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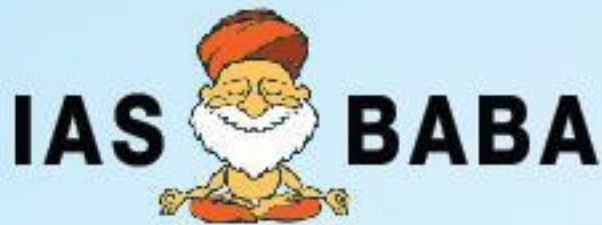


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## PRELIMS



## POLITY &amp; GOVERNANCE



## RIGHT TO PROPERTY

**Context:** The right to property is a human right and a constitutional right and no person can be deprived of his or her property without being paid adequate compensation, the Supreme Court ruled recently while also holding that in exceptional circumstances of inordinate delay in disbursement of compensation, the date of fixing the valuation can be shifted to a more recent one.

**Background:**

- Supreme Court in the judgment directed that compensation to people who lost their land for the over 20,000-acre Bengaluru-Mysore Infrastructure Corridor (BMIC) project over two decades ago, must be paid according to the market value prevailing in 2019.

**Key takeaways from the judgement**

- **Right to Property** ceased to be a Fundamental Right by the Constitution (Forty-Fourth Amendment) Act, 1978, however, it continues to be a human right in a welfare State, and a constitutional right under Article 300-A of the Constitution, SC ruled.
- **Article 300-A** of the Constitution provides that no person shall be deprived of his property save by authority of law. The State cannot dispossess a citizen of his property except in accordance with the procedure established by law, SC said.

**The case details**

- The petitioners, who purchased residential plots in Karnataka's Gottigere village between 1995 and 1997, had their lands acquired in 2003 under the Karnataka Industrial Areas Development Act, 1966, for BMIC project.
- Despite taking possession of the land, state authorities did not finalise compensation for over two decades, forcing the landowners to repeatedly approach courts.
- Referring to the principle of eminent domain, the court observed that the State's power to acquire land against the owner's wishes comes with an obligation to ensure prompt and fair compensation.
- Recognising this injustice, the Supreme Court invoked its powers under Article 142 of the Constitution to shift the valuation date of the land to 2019.

Source: [Hindustan Times](#)

## APPOINTMENT OF CHIEF ELECTION COMMISSIONER

**Context:** Traditionally, the senior-most Election Commissioner has been appointed as the next Chief Election Commissioner (CEC). However, for the first time, the Chief Election Commissioner and Other Election Commissioners (Appointment, Conditions of Service, and Term of Office) Act, 2023, allows for a wider range of candidates to be considered for the role.

**Background: -**

- This comes against the backdrop of the EC facing the heat from the Opposition parties over a range of issues.

**Key takeaways**

- As per Section 5 of the Chief Election Commissioner And Other Election Commissioners (Appointment, Conditions of Service And Term of Office) Act, 2023, the candidates for the post would be current or former Secretary-level officers.



Current CEC Rajiv Kumar demits office on February 18. The Election Commission comprises the CEC and two election commissioners – Gyanesh Kumar and Sukhbir Singh Sandhu at present. (Express Archives)

- According to Sections 6 and 7 of the Act, the Ministry of Law will set up a Search Committee chaired by the Law Minister to prepare a panel of five names for the Selection Committee.

- **Section 6** states, “A Search Committee headed by the Minister of Law and Justice and comprising two other members not below the rank of Secretary to the Government of India,

shall prepare a panel of five persons for consideration of the Selection Committee, for appointment as the **Chief Election Commissioner and other Election Commissioners.**”

- **The Selection Committee**, comprising the Prime Minister, a Cabinet minister and the Leader of the Opposition in the Lok Sabha, can select from this panel or consider “any other person” from outside.
- This Act was brought after an intervention from the Supreme Court, following a clutch of petitions filed challenging the Centre’s exclusive powers in picking the Election Commissioners.
- The court had noted that the Constitution’s founders never intended to give the Executive exclusive appointment powers.
- In March 2023, the Court ruled that the appointment of the CEC and ECs would be done by the President on the advice of a committee comprising the Prime Minister, the Leader of the Opposition and the Chief Justice of India. This arrangement was to prevail until the Parliament enacted a law for the appointments.
- The Union government eventually brought a law in December 2023, which made it mandatory to appoint the CEC and ECs by way of a shortlist panel and a selection committee. However, the Chief Justice of India was dropped as a member of the Selection Committee.

Source: [Indian Express](https://www.indianexpress.com)

**COMPTROLLER AND AUDITOR GENERAL OF INDIA (CAG)**

**Context:** The Comptroller and Auditor General of India (CAG) is again in the spotlight amid a political row triggered by its report on the cost of renovation at the office and residence of former Delhi Chief Minister Arvind Kejriwal.

**Background:** -

- The CAG has submitted a dozen audit reports to the Lieutenant Governor of Delhi in recent



years. But the AAP government has not laid them in the Assembly, triggering a backlash from the BJP whose MLAs have approached the High Court.

### Key takeaways

- **Articles 148 to 151 in part 5 of the Constitution** are on the appointment, duties, and audit reports of the **Comptroller and Auditor-General**, who is appointed by the President.
- **The Comptroller and Auditor General's (Duties, Powers and Conditions of Service) Act, 1971**, determines the CAG's service conditions and prescribes the duties and powers of their office.
- The CAG conducts three kinds of audits: compliance audit, or an assessment of whether the provisions of the applicable laws, rules, and regulations, and various orders and instructions issued by the competent authority are being followed; performance audit, or an assessment of the implementation of schemes or programmes; and financial audit, or certification of government's accounts and the accounts of Public Sector Undertakings.

### How does the CAG select audit subjects?

- Before finalising a subject, it follows a risk assessment procedure that accounts for various factors such as the size of the outlay of a project, what is being written in newspapers about the issue, and its own inspection reports over the years. It also consults the guidelines laid down by the International Organization of Supreme Audit Institutions, that spell out what is of relevance to citizens.
- Based on these criteria, the CAG's office approves an annual audit plan that is implemented in the field offices. There is also an Audit Advisory Board that meets twice a year and suggests subjects and methodologies for audit.
- The government or courts can also recommend CAG audits.

### What happens after the CAG selects a subject?

- Once a subject is chosen, the CAG holds an entry conference with the department or organisation that is being audited. At this conference, CAG officials inform the body concerned about matters such as their plans for the audit, the methodology to be followed, and a tentative timeline.
- After the audit, the officials from the auditor general's office hold an exit conference to share their findings with the department or organisation and seek their reply. The entry and exit conferences are held for every performance and compliance audit.
- The CAG shares a draft report with the department audited. Normally, the department has to respond within six weeks. Thereafter, the CAG signs the report and sends it to the government (the President or the Governor). Then the government lays the report before the legislature.

### Tabling of a CAG report

- **Article 151** provides for laying CAG reports in Parliament or state legislatures but no time limit is specified. This is why governments often do not lay CAG audit reports on time.
- A CAG report becomes public only after it is laid in the House. The Public Accounts Committee examines the selected reports and seeks a response from the government. The PAC also asks

the government to take action on the recommendations and submit an Action Taken Report.

### Do CAG reports have any impact?

- The audit reports highlight losses to the exchequer and procedural losses and also provide recommendations that play a key role in changing rules and procedures. For instance, the Telangana government made changes in the Engineering Procurement Contract mode a few years ago after a CAG audit.
- Among the CAG reports that have had a big impact was the one on licences and allocation of 2G spectrum that was tabled in 2010. It had a massive effect, damaging the image of the Manmohan Singh-led government that was ultimately voted out of power in 2014.

Source: [Indian Express](#)

## PAY COMMISSION

**Context:** On 16 January, the Union government announced the constitution of the 8th Pay Commission.

### Background: -

- Since 1947, seven Pay Commissions have been constituted, with the last one constituted in 2014 and implemented on January 1, 2016. The 7th pay commission saw an expenditure increase of Rs 1 lakh crore for fiscal 2016-17.

### Key takeaways

- A Pay Commission, set up by the government of India, decides the salary and compensation of Central government staffers and allowances of pensioners.
- Pay commissions consult with central and state governments, along with other stakeholders, before recommending salary structures, benefits, and allowances for government employees.
- The commission also suggests formulas for revising dearness allowance and dearness relief for central government employees and pensioners, aiming to offset the impact of inflation.
- The recommendations are suggestive; there is no obligation on the government to accept the recommendations of the pay commission.
- There are over 49 lakh central government employees and nearly 65 lakh pensioners who will benefit.
- Generally, **every 10 years, the central government implements a pay commission** to revise employee remuneration. **As the 7th Pay Commission's term concludes in 2026**, initiating the process now ensures sufficient time to receive and review recommendations before its completion.

Source: [Indian Express](#)

## AFTER ELECTORAL BOND BAN, FUNDING THROUGH TRUST ROUTE UP

**Context:** After the Supreme Court's decision to scrap electoral bonds last year, donations to political parties significantly increased through electoral trusts, as indicated by the electoral trust contribution reports released by the Election Commission of India (ECI) for the previous financial year.

**Background: -**

- Nearly three-fourths of the donations to the Prudent Electoral Trust, which has received the highest contribution, were made after the Supreme Court’s decision on February 15.

**Key takeaways**

- An Electoral Trust is a non-profit organization established in India to facilitate transparent funding to political parties.
- On 31st January, 2013, through ‘The Electoral Trusts Scheme, 2013’, the Central government specified the eligibility and procedure for registration of Electoral Trusts.

**Key Features of Electoral Trusts**

May receive contributions from	Shall not accept contributions from
An individual who is a citizen of India	An individual who is not a citizen of India
A company registered in India	A foreign entity whether incorporated or not
A firm (resident in India)	Other Electoral Trusts (approved under the Electoral Trusts Scheme)
HUF(Indian residents)	Contributors without PAN
An association of persons (Indian residents)	NRIs without a passport number

- **Purpose:**

- To collect voluntary contributions from individuals, companies, and institutions.
- To distribute these funds to registered olitical parties.

- **Legal Framework:**

- Governed under Section 25 of the Companies Act, 1956 (as a non-profit).
- Electoral trust can receive contribution only from permitted people/ entities as given below
- An ET must distribute up to 95% of the voluntary contributions collected, with the surplus brought forward from the earlier year, to eligible political parties only. The remaining 5%, with a cap of ₹3 lakh, may be used for managing its own affairs.
- These trusts are not allowed to use any contribution for the direct or indirect benefit of its members or contributors.

- **Eligibility Criteria for Donations:**

- Only registered political parties under Section 29A of the Representation of the People Act, 1951, are eligible to receive funds.
- Donations cannot be made to independent candidates or unregistered parties.

- **Transparency and Reporting:**

- Trusts must file an annual contribution report with the Election Commission of India (ECI).
- The accounts of any ET must be audited and the report must be furnished to the

Commissioner of Income Tax, including the list of contributors, list of parties that funds were distributed to, and the amounts disbursed.

- **Tax Benefits:**

- Donors receive tax benefits under **Section 80GGB and Section 80GGC of the Income Tax Act, 1961.**
- Electoral trusts themselves are exempt from income tax on their income.

Source: [Indian Express](#)

## NATIONAL VOTERS' DAY

**Context:** January 25 is celebrated annually as National Voters' Day to mark the foundation day of the Election Commission of India (ECI), which was founded on **January 25, 1950.**

**Background: -**

- This year we are celebrating the **15th National Voters' Day with the theme "Nothing Like Voting, I Vote for Sure"** emphasising the importance of participation in the electoral process, and encouraging voters to take pride in exercising their franchise.

**Key things to know about elections**

- In democracies, voting is seen as a basic exercise that shows people's faith in the political process. Voting is a crucial part of exercising one's citizenship.
- **In 2013, the Indian Supreme Court allowed for the option 'None of the Above'** to be introduced in Lok Sabha and state Legislative Assembly elections to allow such views to be expressed.
- "Not allowing a person to cast a vote negatively defeats the very freedom of expression and the right ensured in Article 21, i.e. the right to liberty... a provision of negative voting would be in the interest of promoting democracy as it would send clear signals to political parties and their candidates as to what the electorate think about them. The mechanism of negative voting, thus, serves a very fundamental and essential part of a vibrant democracy," the court said at the time.

**Postal Ballots**

- 'Postal ballot' allows voters who cannot be physically present in polling stations to vote remotely, as specified in Section 60 of the RPA. **As per Rule 18 of The Conduct of Election Rules, 1961,** the following classes of persons are entitled to vote by postal ballot:
  - **Special voters:** Individuals holding declared office under **Section 20(4) of RPA,** including the President, Vice President, Governors, Cabinet Ministers, other high-ranking dignitaries, etc. and their spouses.
  - **Service voters:** Members of the Indian armed forces, paramilitary forces, an armed state police member serving outside their state, or a government employee stationed abroad and their spouses residing with them.
  - **Voters on election duty:** This includes all Commission's observers, presiding officers, polling officers and agents, police personnel, and public servants assigned official tasks on polling day. Private individuals and non-government staff, such as videographers, control



room staff, drivers, conductors, cleaners, helpline staff, etc., are also covered.

- Electors subjected to preventive detention
- Absentee voters under Section 60 (c) of RPA, 1951: In 2019, the Election Commission created the 'Absentee Voters' category. This includes senior citizens aged 85+, persons with disabilities having at least 40% disability, Covid-19 suspect or affected persons, and persons employed in essential services.

Source: [Indian Express](#)

## ESSENTIAL RELIGIOUS PRACTICES DOCTRINE

**Context:** Observing that use of loudspeakers is not essential part of any religion, the Bombay High Court directed the Maharashtra government to have an in-built mechanism to control decibel levels in loudspeakers, public address system (PAS) or any other sound-emitting gadgets used at places of worship, or institutions, irrespective of religion.

**Background:** -

- The court passed these directives on a plea alleging failure to take action against use of loudspeakers and amplifiers by religious places beyond prohibited hours and permissible decibel limits.

