secure, consent-based information sharing.
	• It integrates with systems like the **Ministry of Corporate Affairs (MCA)**, **Goods and Services Tax Network (GSTN)** and **Directorate General of Foreign Trade (DGFT)**.
	• It uses **Aadhaar-authenticated role-based access**, **encrypted cloud storage** and **consent-based sharing mechanisms** to protect sensitive information.

8.3 ADDITIONAL TOPICS FOR READING FROM IASGYAN WEBSITE

Topic Name	Uploaded Date
PM Surya Ghar Scheme	31st January, 2025