**Key takeaways**

- The court referred to the 2016 HC judgement that issued several directives for the strict implementation of **Noise Pollution (Regulations and Control) Rules, 2000**.
- The HC in 2016 observed that “use of loudspeakers is not an essential part of any religion and therefore protection under Article 25 (freedom of religion) of constitution is not available” to violating institutions.
- The doctrine of “essentiality” was invented by a seven-judge Bench of the Supreme Court in the ‘Shirur Mutt’ case in 1954. The court held that the term “religion” will cover all rituals and practices “integral” to a religion, and took upon itself the responsibility of determining the essential and non-essential practices of a religion.
- The ‘essentiality doctrine’ of the Supreme Court has been criticised by several constitutional experts.
- Scholars of constitutional law have argued that the essentiality/integrity doctrine has tended to lead the court into an area that is beyond its competence, and given judges the power to decide purely religious questions.
- As a result, over the years, courts have been inconsistent on this question — in some cases they have relied on religious texts to determine essentiality, in others on the empirical behaviour of followers, and in yet others, based on whether the practice existed at the time the religion originated.
- Freedom of religion was meant to guarantee freedom to practice one’s beliefs based on the concept of “inward association” of man with God. The apex court in ‘Ratilal Panachand Gandhi vs

The State of Bombay and Ors' (March 18, 1954) acknowledged that "every person has a fundamental right to entertain such religious beliefs as may be approved by his judgment or conscience".

- Scholars have argued that the essentiality test impinges on this autonomy. The apex court has itself emphasised autonomy and choice in its Privacy (2017), 377 (2018), and Adultery (2018) judgments.

Source: [Indian Express](#)

## AD HOC JUDGES IN HIGH COURTS

**Context:** Recently, 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.

### Background:

- In 2021, the SC noted there have only been three recorded instances of ad hoc judges being appointed under Article 224A, calling it a "dormant provision".

### Key takeaways

- **Article 224A** of the Indian Constitution allows the Chief Justice of a High Court to request retired HC judges to perform the duties of a judge again, with the permission of the President of India.
- Such appointees are entitled to allowances as determined by the President's order and have all the jurisdiction, powers and privileges of a Judge of that High Court. However, they cannot be "deemed" as such. Further, both the retired judge and the President of India are required to consent to the appointment.
- The detailed procedure can be found in the 1998 Memorandum of Procedure (MOP) for the appointment of High Court judges, prepared following the creation of the collegium system for appointing judges.
- The MOP states that after the retired judge has consented to the appointment, the Chief Justice must forward name and details on the duration of the appointment to the state's Chief Minister. The CM will pass this recommendation to the Union Law Minister, who will consult the Chief Justice of India before forwarding the recommendation and the CJ's advice to the Prime Minister of India. The PM will advise the President on whether to give her approval.
- However, in the case of Lok Prahari through Its **General Secretary S.N. Shukla IAS (Retd.) v. Union of India (2021)**, the SC held that this recommendation "has to be routed through the collegium of the Supreme Court". This collegium includes the CJI and the two seniormost judges of the Supreme Court.

### When can an ad hoc judge be appointed?

- The SC, in Lok Prahari, was considering measures to address pending cases before the courts and the vacancies in posts for HC judges. SC expressed concerns that Article 224A would encourage "inaction in making recommendations" for regular judge appointments.
- The court thus passed directions on when the appointment process under Article 224A could be initiated.

- Most importantly, the court held ad hoc judges can only be appointed when recommendations have not been made for less than 20% of the vacancies. This is so that Article 224A can be “resorted to only on the process having being initiated for filling up of the regular vacancies and awaiting their appointments.”
- The court also held that there has to be a “Trigger Point” for appointing judges under **Article 224A, such as if the HC has vacancies of more than 20% of the sanctioned strength (excluding any proposals for appointment) and if more than 10% of the backlog of pending cases is over 5 years.**
- It further recommended that each Chief Justice should create a “panel” of retired and soon-to-retire judges for possible ad hoc appointments. Such judges should generally be appointed for 2-3 years, with two to five ad hoc judges in a HC.

Source: [Indian Express](#)



## INTERNATIONAL RELATIONS



## H-1B VISA

**Context:** Weeks before he returns as US President, Donald Trump's supporters are locked in a public row about skilled immigration and H-1B visas.

**Background: -**

- The infighting was triggered by the appointment of Sriram Krishnan as Trump's AI adviser, after which an earlier post by Krishnan on X, which had called for "unlock[ing] skilled immigration", went viral— inviting the ire of Trump's anti-immigration base. The outrage of the MAGA crowd — the vocal supporters of Trump's "Make America Great Again" slogan — was directed towards the H-1B visa.

**Key takeaways**

- **The H-1B visa program allows American employers to hire immigrant workers in occupations that require "a high level of skill" and "at least a bachelor's degree", according to the US Department of Labour.**
- The visa is employer-sponsored, meaning a U.S. employer must file the petition on behalf of the foreign worker
- The program was started in 1990, with the intention of helping employers who cannot otherwise obtain needed skills and abilities from the US workforce by authorising the temporary employment of qualified individuals who are not otherwise authorised to work in the US.
- An H-1B visa can be issued for a maximum of six years at a stretch, after which the visa holder has to either leave the US for a period of at least 12 months before returning, or apply for and receive permanent residence (Green Card).
- People born in India are the largest beneficiaries of the H-1B program.
- Data from the US government show that Indians account for more than 70% of all H-1B petitions approved each year since 2015. People born in China come a distant second, hovering at the 12-13% mark since 2018.

Source: [Indian Express](#)

## THE INDIAN DIASPORA

**Context:** Prime Minister Narendra Modi on January 9th launched the 18th Pravasi Bharatiya Divas in Odisha.

**Background: -**

- **The Pravasi Bharatiya Divas is celebrated on January 9th** to honor the contributions of the Overseas Indian community to the development of India.

**Key takeaways**

- The Indian diaspora has grown since the first group of Indians was brought to countries in the East Pacific and the Caribbean islands as indentured laborers. During the 19th and early 20th centuries, Indians were transported to work on plantations in British colonies facing a labor crisis following



the abolition of slavery in 1833-34.

- In the second wave of migration, nearly 2 million Indians moved to Singapore and Malaysia to work on farms.
- The third and fourth waves saw professionals migrating to Western countries and workers heading to Gulf and West Asian nations during the oil boom. Thus, we observe that the Indian diaspora has periodically spread to different regions of the world.
- **According to India's Ministry of Foreign Affairs, as of May 2024**, approximately 35.42 million Indians were living abroad. This number comprised around 15.85 million non-resident Indians (NRIs) and nearly 19.57 million persons of Indian origin (PIOs).
- Among the nations hosting the largest Indian diaspora, the United States has the highest population of Indians, totaling 5.4 million individuals.

### Role of Indian Diaspora

- India has the world's largest diaspora, and is also the largest recipient of remittances. India saw the highest amount of remittance inflows in the world in 2023 at USD 125 billion.
- The diaspora contributes to growth through various forms of investment in the Indian economy in the form of foreign portfolio investment, foreign direct investment (FDI), transfer of knowledge and entrepreneurial network.
- The Indian diaspora plays a vital role in promoting our culture and values, which contributes in shaping India's soft power globally.

### Engagement with diaspora

- Over the last decade, the Centre has made a sustained effort to connect with the Indian community overseas, with PM Modi making it a point to address a community event during his foreign visits.
- Every year, 25 lakh Indians immigrate overseas, making India the nation with the highest annual number of emigrants in the world.
- The Indian government's approach to engaging with the Indian diaspora focuses on two main strategies. First, it implements policies aimed at the welfare and protection of overseas Indians. Second, it encourages the diaspora to contribute to India's growth in various ways, such as through knowledge transfer and investments, etc.

### key initiatives of Indian governments related to diaspora:

- **Know India Programme (KIP):** It is an initiative by the Ministry of External Affairs aimed at Indian diaspora youth aged 21 to 35 years. The primary goal of the KIP is to strengthen the connection between young people of Indian origin and their ancestral homeland by enhancing their understanding of India.
- **Indian Community Welfare Fund (ICWF):** The Fund, established in 2009, aims to assist overseas Indian nationals during times of distress and emergencies in the most deserving cases. The ICWF has played a crucial role in the emergency evacuation of Indian nationals from conflict zones, areas affected by natural disasters, and other challenging situations.

- E-Migrate: It is a comprehensive system designed to facilitate the safe and legal emigration of Indian workers. This initiative aims to make the emigration process more transparent and address complaints effectively.
- Inter-Governmental Labour migration Agreements: These agreements provide an overarching framework for cooperation on labor and manpower issues.
- Pravasi Bharatiya Bima Yojana (PBBY): It is an insurance scheme available to all Indian workers emigrating from India, requiring a nominal premium payment made to insurance companies.

Source: [Indian Express](#)

## INDIA BANGLADESH BORDER

**Context:** The Ministry of External Affairs (MEA) summoned the Head of Mission at the High Commission of Bangladesh to convey that fencing works on the India-Bangladesh border was being carried out in accordance with “all protocols and agreements”.

### Background: -

- The conversation took place a day after Bangladesh Foreign Secretary expressed deep concern to Indian High Commissioner in Dhaka about the construction works by the Border Security Force (BSF) along the border.

### Key takeaways



- The India-Bangladesh border is approximately 4,096.7 km, making it the longest international border that India shares with any country.

- States Sharing the Border: West Bengal (2,216.7 km), Assam (263 km), Meghalaya (443 km), Tripura (856 km), Mizoram (318 km)

### • Geography:

- The border passes through plains, rivers, hills, and densely populated areas.

- Major rivers like the Ganga, Brahmaputra flow across this region.

- The border was drawn during the partition of India, based on the Radcliffe Line, dividing Bengal into West Bengal (India) and East Bengal (later East Pakistan, now Bangladesh).

### The current issue

- Border Guards Bangladesh (BGB) attempted to obstruct the construction of a barbed wire fence on the international border in West Bengal’s Malda and Cooch Bihar districts.
- According to the 1975 Joint India-Bangladesh Guidelines for Border Authorities, no defence

structure can be constructed within 150 yards from the zero line or the international boundary by either side. India does not consider wire fencing as a defense structure, but Bangladesh and Pakistan do.

- Bangladesh's objections to single row fencing (SRF) are essentially two pronged: the first argument, which is most commonly cited, is the 1975 agreement on no fencing within 150 yards of the international border. The second argument is that fencing causes inconvenience to residents along the international border.

Source: [Indian Express](#)

## WORLD ECONOMIC FORUM

**Context:** The World Economic Forum (WEF) is holding its Annual Meeting from January 20 to 24 in Davos, Switzerland.

**Background:** -

- Union Minister Ashwini Vaishnaw will head the Indian delegation. Maharashtra Chief Minister Devendra Fadnavis, Telangana Chief Minister Revanth Reddy, and Andhra Pradesh Chief Minister Chandrababu Naidu will also attend.

**Key takeaways**

- **Founded:** 1971 by Klaus Schwab, originally known as the European Management Forum.
- **Headquartered** in Geneva, Switzerland.
- **Nature:** An international, non-governmental organization.
- **Objective:** To improve the state of the world by fostering public-private cooperation.
- **Key Focus Areas:** Economic growth, sustainable development, technological innovation, social inclusion, and global governance.
- The WEF is largely **funded by its partnering corporations.**

**Functions of the WEF**

- **Platform for Dialogue:**
  - Brings together political leaders, business executives, academicians, and civil society representatives.
  - Focuses on addressing global challenges such as climate change, poverty, inequality, and economic instability.
- **Annual Meetings:** The Davos Agenda, held annually in Davos, Switzerland, serves as a platform for addressing pressing global issues.
- Regional and thematic meetings are also organized.
- **Publishes key reports such as:**
  - Global Competitiveness Report
  - Global Gender Gap Report
  - Global Risks Report

- Future of Jobs Report
- Energy Transition Index

Source: [Indian Express](#)

## TRUMP TO END BIRTHRIGHT CITIZENSHIP

**Context:** Starting his second term with a flurry of executive orders, US President Donald Trump has sought to revoke birthright citizenship – automatic citizenship of children born in the US to non-citizen parents.

**Background:** -

- The Indian-American community, which is one of the fastest-growing immigrant populations in the US, will be profoundly impacted by this change as and when it comes through.

**Key takeaways**

- Under birthright citizenship, anyone born on American soil is automatically granted US citizenship, regardless of the citizenship or immigration status of the parents. This provision was enacted in 1868.
- Trump's new order would deny US citizenship, including passports, to those children born in the US starting 30 days from now, if at least one parent isn't an American citizen.
- Children born to Indian nationals who are on temporary work visas (like the H-1B visa) or waiting for the Green Card would no longer automatically acquire US citizenship.
- Children born to Indian students on non-immigrant visas would face challenges in securing US citizenship, at a time when Indian students make up one of the largest groups of international students in the US.
- Such a move would discourage many Indian professionals & students from seeking opportunities in the US, opting for more immigration-friendly countries like Canada or Australia instead. It could also affect the US economy, as the Indian community significantly contributes to the tech industry, healthcare and education.
- US-born children could no longer petition to bring their parents to the US after turning 21 if they do not get birthright citizenship. The policy will also curb "birth tourism" from countries like India and Mexico, a practice of women travelling to the US specifically to give birth, so their children can claim citizenship.

Source: [Indian Express](#)

## GLOBAL PLASTIC ACTION PARTNERSHIP (GPAP)

**Context:** The **Global Plastic Action Partnership (GPAP)** has recently reached a significant milestone by expanding its network to include 25 countries.

**Background:**

- With a combined population of over 1.5 billion people, the expansion highlights a growing global effort to address the urgent issue of plastic pollution. Seven new countries — Angola, Bangladesh, Gabon, Guatemala, Kenya, Senegal, and Tanzania — have joined this collaborative effort.

**Key takeaways**



- **The Global Plastic Action Partnership (GPAP)** is a multistakeholder platform launched by the World Economic Forum in 2019.
- Its primary goal is to accelerate the transition to a circular economy for plastics and tackle plastic pollution on a global scale.

### Objectives

- **Reduce Plastic Pollution:** GPAP aims to reduce plastic waste leakage into the environment, particularly oceans.
- **Promote Circular Economy:** Encourage the reuse and recycling of plastics to minimize waste and environmental impact.
- **Foster Collaboration:** Bring together governments, businesses, and civil society to work towards common goals.

### Key Initiatives

- **National Action Roadmaps:** Tailored strategies for each participating country to address plastic waste management.
- **Investment Mobilization:** GPAP has mobilized significant investments to support sustainable plastic management.
- **Job Creation:** Focus on creating green jobs, especially for informal waste workers.
- **Awareness and Education:** Raise awareness about the impact of plastic pollution and promote sustainable practices.

Source: [Down To Earth](#)

## TRUMP AND GREENLAND

**Context:** US President-elect Donald Trump has once again expressed interest in buying Greenland, and Greenland has again stated it is not for sale.

### Background: -

- Greenland, though geographically part of North America, has been under Denmark's control—located nearly 3,000 km (1,860 miles) away—for around 300 years.

### Why Greenland matters to US?

- Greenland's strategic importance rose during the Cold War, and the US has an air base there, the Pituffik Space Base, earlier the Thule Air Base. From Greenland, the US can monitor and prevent any missile coming towards it from Russia, China, or even North Korea. Similarly, it can launch missiles and ships towards Asia or Europe more easily from Greenland.
- **Second**, Greenland is rich in rare earth minerals. At present, China is a major supplier of these minerals.
- **Third**, as global warming leads to melting of ice, new waterways can open in the Arctic region, and all major powers are keen to boost their presence here. The US would want to pre-empt a larger Russian or Chinese role in Greenland and its neighbourhood.

### US bought territories

- In 1803, the US bought more than 2 million sq km of land from France in what is known as the Louisiana Purchase. US paid \$ 15 million for the deal.
- Another example is Alaska, which the Russian empire transferred to the US in 1867, for \$7.2

million.

- In 1917, the US bought the Danish West Indies, a group of islands in the Caribbean, and called them the US Virgin Islands.

#### **About Greenland**

- Greenland, the largest island on Earth, is situated in the Arctic and is the most sparsely populated territory in the world. It is home to approximately 56,000 residents, primarily indigenous Inuit people.
- Around 80% of Greenland is covered by ice, with most of its population concentrated along the south-western coast near the capital, Nuuk.
- As an autonomous territory of Denmark, Greenland hosts both Danish and U.S. military bases. Its economy relies heavily on fishing, while substantial subsidies from the Danish government contribute about 20% of its GDP.

Source: [Indian Express](#)



## Economy



### INDIAN COFFEE EXPORTS CROSS \$1 BILLION FIRST TIME

**Context:** Traditionally a tea exporter, India is making significant inroads into the global coffee market with total exports during the current financial year up to November crossing the \$1-billion mark for the first time, according to data from Centre for Monitoring Indian Economy (CMIE).

**Background: -**

- Notably, India's exports of tea saw little change despite expectations of gaining new markets following the economic crisis in Sri Lanka, one of the largest tea exporters in the world.

**Key takeaways**

- India is the only country that grows all of its coffee under shade.
- India is the seventh-largest producer of coffee globally.
- **Types of Coffee Grown in India**
  - Arabica (*Coffea arabica*):
    - Grown at higher altitudes (900–1,800 meters).
    - Arabica has a higher market value than Robusta coffee due to its mild aromatic flavour.
    - Requires a cool climate and less rainfall compared to Robusta.
  - Robusta (*Coffea canephora*):
    - Grown at lower altitudes (500–1,000 meters).
    - Higher yield and more resistant to diseases.
    - Preferred for instant coffee production due to its strong flavor.

**Major Coffee-Producing States**

- **Karnataka:** Largest producer, accounting for about 70% of India's coffee output.
  - Key regions: Kodagu (Kodagu district alone produces 33% of India's coffee), Chikmagalur, Hassan.
- **Kerala:** Second-largest producer.
  - Key regions: Wayanad, Idukki, and Palakkad.
- **Tamil Nadu:** Known for its coffee estates in the Nilgiri Hills.
  - Important regions: Pulneys, Nilgiris, and Shevaroy.
- **Non-traditional Areas:** Andhra Pradesh, Odisha, and the northeastern states (especially Arunachal Pradesh and Nagaland) are emerging coffee-growing regions.
- **Climatic Requirements for Coffee**
  - Temperature: 15°C–28°C.
  - Rainfall: 1,500–2,500 mm annually, well-distributed.
  - Soil: Well-drained, rich in organic matter.

### Reasons for hike in export value

- The sharp growth is partly attributed to a surge in Robusta coffee prices and partly due to stocking ahead of the European Union's new deforestation regulation that could raise the cost of coffee as well as several other agricultural exports to the EU.
- The European Union's Deforestation Regulation (EUDR), aimed at preventing products sold in the EU from being sourced from deforested land, was scheduled for implementation in December. However, the European Parliament recently decided to extend the regulation's timeline by another year.
- According to the think tank Global Trade Research Initiative (GTRI), the EUDR is expected to impact India's agricultural exports to the EU, valued at \$1.3 billion, more severely than exports from competing countries due to India's higher deforestation rate.

Source: [Indian Express](#)

## FRONT-RUNNING

**Context:** The Securities & Exchange Board of India (SEBI) has unearthed a front-running scam in the securities market and debarred 22 entities, including stock brokers, for alleged involvement and impounded ₹66 crore as 'wrongful gains.'

**Background:** -

- SEBI's Prohibition of Fraudulent and Unfair Trade Practices Regulations (PFUTP) explicitly bans front-running.

**Key takeaways**

- Front-running refers to the unethical or illegal practice where a broker, trader, or individual with insider access executes trades based on advance knowledge of pending large orders from clients or institutions that could influence market prices.
- The objective is to profit from anticipated price movements before the larger trade impacts the market.
- **How Front-Running Works**
  - **Step 1:** Advance Information (non-public information) : A broker or trader becomes aware of a large buy or sell order from a client or institutional investor.
  - **Step 2:** Personal Trade Execution: Before executing the client's order, the broker/trader places their own trade to benefit from the expected price movement. The large order impacts the market, and the broker/trader profits by selling or buying at a favorable price.

Source: [The Hindu](#)

## WHOLESALE PRICE INDEX (WPI) AND PRODUCER PRICE INDEX (PPI)

**Context:** The Centre announced the formation of an expert panel to revise the constituents of the country's Wholesale Price Index (WPI) in light of the structural changes in the economy that have occurred between 2011-12, the current base year for the critical price gauge, and 2022-23 that would be the new base year.

**Background:**

- The panel would also examine the composition of, and the methodology for compilation of a new Producers' Price Index or PPI and, more importantly, recommend a roadmap for India to switch over from using WPI to the PPI.
- The group has been asked to submit its final report to the Office of the Economic Adviser in the Commerce and Industry Ministry within 18 months, effectively giving it a June 30, 2026 deadline.

**Reasons for the setbacks in summits**

- Wholesale Price Index (WPI) is a measure of the average change in the prices of goods at the wholesale level, before they reach the retail market. It is one of the key indicators to track inflation in the economy.

**Components of WPI in India**

- **Categories of Goods:**
  - Primary Articles (22.6% weight): Includes food articles, non-food articles, and minerals.
  - Fuel and Power (13.2% weight): Includes items like coal, electricity, and mineral oils.
  - Manufactured Products (64.2% weight): Includes various industrial goods such as textiles, chemicals, and machinery.
- **Base Year:**The current base year for WPI in India is 2011–12.
- **Frequency of Data:**WPI data is released monthly by the Office of the Economic Adviser, Ministry of Commerce and Industry.

**Limitations of WPI**

- **Excludes Services:**WPI does not account for the price changes in the service sector, which constitutes a significant part of India's GDP.
- **Retail Prices Missing:**It measures prices at the wholesale level, not reflecting the actual burden on end consumers.
- **Outdated Composition:**The current WPI composition and weights do not fully represent India's modern economic structure.
- **Volatility in Primary Articles:**Prices of primary articles, especially food, are subject to high seasonal volatility, skewing the index.

**Producer Price Index (PPI): An Alternative**

- **Producer Price Index (PPI)** is a more comprehensive measure of inflation that tracks the average change in the selling prices received by domestic producers for their goods and services.
- **Advantages of PPI Over WPI**
  - **Covers Services:** Unlike WPI, PPI includes the service sector, offering a holistic view of inflation.
  - **Reflects Supply-Side Dynamics:** Tracks price changes throughout the production process, from raw materials to finished goods.



- **International Best Practices:** Most advanced economies like the US, UK, and the EU use PPI as a standard measure of inflation.
- **Better Policy Insights:** Provides insights into the supply chain, helping policymakers address inflationary pressures at their source.

Source: [The Hindu](#)

## CASH TRANSFER SCHEMES

**Context:** Increasing resort to cash transfer schemes by political parties for winning elections is a matter of serious concern.

**Background:** -

- The success of incumbent parties in Maharashtra and Jharkhand appears to be the result of such cash-transfer schemes directed towards women. There are now more than 10 states that have either implemented or announced such schemes.

**Key takeaways**

- The temptation to use cash transfers as the one-size-fits-all solution for political parties is many.
- With universal access to financial services, these are easy-to-implement, tangible benefits for voters, directly delivered to beneficiaries.
- The success of the scheme is also due to the preference of beneficiaries for such cash transfers as they are fungible and unconditional. Most importantly, they bypass middlemen.
- While cash transfers may be politically successful, there is no evidence of whether they actually deliver on the purpose for which they are designed.
- A study on 20 cash transfer schemes in Latin America found inconclusive evidence regarding their impact on women's empowerment. Similarly, cash transfers to farmers show limited evidence of success, with real incomes declining since 2018-19, leading to growing farmer unrest.
- While it may be premature to assess impacts in the short run, the core issue lies in the assumption that cash transfers alone can solve complex problems, oversimplifying deeper systemic challenges.
- Most reforms require policy interventions, which are unlikely to result in any tangible gain in the short run, and require consensus-building and carefully-designed interventions with active participation and investment from the government machinery. For governments, the effort is not worth the benefits that cash transfers deliver in the short run.
- This is not to suggest that all cash transfers are undesirable. Programs like the National Social Assistance Programme (NSAP) have proven effective as social protection nets, while maternity entitlements and scholarships have contributed to improved human development outcomes. However, these schemes cannot replace state investments in services such as health and education. Instead, they function as complementary incentives, encouraging households/communities to utilize these services.

- One consequence of cash transfers has been the excessive fiscal strain on government finances at the cost of essential spending on health, education, nutrition or basic infrastructure.
- While new cash transfers have been announced, spending on existing basic social protection such as the NSAP, MGNREGA or the maternity-entitlement scheme remains frozen with decline in real terms.
- What is needed is a nuanced understanding of the role of cash transfers in supplementing and expanding the social safety nets rather than a quick-fix solution guaranteed to deliver political dividends.

Source: [Indian Express](#)

## RUPEE DEPRECIATION

**Context:** The rupee weakened to its all-time low on Tuesday, hitting a record low of 86.6475 before closing at 86.63 against the US dollar.

### Background:

- In the last three months, the Indian rupee has depreciated by around 3.2 percent against the US dollar.

### Key takeaways

- Rupee depreciation refers to a decline in the value of the Indian Rupee (₹) relative to foreign currencies, for example to the US Dollar (\$). It means more rupees are required to buy a unit of foreign currency.

### Reasons behind current fall of rupee

- The strong dollar, rise in crude oil prices and selling by foreign investors in the equity market are the major reasons for depreciation in the rupee.
- US jobs report came out which was higher than market consensus. Robust economic data in the US has pushed US 10-year yields higher, triggering capital outflows from emerging markets like India.
- Sharp rise in crude oil prices.

### How does a weak rupee affect the economy?

- A weak rupee increases the import bill since importers pay in dollars. Weaker rupee means more expensive imports which hike inflation in the country. For example, higher oil prices lead to higher transport costs, making food items costlier.
- Higher import bill worsens trade deficit.
- Pharmaceuticals, textiles and IT sectors will benefit from an improvement in export revenues in rupee terms since these are export-centric sectors. A weaker rupee will help make exports more competitive and by protecting the interest of domestic manufacturers from cheap import substitutes.
- Import-dependent sectors (energy, electronics, chemicals, transportation) will be negatively impacted.
- Debt servicing costs of companies that have raised funds from overseas will go up. Those who want

to study abroad will be hit hard by a weakening rupee, paying more than before for their studies.

- A weakening rupee stoking inflation will make the RBI's job to control inflation harder and also lower possibilities of a rate cut which many expect due to the recent slump in India's GDP growth rate.

Source: [Economic Times](#)

## RAT-HOLE MINING

**Context:**An oral question from the Supreme Court to the Union government continues to remain unanswered even as rescue workers recover bodies of workers who died trapped in a flooded rat-hole coal mine at Dima Hasao district in Assam.

**Background:** -

- Unlike in Chhattisgarh and Jharkhand, coal seams in Meghalaya are very thin. This, miners say, makes rat-hole mining more economically viable than opencast mining.

**Key takeaways**

- Rat-hole mining refers to an unscientific and hazardous coal extraction method involving small tunnels barely allowing workers to crawl in and out. **It is of two types:**
  - **Side-Cutting Mining:**
    - Conducted on hill slopes by following visible coal seams (dark brown or black-banded coal within rock layers).
  - **Box-Cutting Mining:**
    - Involves digging a circular or square pit (approximately 5 sq. meters wide) to a depth of up to 400 feet.
    - Miners descend using makeshift cranes or rope-and-bamboo ladders.
    - Once coal seams are located, horizontal tunnels are dug in all directions from the pit's edge, resembling octopus tentacles.

**Why is such mining banned?**

- The government has little control over the land in Meghalaya, a Sixth Schedule State where the Coal Mines Nationalisation Act of 1973 does not apply. The landowners are thus also the owners of the minerals beneath.
- Coal mining boomed after Meghalaya attained statehood in 1972. However, the terrain and expenses involved discouraged mine owners from employing advanced drilling machines. So, labourers mainly from Assam, Nepal, and adjoining Bangladesh were employed.
- Apart from issues of safety and health, unregulated mining led to land degradation, deforestation, and water with high concentrations of sulphates, iron, and toxic heavy metals, low dissolved oxygen, and high biochemical oxygen demand. At least two rivers, Lukha and Myntdu, became too acidic to sustain aquatic life.
- Environmentalists and human rights activists began flagging the hazards of rat-hole mining in Meghalaya two decades ago. The campaign intensified after Impulse, a Meghalaya-based NGO,

began addressing the issue of human trafficking and child labour in such mines.

- The State's Department of Mining and Geology refuted the claim but, under pressure from the National Human Rights Commission, admitted in 2013 that 222 children were employed in rat-hole mines, specifically in the East Jaintia Hills district. NGT banned rat-hole mining in Meghalaya in 2014.
- The State has an estimated reserve of 576.48 million tonnes of low-ash, high-sulphur coal belonging to the Eocene age (33-56 million years ago). The stakes for a section of locals have been so high that the State government has been under pressure to facilitate the resumption of mining legally.

Source: [The Hindu](#)

## ECONOMIC SLOWDOWN

**Context:** India's Real Gross Domestic Product (GDP) is seen growing at a four-year low of 6.4 per cent in the current financial year 2024-25, the first advance estimates for FY25 released by the National Statistics Office (NSO) showed.

**Background:** -

- The government seems to have placed the blame for what it believes to be a cyclical slowdown largely at the door of the RBI. While the RBI's tight monetary policy and interference with the rupee's value have hindered export competitiveness, the issues are deeper and structural, not resolvable through interest rate cuts alone.

**Key takeaways**

- The high growth rates seen in the aftermath of the pandemic were driven in large part by the surge in services exports, specifically, the boom in Global Capability Centres (GCC).
- However, this growth structure is biased in favour of the highly skilled who account for a very small section. With not many moving up the income ladder, the overall consumption base hasn't been growing.
- Limited upward mobility has, however, been a feature of the Indian economy, reflecting the inability to generate productive forms of employment for the majority. But mobility seems to have become more restricted since the pandemic. Arguably, the clearest evidence of this can be found in the car market, specifically, the low-priced, small car market.
- Take the sub Rs 10 lakh segment. Cars in this segment are bought by first-time users or those upgrading from two-wheelers or used cars. In 2014-15, this category accounted for 73 per cent of all cars sold in the country. By 2024-25, the category accounted for just 46 per cent of all cars sold.
- The labour market is just not providing enough productive employment opportunities nor are real wages growing at a fast clip.
- While millions more have joined the workforce, more are now self-employed, either as unpaid help in household establishments or in one-man roadside shops or in agriculture. Informal establishments and employment continue to witness an expansion, indicating the absence of

alternatives.

- Formal employment, as per the EPFO payroll data shows, remains driven by expert services, which are nothing but manpower suppliers, normal contractors, and security services — segments that don't require high-skill levels.
- The fallout of limited job creation and muted wage growth can be seen in the greater recourse to debt. Household debt had risen to 43 per cent by June 2024. But even this debt surge has failed to boost overall consumption significantly.
- With little demand visibility and uncertainty over government policy, investment activity continues to remain subdued. New project announcements have slowed down as per CMIE.

Source: [Indian Express](#)

## FISCAL HEALTH INDEX

**Context:** The Chairman of the 16th Finance Commission, Dr. Arvind Panagariya, launched the inaugural issue of NITI Aayog's report titled "Fiscal Health Index (FHI) 2025".

**Background:** -

- The FHI aims to throw light on the fiscal status at the sub-national level and guide policy reforms for sustainable and resilient economic growth

**Key things to know about elections**

- **The report ranks 18 major States on the basis of composite fiscal index, which is based on five major sub-indices -**
  - **Quality of Expenditure:** Assesses how effectively states allocate their expenditures.
  - **Revenue Mobilisation:** Evaluates the ability of states to generate revenue.
  - **Fiscal Prudence:** Measures the fiscal discipline of states in managing their finances.
  - **Debt Index:** Assesses the debt burden and sustainability of states.
  - **Debt Sustainability:** Evaluates the long-term sustainability of state debt.
- With a cumulative score of 67.8, Odisha tops the ranking in fiscal health among 18 major States, followed by Chhattisgarh and Goa with scores of 55.2 and 53.6, respectively.
- Goa, Telangana and Odisha are leading in revenue mobilization and fiscal prudence.
- It was observed that Odisha, Jharkhand, Goa, and Chhattisgarh have effectively mobilised non-tax sources, with Odisha relying heavily on mining-linked premiums and Chhattisgarh benefitting from coal block auctions.
- Punjab emerged as the biggest laggard, followed by Andhra Pradesh, West Bengal, Kerala, and Haryana.
- Kerala and Punjab struggle with low quality of expenditure and debt sustainability, while West Bengal faces revenue mobilization and debt index issues. Andhra Pradesh has high fiscal deficits, and Haryana has a poor debt profile.



Source: [PIB](#)

## UNIFIED PENSION SCHEME (UPS)

**Context:** Five months after the Centre announced a new Unified Pension Scheme (UPS) with assured benefits for government employees, the Finance Ministry notified the scheme as an option for workers covered by the National Pension System (NPS) to be effective from April 1, 2025.

**Background:** -

- The NPS did not offer an assured pension to government employees who joined service on, or after January 1, 2004, and had replaced an older arrangement that guaranteed pensions for government employees equivalent to 50% of their last drawn salary that were considered fiscally unsustainable.
- The UPS, approved by the Union Cabinet, restores the assurance of 50% of salary as pension for Union government employees.

**Key takeaways**

- The Unified Pension Scheme (UPS) is a new pension scheme introduced by the Indian government, aimed at providing greater financial security for government employees.
- Current and future central government employees under the NPS have the option to either transition to the UPS or remain with the existing NPS. Once the decision to switch to the UPS is made, it becomes final and cannot be reversed.

- **Key Features**

- **Assured Pension:** Employees will receive a pension equivalent to 50% of their average basic pay drawn during the last 12 months before retirement, provided they have completed at least 25 years of service.
- **Minimum Pension:** Employees with at least 10 years of service will receive a minimum pension of Rs. 10,000 per month.
- **Family Pension:** In case of the employee's death, family members are entitled to 60% of the pension.
- **Dearness Relief:** Regular pension hikes to align with inflation trends.
- **Superannuation Benefits:** A lump sum payout alongside gratuity upon retirement.
- **Voluntary Retirement:** Employees who opt for voluntary retirement after completing a minimum of 25 years of service will be eligible for the pension from the date they would have attained superannuation age.

Source: [Business Standard](#)



## GEOGRAPHY



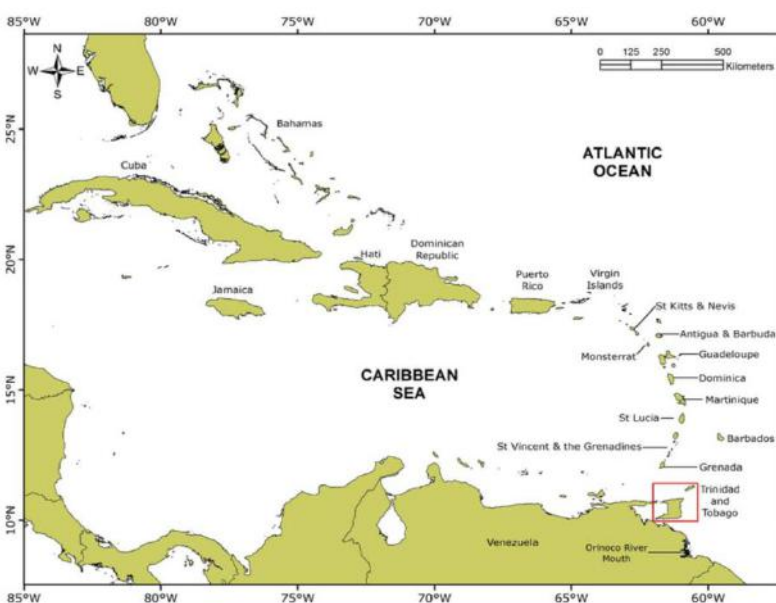
### TRINIDAD AND TOBAGO

**Context:** The government of Trinidad and Tobago declared a state of emergency on Monday (December 30), following a deadly weekend of violence in the Caribbean dual-island nation.

#### Background:

- Trinidad and Tobago has a population of 1.5 million and already accounted for one of the highest murder rates in the Caribbean, along with Jamaica and Haiti.

#### Key takeaways



- Trinidad and Tobago is a twin-island nation located in the southern Caribbean, near the northeastern coast of Venezuela. It is the southernmost island country in the Caribbean.

- It is an active member of CARICOM, Organization of American States (OAS), and the Commonwealth of Nations.

- Trinidad is the larger and more populous island. Tobago, the smaller island is located northeast of Trinidad.

- The capital city is Port of Spain, located on the island of Trinidad.

#### History

- Colonial Past: Trinidad was colonized by the Spanish in the 16th century, followed by the British in the 19th century. Tobago changed hands between the British and French several times before becoming a British colony.
- Indentured Labour: After the abolition of slavery, Indians were brought as indentured laborers (1845–1917) to work on sugar plantations, shaping the country's demographics and culture.
- Independence: Trinidad and Tobago gained independence from Britain on August 31, 1962.
- Republic: The country became a republic within the Commonwealth on August 1, 1976.

#### Culture

- Carnival: Trinidad and Tobago is famous for its Carnival, a world-renowned festival featuring colorful parades, music, and dance.
- Music: The islands are known for their contributions to calypso and soca music.

Source: [Indian Express](#)

## NORTH SEA

**Context:**U.S. President-elect Donald Trump called to “open up” the North Sea and get rid of windmills in a post on his social media platform Truth Social.

**Background:** -

- Oil companies have been steadily exiting the North Sea in recent decades with production declining from a peak of 4.4 million barrels of oil equivalent per day (boe/d) at the start of the millennium to around 1.3 million boe/d today.

**Key takeaways**



- The North Sea is a marginal sea of the Atlantic Ocean, bordered by several European countries: the UK, Norway, Denmark, Germany, the Netherlands, Belgium, and France.

- Location: Lies between Great Britain to the west and mainland Europe to the east, connecting to the Atlantic Ocean via the English Channel and to the Baltic Sea via the Skagerrak Strait.

**Economic Importance**

- Fishing: The North Sea has been a vital fishing ground for centuries, providing a significant source of seafood for many countries.

- Oil and Gas: The discovery of oil and natural gas in the North Sea in the 1960s revolutionized the energy industry. The region remains one of the

world's major offshore oil and gas production areas.

- Shipping and Trade: The North Sea is a crucial route for maritime trade, connecting major European ports such as Rotterdam, Hamburg, and London.
- Renewable Energy: Offshore wind farms are increasingly being developed in the North Sea, contributing to the region's renewable energy goals.

**Whats happening in North Sea?**

- Trump’s post was in response to a report about U.S. oil and gas producer APA Corp’s unit Apache’s plans to exit North Sea by year-end 2029. The company expects North Sea production to fall by 20% year over year in 2025.
- Last year, the British government said it would increase a windfall tax on North Sea oil and gas producers to 38% from 35%. The government wants to use the revenue from oil and gas to raise funds for renewable energy projects.
- North Sea producers have warned that the higher tax rate could lead to a sharp drop in investments and are exiting from the ageing basin ahead of the new tax increases.

Source: [The Hindu](#)

## CRIMEA

**Context:** Russia officials in Crimea announced a regional emergency on Saturday, as oil was detected on the shores of Sevastopol, the peninsula's largest city.

**Background:** -

- Fuel oil spilled out of two storm-stricken tankers nearly three weeks ago in the Kerch Strait, close to eastern Crimea — about 250 kilometers from Sevastopol, which lies on the southwest of the peninsula.

**Key takeaways**



- Crimea is a peninsula in Eastern Europe, located on the northern coast of the Black Sea and almost entirely surrounded by the Black Sea and the Sea of Azov.

- The peninsula is divided into three main zones: mountains, steppe, and the southern coast. The Crimean Mountains rise to 1,545 meters at their highest point, Roman-Kosh.

- **Water Bodies:** Crimea has numerous rivers, including the Salhyr, Alma, Kacha, and Belbek. It also has several salt pans and salty lakes, with Lake Sasyk being the largest.

- Crimea was part of Ukraine until 2014, when Russia annexed the peninsula, a move that was widely condemned by the international community.
- **Economy**
  - **Agriculture:** The steppe region of Crimea is under intensive agricultural cultivation, with crops like winter wheat, corn, potatoes, and sunflowers.
  - **Industry:** Crimea has a spa industry due to its mud volcanoes and mineral springs, and large-scale iron ore mining in the Kerch Peninsula.
- **Crimea Bridge:** Constructed in 2018, this bridge spans the Strait of Kerch, linking Crimea with Russia.

Source: [Indian Express](#)

## Z-MORH TUNNEL

**Context:** Prime Minister Narendra Modi is set to visit Sonamarg on Monday to inaugurate the Z-Morh Tunnel.

**Background:** -

- The Z-Morh will lead towards the Zojila tunnel, which is being constructed nearby. The Zojila, Asia's longest tunnel, will cut through the Himalayan range at Zojila Pass to reach the Kargil

district in Ladakh.

### Key takeaways

- The Z-Morh Tunnel is a significant infrastructure project in Jammu and Kashmir, India, aimed at enhancing connectivity between the Kashmir Valley and the strategically important region of Ladakh.
- **Length:** The main tunnel is approximately 6.4 kilometers long.
- **Location:** The tunnel connects Gagangir and Sonamarg in the Ganderbal district along the Srinagar-Leh highway. It is situated at an altitude of around 8,652 feet (2,637 meters).
- **Structure:** The project also includes an escape tunnel for emergencies and approach roads, bringing the total project length to about 12 kilometers.

### Strategic and Economic Importance

- **All-weather Access:** The tunnel provides year-round connectivity to Sonamarg, a popular tourist destination, which was previously cut off during winter months due to heavy snowfall and avalanches.
- **Military Logistics:** Z-Morh Tunnel plays a crucial role in enhancing strategic military logistics, ensuring uninterrupted access to Ladakh, an area of significant strategic importance for India's defense.

### Future Prospects

- The Z-Morh Tunnel is a crucial part of the broader Zojila Tunnel project, which aims to establish uninterrupted connectivity between Srinagar and Ladakh.
- While the Z-Morh Tunnel connects Sonamarg to the rest of Kashmir year-round, the Zojila Tunnel—under construction at an altitude of approximately 12,000 feet—will connect Sonamarg with Drass in Ladakh.
- The Zojila Tunnel, which is expected to be completed by December 2026, will provide all-weather access to Ladakh's strategic border regions, including Kargil and Leh.

Source: [Indian Express](#)

## NANKAI TROUGH

**Context:** Southern Japan was hit by a strong earthquake on Monday.

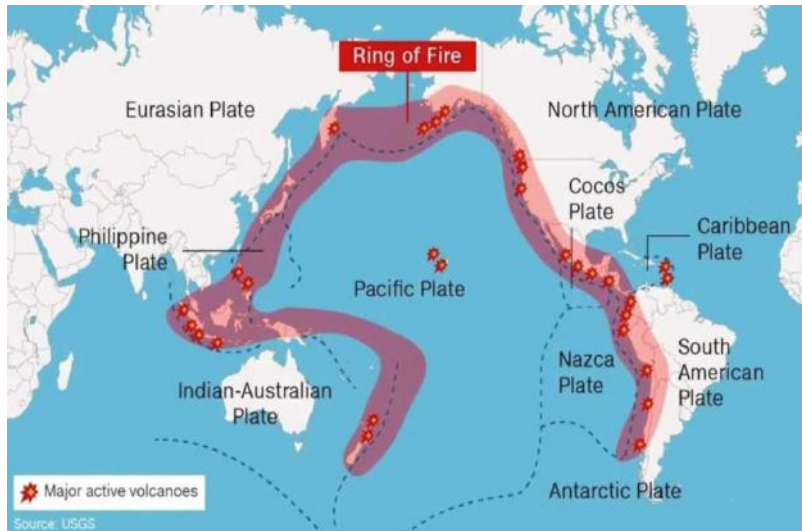
**Background:** -

- The Nankai Trough produces massive earthquakes about every 100-150 years. Strong quakes nearby are seen as a potential indication that a megaquake could be more likely.

### Key takeaways

- The Nankai Trough is an undersea subduction zone located off coast of Japan. It extends approximately 900 kilometers (559 miles), running parallel to Honshu, Japan's main island.
- Nankai Trough is where the Philippine Sea Plate is slipping under the Eurasia Plate at the bottom of the sea off the southwest coast of Japan. The accumulating tectonic strains could result in





Geological Survey. The largest earthquake ever recorded was a magnitude 9.5 on May 22, 1960 in Chile on a fault that is almost 1,000 miles long.

Source: [Reuters](#)

earthquakes.

- The Nankai Trough is known for generating megathrust earthquakes, some of the most powerful types of quakes. The most recent notable event was in 1946, with a magnitude 8.0 earthquake and subsequent tsunami.

- It is part of the larger Pacific "Ring of Fire."

Additional Information

- The magnitude of an earthquake is related to the length of the fault on which it occurs, according to the United States

## DECCAN VOLCANISM

**Context:** Deccan Volcanism, a major event of volcanic eruptions which occurred ~66 million years ago and led to mass extinctions of fauna, did not have such negative impact on tropical flora, says a new study.

**Background:** -

- The study was conducted by Birbal Sahni Institute of Palaeosciences (BSIP), an autonomous institute of Department of Science and Technology.

**Key takeaways**

- Deccan Volcanism, one of Earth's most significant volcanic events, occurred about 66 million years ago in what is now west-central India. It created the Deccan Traps, a massive region of flood basalts covering around 500,000 square kilometers and reaching up to 2,000 meters thick in places.

**Key Features of Deccan Volcanism:**

- **Formation of Deccan Traps:** The Deccan Traps were formed by massive volcanic eruptions. Lava extruding through fissures created horizontal layers of basalt, forming step-like hills (hence the term "Traps," derived from the Swedish word for stairs).
- **Duration:** These eruptions lasted for around 600-800,000 years during the transition between the Cretaceous and Paleogene periods.
- **Volcanic Source:** A mantle plume, often associated with the still-active Réunion hotspot, is believed to have triggered these extensive eruptions

**Impact on Earth's History:**

- **Cretaceous-Paleogene (K-Pg) Mass Extinction:** Deccan Volcanism is one of the key events linked

to the K-Pg mass extinction, which led to the extinction of non-avian dinosaurs.

- The eruptions released vast amounts of greenhouse gases and sulfur aerosols that altered the global climate, causing significant warming and acid rain.

#### What the new study says?

- The study by Birbal Sahni Institute of Palaeosciences (BSIP) suggests that despite highly devastating consequences for terrestrial faunas, the Deccan Volcanism only caused regional and short-term impacts on the flora.
- Deccan Volcanism indirectly imposed a positive impact on the development of hyper-diverse tropical flora by wiping off the large faunal community of dinosaurs along with gymnosperms and by providing nascent, undisturbed, barren yet fertile habitats within congenial warm and humid climate state ideal for angiosperms to grow and evolve.

Source: [PIB](#)

## DIEGO GARCIA

**Context:** Even as Tamil Nadu's coastal communities continue to face challenges due to the regular arrests of fishermen by the Sri Lankan Navy, another group of ten fishermen from Thothoor village in the state has been allegedly arrested by the British Navy near Diego Garcia Island.

#### Background: -

- The fishermen were reportedly arrested for allegedly crossing the International Maritime Boundary Line (IMBL).

#### Key takeaways



- Diego Garcia is a coral atoll located in the central Indian Ocean, forming the largest and southernmost part of the Chagos Archipelago. It is part of the British Indian Ocean Territory (BIOT) and serves as a strategic military base jointly operated by the United Kingdom and the United States.

- Location: Approximately 3,535 km east of Tanzania, 2,984 km east-southeast of Somalia, and 726 km south of the Maldives

- Diego Garcia's location along major international trade routes between Asia and Africa enhances its strategic importance. The joint UK-US military base supports various operations and serves as a logistical hub for forces operating in the Indo-Pacific region.

- The sovereignty of Diego Garcia has been a subject of international dispute. Mauritius claims the Chagos Archipelago, including Diego Garcia, as its territory.
- In October 2024, the UK announced plans to transfer sovereignty of the Chagos Islands to

Mauritius, while retaining a long-term lease for the military base on Diego Garcia.

Source: [NDTV](#)

## HYDROCLIMATE WHIPLASH

**Context:** The wildfires that have devastated large parts of the Los Angeles city and surrounding areas in the United States since January 7 occurred due to rare meteorological conditions enhanced by global warming and consequent climate change, mainly due to a 'hydroclimate whiplash'.

**Background: -**

- The blazes have already killed 24 people and burnt 12,000 structures to the ground over an area of 155 square kilometres as of January 13 and may intensify further due to fierce winds in the coming days.

**Key takeaways**

- Hydroclimate whiplash refers to rapid and extreme transitions between very wet and very dry conditions in a region. This phenomenon is becoming more frequent and severe due to climate change, leading to significant environmental and societal impacts.

**Causes of Hydroclimate Whiplash:**

- A primary driver is the increasing capacity of a warmer atmosphere to hold moisture. For every degree Celsius of warming, the atmosphere can hold about 7% more water vapor. **This "expanding atmospheric sponge" effect results in:**
  - **Intensified Precipitation:** When the saturated atmosphere releases moisture, it leads to heavier and more intense rainfall events.
  - **Enhanced Evaporation:** A warmer atmosphere also increases evaporative demand, drawing more moisture from soils and vegetation, which exacerbates drought conditions during dry periods.
- These dynamics contribute to more pronounced swings between wet and dry periods, characteristic of hydroclimate whiplash.

**Impacts of Hydroclimate Whiplash:**

- **Wildfires:** Periods of heavy rainfall promote vegetation growth, which, during subsequent droughts, becomes dry fuel, increasing wildfire risk. This sequence has been observed in regions like California, where wet winters followed by dry summers have led to severe wildfires.
- **Flooding and Landslides:** Intense rainfall can lead to flash floods and landslides, especially when occurring after prolonged dry spells that compromise soil stability.
- **Agricultural Disruption:** Crops may suffer from alternating flooding and drought conditions, affecting food production and security.
- **Water Resource Management Challenges:** The unpredictability of water availability complicates the management of reservoirs and water supplies, impacting both human consumption and ecological needs.

Source: [Down To Earth](#)

## SIACHEN GLACIER

**Context:** Reliance Jio announced that it had extended its 4G and 5G services to Siachen Glacier, known as the world's highest battlefield.

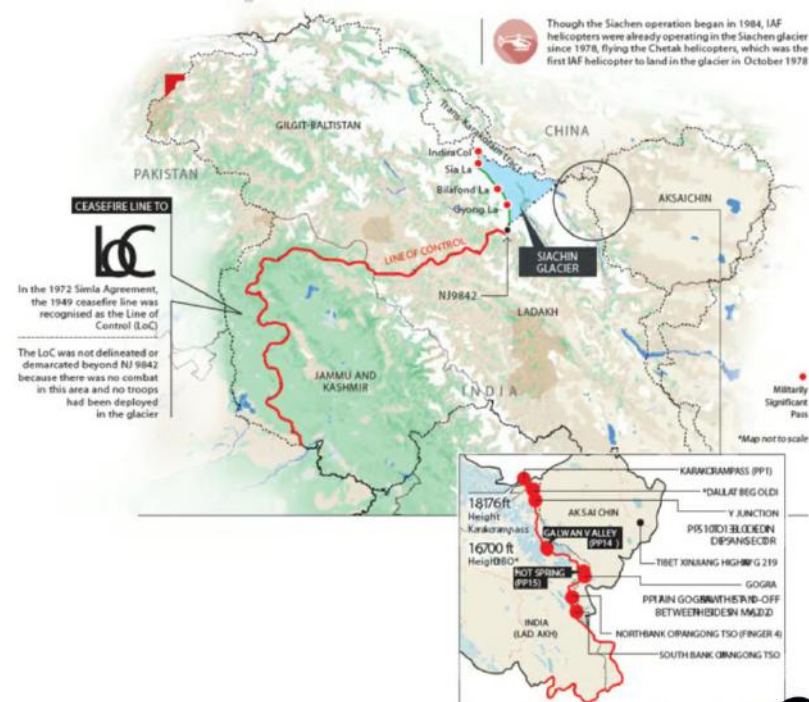
**Background:** -

- Reliance Jio noted that it worked with Army Signallers of the Indian army in order to manage the logistics and airlift Jio equipment to the glacier in freezing weather conditions.

**Key takeaways**

- **Location and Geography:**

- Situated in the eastern Karakoram range in the Himalayas. The Siachen Glacier is positioned from northwest to southeast.
- It originates at the base of the Indira Col West, a col (low point) on the Indira Ridge, at an altitude of 6,115 metres (20,062 feet), and it descends to an altitude of 3,570 metres (11,713 feet).



- Length: Approximately 76 km, making it the longest glacier in the Karakoram and the second-longest in non-polar regions.

- Lies to the north of the Nubra Valley in Ladakh. At the glacier's snout, two proglacial meltwater streams emerge, and eventually they combine into a single stream, thus forming the Nubra River in the Indian union territory of Ladakh.

- The Nubra flows 90 km before its confluence with the Shyok River, which in turn drains into the approximately 3,200-km-long Indus

River.

- **Strategic Importance:**

- Positioned at the tri-junction of India, Pakistan, and China, making it geopolitically significant.
- Overlooks major supply routes and the Karakoram Pass, crucial for controlling the region.

- **Conflict and Military Presence:**

- The Siachen region has been at the center of military significance due to its strategic position between India and Pakistan. India controls the entire Siachen Glacier since the Operation Meghdoot in 1984
- Highest militarized zone in the world, with troops stationed at altitudes exceeding 20,000 feet.

Source: [The Hindu](#)

## TUNGABHADRA RIVER

**Context:** The Tungabhadra water has turned green around Shiranahalli, Gangapur and Korlahalli villages in Mundargi taluk of Gadag district creating panic among the residents

**Background:** -

- According to the residents, the river flowing in the region usually dries up during summer and the water left in puddles turns green. However, this year, flowing river water turning green has caused anxiety among them.

**Key takeaways**

- The Tungabhadra River is a prominent river in southern India. It is a key tributary of the Krishna River and plays a vital role in the irrigation, hydroelectricity, and water supply of the region.

**Geographical Features:**

- **Source:** Originates in the Western Ghats at the confluence of the Tunga and Bhadra rivers near Kudremukh in Karnataka.
- **Course:** Flows for approximately 531 km through Karnataka, Andhra Pradesh, and Telangana before merging with the Krishna River at Sangameswaram in Andhra Pradesh.
- **Basin Area:** Covers about 71,417 square kilometers across Karnataka, Andhra Pradesh, and a small part of Telangana.
- **Irrigation:**
  - The river supports extensive agricultural activities in the Deccan Plateau.
  - The Tungabhadra Dam near Hospet in Karnataka provides irrigation to over 1.25 million hectares of land.
- **Hydroelectric Power:** The dam generates hydroelectric power, contributing to the energy requirements of Karnataka and Andhra Pradesh.
- **Historical Importance:** The river was central to the prosperity of the Vijayanagara Empire, with Hampi located on its banks.

Source: [The Hindu](#)

## GAZA CEASEFIRE DEAL TAKES EFFECT

**Context:** After 15 months of devastating war between Israel and Hamas, a ceasefire took effect on Sunday.

**Background:** -

- The ceasefire deal, brokered by Qatar, the US, and Egypt, promises to pause fighting for 42 days



and includes the release of hostages held in Gaza in exchange for Palestinian prisoners in Israeli jails.

**Key takeaways**

- During a 42-day first phase beginning Sunday, Hamas will release 33 hostages and Israel will release between 900 and 1,650 Palestinian detainees, including all of those detained since October 7, 2023.
- The IDF will withdraw from central Gaza and the Netzarim Corridor — a 2-4-km-wide security clearing that it has created, cutting Gaza in half up to the Mediterranean — and eventually from the Philadelphi Corridor, the buffer zone along the Gaza-Egypt border.
- Negotiations for a second phase will begin on the 16th day after the ceasefire comes into effect, and is expected to produce almost a full Israeli withdrawal from the Strip, and the release of all remaining hostages by Hamas in return for a yet-to-be-decided number of Palestinian detainees.

**War that reshaped the Middle East**



- The war has rippled across the Middle East, triggering conflict with Hezbollah in Lebanon and drawing Israel into direct confrontation with Iran.

- Despite billions spent by Iran in building up a network of militants around Israel, its influence in the region has taken a significant hit. Hezbollah’s formidable missile arsenal has been largely destroyed, and much of its leadership has been killed.

- In Syria, the collapse of the Assad regime has further weakened Iran’s position in the region, leaving Israel militarily unchallenged but diplomatically isolated.

- Even as Israel emerges from the conflict militarily dominant, its international

standing has suffered. Outrage over the humanitarian toll in Gaza has mounted, with Netanyahu now facing allegations of war crimes at the International Criminal Court (ICC) and accusations of genocide at the International Court of Justice (ICJ).

Source: [Indian Express](https://www.indianexpress.com)

**BOREAL FORESTS**

**Context:** Nearly half of the global boreal forests — spanning Canada, Alaska and Siberia — are undergoing major transitions due to climate change, making them increasingly vulnerable to forest fires and altering their role as a key carbon sink, a new study has revealed.

**Background: -**

- Boreal forests, also known as Taiga, are the largest terrestrial biome on Earth, forming a critical part of the planet's ecological balance.

**Key takeaways**

- Boreal forests are primarily found in the high northern latitudes, forming a circumboreal belt around the world, spanning across northern Europe, Asia, and North America.
- They are located between temperate forests in the south and the Arctic tundra in the north.

**Characteristics**

- **Climate:** Boreal forests experience long, cold winters and short, mild summers. The regions are characterized by low temperatures, low precipitation, and frequent snow cover.
- **Vegetation:** The predominant vegetation consists mainly of coniferous trees like pines, spruces, and larches. There are also some deciduous trees, such as birches and poplars. Understory vegetation includes shrubs, mosses, and lichens.
- **Soils:** The soils in boreal forests are usually acidic and nutrient-poor, formed under cool, moist conditions which slow down the decomposition of organic matter. This results in a thick layer of litter on the forest floor.

**Ecological Importance**

- **Carbon Storage:** Boreal forests are vital carbon sinks, holding more carbon than all tropical forests combined. The accumulation of organic matter, under cold temperatures, leads to large stores of carbon.
- **Biodiversity:** They support a variety of wildlife adapted to the cold, such as moose, caribou, wolves, bears, and many bird species. These forests also provide essential breeding grounds for several migratory bird species.
- **Hydrology:** Boreal forests contain substantial amounts of surface freshwater and play a critical role in regulating the water cycle.

Source: [Down To Earth](#)

## BOMB CYCLONE

**Context:** A powerful "bomb cyclone" named Storm Éowyn (pronounced AY-oh-win) pummeled parts of Ireland and the United Kingdom recently.

**Background: -**

- It is not unusual for winter storms in this part of the world to reach bomb cyclone status. However, only very few in recent years have shown a rate of deepening pressure that is comparable to that of Storm Éowyn.

**Key takeaways**

- A bomb cyclone, also known as explosive cyclogenesis or weather bomb, is a rapidly intensifying storm system characterized by a significant drop in atmospheric pressure.
- **Definition:** A bomb cyclone occurs when a mid-latitude cyclone's central pressure drops by at

least 24 millibars (mb) within 24 hours.

- **Formation:** It typically forms when a cold air mass collides with a warm air mass, often over ocean waters. This clash leads to a rapid drop in pressure and intensification of the storm.

#### Characteristics

- **Rapid Intensification:** The defining feature of a bomb cyclone is its quick strengthening, which can lead to severe weather conditions.
- **Weather Impact:** Bomb cyclones can bring heavy precipitation (rain, snow), strong winds, and coastal flooding. They can cause significant damage to infrastructure and pose risks to human safety.

#### Regions Prone to Bomb Cyclones:

- North America: U.S. East Coast, Great Lakes region, and Canada.
- Europe: North Atlantic regions, UK, and Scandinavia.
- Japan & East Asia: Occurs due to cold Siberian air masses interacting with warm ocean air.

Source: [Weather](#)

## CONFLICT IN DEMOCRATIC REPUBLIC OF THE CONGO

**Context:** Security forces of the Democratic Republic of the Congo are fighting against Rwanda-backed rebels (named M23) who advanced into Goma, a key eastern city, in a major escalation of a decades-long conflict.

#### Background: -

- Sitting on the border with Rwanda and the shores of Lake Kivu, Goma is a vital trading and transport hub that is within reach of mining towns supplying metals and minerals in high demand such as gold, tin and coltan, which is a key component of mobile phones and batteries for electric vehicles.

#### Key takeaways



#### Who are the M23?

- The M23 are led by ethnic Tutsis, who say they needed to take up arms to protect the rights of the minority group.

- Shortly after its creation in 2012, the M23 rapidly gained territory and seized Goma – acts that were met with international opprobrium and accusations of war crimes.

- It was forced to withdraw from Goma, and then suffered a series of defeats at the hands of the Congolese army along with a UN force that saw it expelled from the country.

- M23 fighters then agreed to be integrated into the army in return for promises

that Tutsis would be protected. But, in 2021, the group took up arms again.

- Neighbouring Rwanda has in the past consistently denied that it supported the M23, but ever since 2012 UN experts have accused it of providing weapons, logistical support and even ultimately commanding the rebels.

#### **What is the connection with Rwanda?**

- The origin of the current fighting can partly be traced back to the genocide in Rwanda in 1994. About 800,000 people – the vast majority from the Tutsi community – were slaughtered by ethnic Hutu extremists.
- The genocide ended with the advance of a force of Tutsi-led rebels commanded by Paul Kagame, who is now Rwandan president.
- Fearing reprisals, an estimated one million Hutus then fled across the border to what is now DR Congo. This stoked ethnic tensions as a marginalised Tutsi group in the east – the Banyamulenge – felt increasingly under threat.
- Rwanda's army twice invaded DR Congo, saying it was going after some of those responsible for the genocide.
- After 30 years of conflict, one of the Hutu groups, the Democratic Forces for the Liberation of Rwanda (FDLR), which includes some of those responsible for the Rwandan genocide, is still active in eastern DR Congo.
- Rwanda is unlikely to stay out of DR Congo unless it is satisfied that the FDLR is no longer a threat to itself, or to the Tutsi communities in eastern DR Congo.

#### **What about Congo's mineral wealth?**

- DR Congo and multiple UN reports have accused Rwanda of using the conflict as a way of looting Congolese minerals, such as gold and coltan, which is used to make batteries for electric vehicles and mobile phones.
- In recent years, the M23 has seized several lucrative mining areas and a report by UN experts said that around 120 tonnes of coltan was being sent by the M23 to Rwanda every four weeks.

Source: [BBC](#)

## **KARA SEA**

**Context:** Amid a rapid expansion of Russian activity in the Arctic region, a nuclear-powered icebreaker suffered damage after colliding with a cargo vessel in the Kara Sea.

#### **Background:**

- During the winter, nuclear icebreakers frequently accompany oil tankers and LNG carriers across the waters of the Arctic.

#### **Key takeaways**

- The Kara Sea is a marginal sea of the Arctic Ocean, located to the north of Siberia, Russia.
- Location: The Kara Sea is bordered by the Novaya Zemlya archipelago to the west, the Severnaya

Zemlya archipelago to the east, and the Franz Josef Land to the northwest.



• Climate

○ Ice Cover: The Kara Sea is one of the coldest seas in the world, remaining ice-bound for most of the year, typically from September to May.

○ Temperature: Air temperatures below 0°C prevail for 9-10 months in the north and 7-8 months in the south. In January, temperatures range from -28°C to -20°C, and in July, they

range from -1°C to 6°C.

- Rivers: Major rivers that drain into the Kara Sea include the Yenisey, Ob, Pyasina, and Kara rivers.
- Islands: The Kara Sea contains numerous islands, including the Nordenskiold Archipelago, which is composed of more than 90 islands.

**Current Developments**

- The incident draws attention to the Northern Sea Route (NSR). The development of this route has emerged as a strategic priority for Russian President Putin.
- Russia has been promoting the Northern Sea Route (NSR) as an alternative global shipping route. Compared to the Suez Canal, the NSR provides faster transit between Northern Europe and East Asia.
- For example, the expected commerce through the NSR will reduce the distance between Shanghai and Rotterdam (the Netherlands’ main commercial port) by over 2,800 nautical miles, or 22%, compared to the Suez Canal route. This route will also likely reduce transportation costs by 30 to 40 percent.

Source: [Eurasian Times](#)

**YAMUNA RIVER**

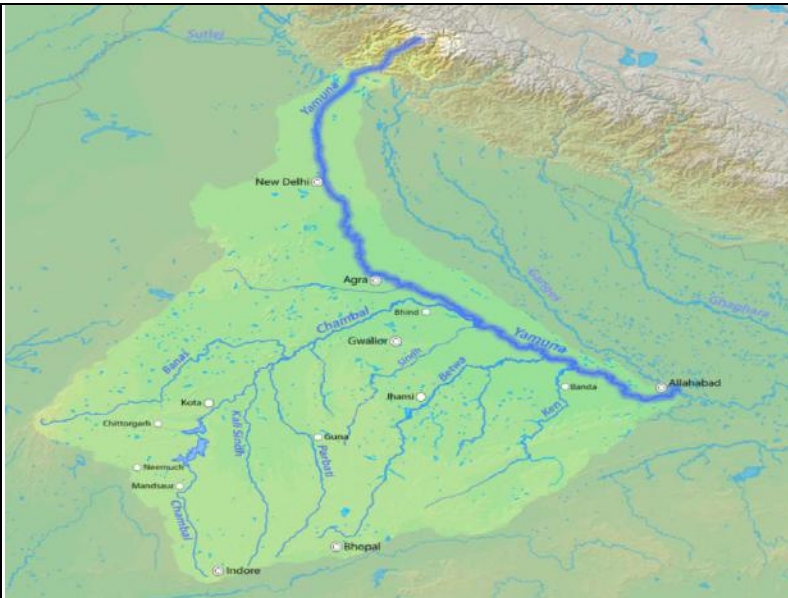
**Context:**Arvind Kejriwal replied to the Election Commission of India's notice over his claim that the Haryana government was “mixing poison” in Yamuna river, and said raw water received from the state recently has been “highly contaminated and extremely poisonous” for human health.

**Background: -**

- The Yamuna River is vital to Delhi, providing water to about 70 percent of its population, not to mention its spiritual significance.

**Key takeaways**





- The Yamuna River is the largest tributary of the Ganga River and one of the most significant rivers in India.

- It originates from the Yamunotri Glacier at an altitude of 6,387 meters in the Uttarkashi district of Uttarakhand.

- States Covered: Uttarakhand, Himachal Pradesh, Haryana, Delhi, Uttar Pradesh, Rajasthan, and Madhya Pradesh.

- Length: 1,376 km, making it the second-longest river in India after the Ganga.

- Major Cities Along Its Banks: Delhi,

Mathura, Agra, Etawah, Allahabad (Prayagraj).

- Confluence: The Yamuna meets the Ganga at the Triveni Sangam in Prayagraj, Uttar Pradesh, where the Saraswati River is also believed to join.
- Tributaries: Major tributaries include the Tons, Chambal, Sindh, Betwa, and Ken rivers.

Source: [Hindustan Times](https://www.hindustantimes.com)

## DARFUR REGION

**Context:** The head of the World Health Organization called for an end to attacks on healthcare workers and facilities in Sudan after a drone attack on a hospital in Sudan's North Darfur region killed more than 70 people and wounded dozens.

**Background:** -

- The war between Sudan's army and the Rapid Support Forces (RSF), which broke out in April 2023 due to disputes over the integration of the two forces, has killed tens of thousands, driven millions from their homes and plunged half of the population into hunger.

**Key takeaways**



- Darfur is a region in western Sudan, bordering Libya, Chad, and the Central African Republic (CAR).

- The region consists of savannahs in the south and semi-arid deserts in the north.

- Darfur was an independent Sultanate (Darfur Sultanate) until it was annexed by Sudan in 1916.

- It has a history of ethnic and tribal conflicts between Arab and non-Arab African communities over land and resources.

**Darfur Conflict (2003-Present):**



- The Darfur conflict began in 2003 when non-Arab rebel groups (Sudan Liberation Army – SLA and Justice and Equality Movement – JEM) took up arms against the government.
- The Sudanese government, under Omar al-Bashir, supported Arab militias (Janjaweed) to suppress the rebellion.
- The conflict led to widespread human rights abuses, massacres, and genocide, with over 300,000 deaths and 2.5 million displaced.
- Following Sudan’s military coup (2021) and the civil war in 2023, violence in Darfur has escalated again.
- The Rapid Support Forces (RSF), an offshoot of the Janjaweed militia, is involved in ongoing conflicts.

Source: [Reuters](#)



## Environment and Ecology



### AMAZON CAPS BRUTAL YEAR OF FIRES, DROUGHT

**Context:** 2024 was a brutal year for the Amazon rainforest, with rampant wildfires and extreme drought ravaging large parts of a biome that's a critical counterweight to climate change.

**Background:** -

- The Amazon is twice the size of India and sprawls across eight countries and one territory, storing vast amounts of carbon dioxide that would otherwise warm the planet.

**About Amazon Rainforest**

- The Amazon Rainforest, often referred to as the "lungs of the Earth," is the world's largest tropical rainforest.



- Lies within the Amazon River Basin, covering countries such as Brazil, Peru, Colombia, Venezuela, Ecuador, Bolivia, Guyana, Suriname, and French Guiana.

- **Climate:** Features an equatorial climate with high humidity, temperatures ranging from 25–30°C, and significant rainfall throughout the year.

**Environmental Significance**

- **Carbon Sink:** Absorbs 2 billion tons of CO<sub>2</sub> annually, mitigating global warming.

- **Oxygen Production:** Contributes significantly to the global oxygen cycle, earning its nickname as the "lungs of the Earth."
- **Water Cycle Regulation:** Produces 20% of the world's freshwater runoff into the oceans via the Amazon River.
- Influences global and regional precipitation patterns, including the South American monsoon.

Source: [The Hindu](#)

### ANNUAL GROUNDWATER QUALITY REPORT 2024

**Context:** The Annual Groundwater Quality Report 2024 by Central Ground Water Board (CGWB) has pointed out concerns regarding ground water in various parts of the country arising from nitrates, arsenic, fluoride and uranium among others.

**Background:** -

- While it is a good sign that India now has a robust, scientific system of assessment to monitor the health of groundwater blocks annually, efforts are lacking in getting States to act on these

findings

### Key takeaways

- The number of districts with excessive nitrate in their groundwater has risen from 359 in 2017 to 440 in 2023. This translates to a little more than half of India's 779 districts having excessive nitrate, or more than 45 mg/L (milligram per litre).
- There are two major concerns with excess nitrate content: first, methemoglobinemia, or a reduced ability of red blood cells to carry oxygen. This sometimes causes 'Blue Baby Syndrome,' in infants.
- The bigger problem is environmental: once nitrates in groundwater rise to the surface and become part of lakes and ponds, algal blooms throttle the health of aquatic ecosystems.
- High nitrate levels in groundwater can be a result of excessive irrigation which can push nitrates from fertilizers deep into the soil, the report said.
- Poor management of animal waste in livestock farming adds to the problem, as it releases nitrates into the soil. Urbanisation and population growth increase wastewater and sewage, which often contain high nitrate levels, while leaking septic systems and poor sewage disposal worsen contamination.
- Rajasthan, Madhya Pradesh and Gujarat have a perennial nitrate problem, primarily from geological factors, with relative levels fairly constant since 2017, the report says.
- The report further said fluoride concentrations exceeding the permissible limit are a major concern in Rajasthan, Haryana, Karnataka, Andhra Pradesh, and Telangana.
- Elevated arsenic levels (more than 10 parts per billion) were found in several states, particularly in the floodplains of the Ganga and Brahmaputra rivers.
- Long-term exposure to fluoride and arsenic contaminants can have severe health consequences, including fluorosis (from fluoride) and cancer or skin lesions (from arsenic).
- Another major concern is the elevated levels of uranium in several regions. Forty-two per cent of samples with uranium concentrations exceeding 100 ppb (parts per billion) came from Rajasthan, and 30 per cent from Punjab, indicating regional hotspots of uranium contamination, the report said.
- Chronic exposure to uranium can lead to kidney damage.
- The report said that groundwater samples with uranium concentrations above 30 ppb were clustered in areas identified as over-exploited, critical and semi-critical groundwater stress zones, such as Rajasthan, Gujarat, Haryana, Punjab, Tamil Nadu, Andhra Pradesh and Karnataka.

Source: [Business Standard](#)

## POLAR VORTEX

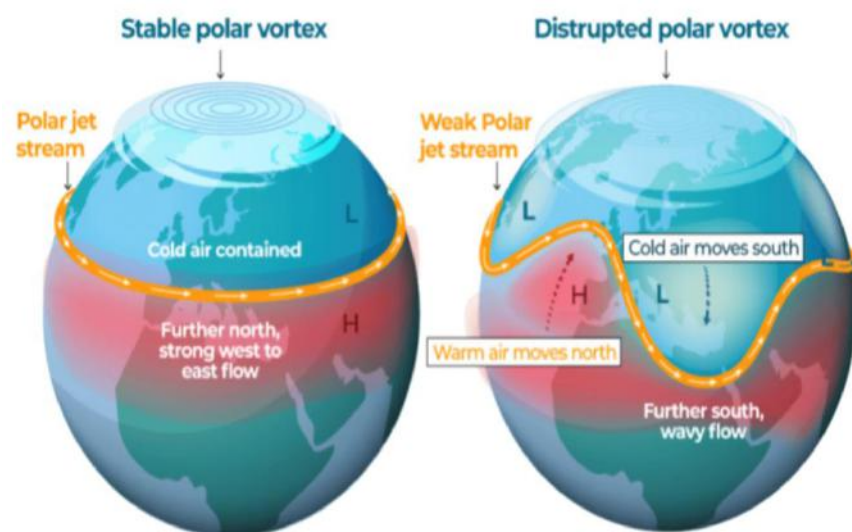
**Context:** At least five people have died in the United States after a winter storm hit a large swathe of the country over the weekend. The extreme weather has been caused by the expansion of the polar vortex southwards.

**Background: -**

- Some 60 million people are under weather alerts across 30 states. Seven of them have declared emergencies. The National Weather Service has warned that severe thunderstorms, with the possibility of tornadoes and hail, would also take place in some regions over the next few days.

**Key takeaways**

- The polar vortex is a large area of low-pressure and cold air that swirls like a wheel around both of the Earth's polar regions. There are two types of polar vortex: tropospheric and stratospheric.
- The tropospheric polar vortex occurs at the lowest layer of the atmosphere — it extends from the surface up to about 10 km to 15 km — where most weather phenomena occur.



north and warm air south.

- However, when the polar vortex weakens, the jet stream loses stability, becoming more wavy and irregular. High-pressure systems can disrupt its flow, allowing cold air masses to move southward along with portions of the polar vortex. This shift results in the spread of arctic weather to lower latitudes.

Source: [Indian Express](https://www.indianexpress.com)

- The stratospheric polar vortex occurs at around 15 km to 50 km high. Unlike the tropospheric polar vortex, the stratospheric polar vortex disappears during the summer and is the strongest during the autumn.

- When the polar vortex is strong and stable, it keeps the jet stream travelling around the planet in a circular path. The jet stream is a narrow band of strong wind in the upper levels of the atmosphere which plays a key role in keeping cold air

## 2024 - THE FIRST YEAR TO BREACH GLOBAL WARMING LIMIT

**Context:** Temperature data made public by the Copernicus Climate Change Service (C3S), an authoritative source on historical trends in climate, show that 2024 was the first year in history when mean global temperature went 1.5 degrees Celsius above the pre-industrial level.

**Background: -**

- 2024 with a warming of 1.6 degree Celsius higher than pre-industrial levels has overtaken 2023 as the warmest year ever recorded. 2023 was recorded to be 1.45 degree Celsius warmer than pre-industrial times.

**Key takeaways**

- The 1.5 degree Celsius mark is an important threshold mentioned in the 2015 Paris Agreement,

which calls upon the world to restrict the rise in global temperatures to “well below 2 degree Celsius” from pre-industrial levels while “pursuing efforts” to keep this within 1.5 degree Celsius.

**RISING AVG ANNUAL TEMPS ABOVE PRE-INDUSTRIAL TIMES**



Source: WMO

monthly average temperatures have crossed the 1.5 degree Celsius mark several times during the last two years.

- From the climate change perspective, the 1.5 degree mark would be considered to have been breached only if the averages over a decade or two remain above the thresholds.

**2023 & 2024 - Exceptionally warm years**

- The years 2023 and 2024 stand out even in the rapidly warming trend witnessed in the last decade, European Centre for Medium Range Weather Forecasting (ECMWF) said.
- For instance, the previous warmest year, 2016, which was 1.29 degrees Celsius warmer than pre-industrial levels, was influenced by a very strong El Niño — a phenomenon in the eastern Pacific Ocean. El Niño has a general warming effect.
- There was an El Niño prevailing during 2023 and 2024 as well, but it was mild. ECMWF said the unusual warming of 2023 and 2024 could be because of other factors, though there was no one dominant reason. It cited “unprecedented” El Niño-like systems in multiple other ocean regions as one of the possible reasons.
- An underwater volcanic eruption near Tonga in the southern Pacific Ocean in January 2022, and lower sulphur dioxide emissions from the shipping industry in 2024 could also have contributed to the warming, ECMWF said. Sulphur dioxide in the atmosphere reflects some solar radiation, thus preventing it from reaching Earth.
- The unusual warming could also be because of the Sun, which was in its solar maximum phase in 2024 during its routine 11-year solar cycle. An increase in the solar energy reaching the Earth during the solar maximum phase could have contributed to the warming.

Source: [Indian Express](#)

**MISSION MAUSAM**

**Context:** During the inaugural event to celebrate 150 years of the India Meteorological Department (IMD), P M Modi launched ‘Mission Mausam’.

**Background:**

- Established in 1875, the India Meteorological Department (IMD) completed 150 years of service on

January 15.

### About Mission Mausam

- The mission aims to upgrade the capabilities of India's weather department in forecasting, modelling, and dissemination.
- **The primary objectives of Mission Mausam are:**
  - To enhance India's capability in weather forecasting across various scales—short-term, medium-term, extended-range, and seasonal.
  - To develop high-resolution models for improved accuracy in predicting monsoon behaviour.
  - To strengthen observational networks with advanced radars, satellites, and automated weather stations.
  - To provide actionable advisories for agriculture, water resources, energy, health, and disaster management sectors.
  - To build capacity through research collaborations with national and international institutions.
- Mission Mausam will have a budget of Rs 2,000 crore for the first two years of its implementation.
- **Mission Mausam adopts a multi-pronged approach to achieve its objectives:**
  - Infrastructure Development: Installation of Doppler Weather Radars (DWRs), Automatic Weather Stations (AWS), and rain gauges across the country.
  - Supercomputing Power: Leveraging high-performance computing systems like Pratyush and Mihir for advanced climate modelling.
  - Collaborative Research: Partnerships with global organizations like the World Meteorological Organization (WMO) to enhance forecasting techniques.
  - Public Outreach: Dissemination of user-friendly advisories through mobile apps (e.g., Mausam app), SMS services, and media channels.
- The mission will also 'manage' certain weather events, and on-demand, enhance or suppress rainfall, hail, fog and, later, lightning strikes.
- For effective weather modification, one of the most important areas is cloud physics. Towards this end, India is establishing a first-of-its-kind cloud chamber at the Indian Institute of Tropical Meteorology (IITM), Pune.
- A cloud chamber resembles a closed cylindrical or tubular drum, inside which water vapour, aerosols, etc. are injected. Under the desired humidity and temperature inside this chamber, a cloud can develop.
- With Mission Mausam, India will build a cloud chamber with convection properties, as required to study Indian monsoon clouds.

Source: [Indian Express](#)

## OLIVE RIDLEY TURTLES

**Context:**Over the past two weeks, numerous dead olive ridley turtles have washed ashore in Tamil Nadu,



particularly in Chennai.

#### Background:

- Olive ridley turtles arrive near the Tamil Nadu coast around September-October to breed. Their nesting season begins in late November and ends in March. Although deaths during nesting season are not unusual, the large number of turtle carcasses found this early in the nesting period has sparked concerns.

#### Key takeaways



All stages of a sea turtle's life are affected by environmental conditions such as temperature—even the sex of offspring. The warmer the nest beach conditions, the more female hatchlings that emerge from the eggs. Unusually warm temperatures caused by climate change could be disrupting normal sex ratios, resulting in fewer male baby turtles. Warmer sea surface temperatures can also lead to the loss of important foraging grounds for marine turtles, while increasingly severe storms and sea level rise can destroy critical nesting beaches and damage nests.

- Olive Ridley Sea Turtles (*Lepidochelys olivacea*) are one of the smallest and most abundant of all sea turtles found globally.

- Physical Characteristics:

- Size: Around 60–70 cm in length and 35–50 kg in weight.
- Shell: Olive-colored, heart-shaped, and flattened.

- Habitat:

- Found in warm waters of the

Pacific, Atlantic, and Indian Oceans.

- Prefer coastal and shallow marine environments but occasionally venture into open seas.
- Diet: Omnivorous; feed on algae, fish, shrimp, crabs, and jellyfish.
- Lifespan: Typically live for 50–60 years.
- These turtles are known for their unique mass nesting events called "arribadas," where thousands of females gather on the same beach to lay eggs. Significant nesting sites include the coasts of India, Mexico, and Costa Rica.
- Olive ridley turtles lay eggs across several coastal states on India's east coast and west coast. However, mass nesting takes place in Odisha, followed by Andhra Pradesh and Tamil Nadu.
- Odisha's Gahirmatha and Rushikulya beaches witness the arrival of lakhs of female olive ridley turtles every year.
- Olive Ridley turtles are classified as Vulnerable by the IUCN Red List.

Source: [The Hindu](#)

### BHITARKANIKA NATIONAL PARK

**Context:** The population of saltwater crocodiles in Odisha's Bhitarkanika National Park has marginally increased in 2025. Forest officials counted 1,826 crocodiles during the recent annual reptile census whereas in 2024, they sighted 1,811 reptiles.

#### Background: -

- The forest department had stopped the crocodile breeding and rearing programme in 2024 in the

park as the crocodile population reached a saturation point.

### Key takeaways

- Bhitarkanika National Park is a prominent protected area in Odisha, known for its rich biodiversity, mangrove ecosystems, and unique wildlife.
- Situated in the delta region of the Brahmani, Baitarani, and Dhamra rivers.
- Designation: Declared a national park in 1998.
- Part of the Bhitarkanika Wildlife Sanctuary (declared in 1975).
- Designated as a Ramsar Site in 2002 for its wetland significance.
- **Flora:**
  - One of India's largest mangrove ecosystems.
  - Supports diverse plant species such as Avicennia, Rhizophora, and Heritiera.
- **Fauna:**
  - Known for saltwater crocodiles, with one of the largest breeding populations in India.
  - Other species include Indian python, king cobra, water monitor lizard, spotted deer, and wild boar.
  - Rich avian biodiversity, including migratory birds like open-billed storks and herons.
- Located within the close vicinity of the Bhitarkanika National Park is Odisha's only Turtle Sanctuary. A part of the Gahirmatha Beach, the Turtle Sanctuary is the place where one can spot Olive Ridley Turtles.

Source: [Down To Earth](#)

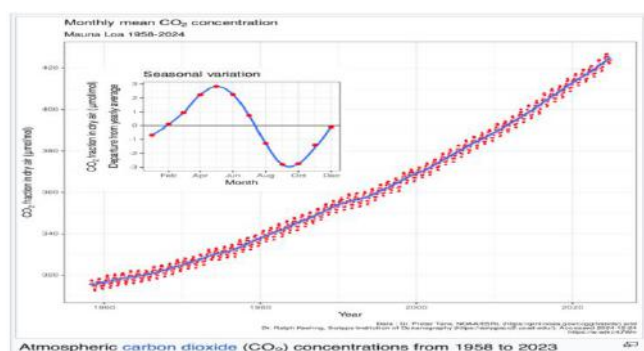
## KEELING CURVE

**Context:** In 2024, the yearly average level of the greenhouse gas carbon dioxide (CO<sub>2</sub>) rose faster over the prior year than ever before in the 67-year-old Keeling Curve record.

### Background: -

- When researchers took the average readings for all 12 months in 2024, the average was 3.58 parts per million (ppm) higher than for 2023's average. That broke the record for largest jump set in 2016 of 3.41 ppm. In both instances, the climate pattern El Niño played a role.

### Key takeaways



- The Keeling Curve is a graphical representation of the concentration of carbon dioxide (CO<sub>2</sub>) in Earth's atmosphere over time.

- Origin: Named after Dr. Charles David Keeling, who began continuous monitoring of atmospheric CO<sub>2</sub> levels in 1958 at the Mauna Loa Observatory in Hawaii.

- The curve shows the steady increase in atmospheric CO<sub>2</sub> levels since 1958.
- It also captures seasonal fluctuations caused by natural processes like photosynthesis and plant respiration.
- CO<sub>2</sub> levels decrease during spring and summer as plants absorb CO<sub>2</sub> through photosynthesis, and increase during fall and winter due to plant decay.

Source: [Scripps](#)

## YALA GLACIER

**Context:**Yala glacier is expected to vanish by 2040s.

**Background:** -

- It is the only glacier in the entire Himalayas to be included in the Global Glacier Casualty List, a project launched in 2024 through a collaboration between Rice University, University of Iceland, Iceland Glaciological Society, World Meteorological Organization (WMO), World Glacier Monitoring Service, and UNESCO. It is categorised as "critically endangered".

**Key takeaways**

- Yala Glacier is situated in the Langtang region of the Himalayas, in Nepal, near the Nepal-Tibet border.
- Retreat: The glacier has retreated by 680 meters between 1974 and 2021.
- Area Reduction: It has experienced a 36% reduction in area during the same period

**Additional Information**

- The United Nations has designated 2025 as the International Year of Glaciers' Preservation, to emphasise the importance of glaciers and provide essential hydrological, meteorological and climate services to those dependent on them or affected by cryospheric processes.
- Additionally, starting in 2025, March 21 will be observed annually as the World Day for Glaciers.
- Another glacier in Asia which made it to the "critically endangered" category of the Global Glacier Casualty List is the Dagu glacier in China, which is expected to disappear by 2030.

Source: [Times of India](#)

## DARK OXYGEN

**Context:**Scientists who discovered mysterious 'dark oxygen' on the ocean floor last year is planning a new expedition to study further about it.

**Background:** -

- The discovery of "dark oxygen" was a big deal, prompting scientists to reconsider their long-held beliefs about how complex life might have evolved on Earth.

**Key takeaways**

- Dark oxygen refers to the production of molecular oxygen (O<sub>2</sub>) through processes that do not involve photosynthesis or light. Traditionally, it was believed that significant oxygen generation



Parts of the deep Pacific Ocean are covered in metallic lumps known as polymetallic nodules. A study published last year suggested they produce oxygen without sunlight. NOAA Office of Ocean Exploration and Research, 2019 Southeastern U.S. Deep-sea Exploration

required light-driven photosynthesis.

- A notable discovery in 2024 revealed that polymetallic nodules on the abyssal seafloor might facilitate oxygen production through seawater electrolysis.

- These nodules, composed of metals like manganese, nickel, copper, and cobalt, exhibit electrical potentials on their surfaces. It's proposed that these potentials

could split water molecules into oxygen and hydrogen, even in the absence of light. This phenomenon, termed "dark oxygen production," suggests that oxygen might be generated in deep-sea environments previously thought to be anoxic.

Source: [Smithsonian](https://www.smithsonianmag.com/science-nature/dark-oxygen-production-2024-01/)

## WETLAND ACCREDITED CITIES

**Context:** Indore and Udaipur have become the first two Indian cities to join the global list of accredited wetland cities under the Ramsar Convention on Wetlands.

### Background:

- Indore, known for its cleanliness and innovative policies, is home to Sirpur Lake, a Ramsar site.
- Udaipur, renowned for its picturesque lakes, has five major wetlands: Pichola, Fateh Sagar, Rang Sagar, Swaroop Sagar, and Doodh Talai.

### Key takeaways

- **The Wetland City Accreditation (WCA)** is a voluntary scheme established by the Ramsar Convention on Wetlands in 2015.
- It aims to recognize cities that have a positive relationship with wetlands, promoting their conservation and wise use. This accreditation encourages urban areas to integrate wetlands into their planning and decision-making processes, highlighting the benefits these ecosystems provide to urban communities.
- **Eligibility Criteria:** To be formally accredited, a candidate for the Wetland City Accreditation of the Ramsar Convention should satisfy the standards used to implement each of the following **international criteria**:
  - It has one or more Ramsar Sites, or other wetland conservation sites fully or partly situated within its jurisdiction, which provide(s) a range of ecosystem services to the city;
  - It has adopted measures for conservation of wetlands and their ecosystem services;
  - It has implemented wetland restoration and/or management measures;
  - It considers the challenges and opportunities of integrated spatial/land-use planning for wetlands under its jurisdiction;

- It has raised public awareness about the values of wetlands by delivering locally adapted information, and enabled participation of local stakeholders in decisionmaking processes;
- It has established a local committee with appropriate knowledge and experience on wetlands and representation of and engagement with stakeholders to support the preparation work to apply for the Wetland City Accreditation and the implementation of proper measures to maintain the city's qualifications for the accreditation.
- **Benefits of Accreditation:**
  - **International Recognition:** Accredited cities gain global acknowledgment for their sustainable practices concerning wetlands.
  - **Enhanced Public Awareness:** The accreditation promotes increased awareness among residents about the importance of wetlands.
  - **Tourism and Economic Opportunities:** Recognition can boost eco-tourism and related economic activities.

Source: [Times of India](#)

## NAMDAPHA NATIONAL PARK AND TIGER RESERVE

**Context:** An elephant has been camera-trapped in India's easternmost tiger reserve after 12 years, fuelling conservation hopes.

**Background:** -

- According to the Arunachal Pradesh Forest Department, elephants have traditionally migrated between the Namsai area of the State and Myanmar through the Namdapha National Park and Tiger Reserve but encroachment since 1996 blocked the jumbo migration route.

**Key takeaways**

- Situated in Changlang district, Arunachal Pradesh, near the tri-junction of India, Myanmar, and China.
- Lies in the eastern Himalayas and forms part of the Indo-Burma biodiversity hotspot.
- **Geographical Features:**
  - Spread over 1,985 square kilometers, making it the third-largest national park in India in terms of area.
  - Altitude ranges from 200 meters to 4,571 meters, supporting diverse ecosystems.
  - Major rivers: Noa Dihing River flows through the park.
- **Key Features:**
  - **Biodiversity:** Known for its rich flora and fauna, encompassing tropical evergreen forests, temperate forests, and alpine meadows.
  - **Fauna Highlights:**

- Big Cats: The only park in the world to host four species of big cats: tiger, leopard, snow leopard, and clouded leopard.
- Other notable species: Asiatic black bear, red panda, hoolock gibbons, capped langur, and hornbills.
- The Namdapha flying squirrel (*Biswamoyopterus biswasi*) was first collected in the park and described.[9] It is endemic to the park and critically endangered.
- Flora Highlights: Includes orchids, ferns, bamboos, and diverse medicinal plants.
- **Tiger Reserve:**
  - Declared a tiger reserve in 1983 under Project Tiger.
  - Faces challenges in tiger population estimation due to its rugged terrain and dense forest cover.
- **Tribal Communities:**
  - Inhabited by indigenous tribes like the Lisu, Singpho, and Tangsa.
  - Depend on the forest for subsistence but are now engaged in conservation efforts.

Source: [Indian Express](#)

## HIMACHAL LAUNCHES PROJECT FOR CANNABIS FARMING

**Context:** In the wake of popular demand for cultivation of cannabis in the Himalayan state, Chief Minister Sukhvinder Singh Sukhu-led Himachal Pradesh government approved a pilot project for cannabis or hemp cultivation.

### **Background:** -

- Cannabis is a naturally occurring weed found throughout Himachal Pradesh, yet its cultivation had been banned under the Narcotic Drugs and Psychotropic Substances (NDPS) Act, 1985.
- With this decision, Himachal Pradesh becomes one of the states, along with Uttarakhand, Uttar Pradesh, Madhya Pradesh, Jammu & Kashmir, and Manipur, to grant controlled permission for the cultivation of cannabis for medical and industrial purposes.

### **Key takeaways**

#### **What does the law say about cannabis cultivation?**

- Cannabis cultivation is largely prohibited in India due to its psychoactive properties.
- Section 2 of the Narcotic Drugs and Psychotropic Substances (NDPS) Act, 1985, prohibits the production and sale of cannabis resin and flowers. It defines charas as the separated resin, in any form (crude or purified), obtained from the cannabis plant. It also includes concentrated preparations such as hashish oil or liquid hashish.
- However, it provides exceptions for cannabis cultivation and use for industrial and medicinal purposes under government regulation.
- Section 10 of the Act allows state governments to regulate, permit, or prohibit cannabis cultivation for medicinal and scientific purposes. Additionally, Section 14 grants the Central government the power to authorise and regulate cannabis cultivation for research or other

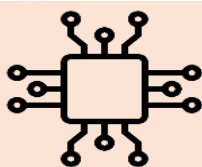


approved purposes.

#### **What is controlled cannabis cultivation?**

- It is the regulated cultivation of specific cannabis varieties having minimal intoxicating properties, along with strict monitoring to prevent misuse. Such varieties are commonly known as hemp. The tetrahydrocannabinol (THC) cannabinoid content (a kind of chemical that has an intoxicating effect) in controlled cannabis should be less than or equal to 0.3 per cent.
- Under controlled cannabis cultivation, authorities focus on its non-narcotic applications, particularly in the pharmaceutical and industrial sectors.
- Hemp's stalks, leaves, and seeds can also be converted into textile, paper, food, cosmetics, biofuel and more. Additionally, cannabidiol (CBD) compounds in the plant are effective in treating chronic pain.
- Before the tightening of restrictions in 2000, cannabis farming was a common practice in Himachal. Despite the ban, illegal cultivation continues in several districts.
- Countries like Canada, the United States, Japan, France, Italy, Hungary, China, Denmark, and Australia are leaders in cannabis farming and its processing.

Source: [Indian Express](#)



## UNDERWATER TELESCOPES TO DETECT 'GHOST PARTICLES'

**Context:** Scientists are deploying two telescopes to detect high-energy neutrinos, also known as ghost particles, under the Mediterranean Sea. The two telescopes are part of the Cubic Kilometre Neutrino Telescope or KM3NeT.

**Background:** -

- These telescopes are much like the IceCube Neutrino Observatory, which can detect high-energy neutrinos from deep space but is under the frozen ice in the Antarctic rather than being in the water.

**What are neutrinos?**

- Detected for the first time in 1959 — though their existence was predicted almost three decades earlier, in 1931 — neutrinos are tiny particles, very similar to electrons, but without any electric charge.
- They are one of the fundamental particles the universe is built of, and are the second most abundant subatomic particles after photons.
- Neutrinos are so numerous that about a billion of them pass through a cubic centimetre of space every second.

**Why do scientists want to study high-energy neutrinos?**

- Although neutrinos are everywhere, not each one of them is important to study. Scientists are interested in examining super-fast, high-energy neutrinos that have come from far, far away. Such neutrinos are rare and mostly originate from exotic events such as supernovae, gamma-ray bursts or colliding stars.
- Studying high-energy neutrinos can help astrophysicists investigate those space mechanisms and regions like the centre of our Milky Way Galaxy which are shrouded in dust. Dust absorbs and scatters the visible light from objects, making them difficult or impossible to observe with optical telescopes.

**Why are scientists building underwater neutrino telescopes?**

- High-energy neutrinos, however, are not just rare but also extremely difficult to detect. One reason is that neutrinos barely interact with anything.
- To detect high-energy neutrinos, there is a need for a large volume of optically transparent material in a place where it is extremely dark. The location needs to be dark because the detectors look for flashes of Cherenkov radiation: light that neutrinos produce when they interact with a water or ice molecule.
- These flashes help scientists trace the path of that neutrino, giving them details about its source, the amount of energy it contains, and its origins.

**Neutrino Observation efforts**

- Cubic Kilometre Neutrino Telescope (KM3NeT)

- The Cubic Kilometre Neutrino Telescope (KM3NeT) is a cutting-edge European research infrastructure designed to detect neutrinos.



One of the ARCA telescope balls.

KM3NeT

- Location: KM3NeT is located at the bottom of the Mediterranean Sea. It consists of two main detectors: ARCA (Astroparticle Research with Cosmics in the Abyss) and ORCA (Oscillation Research with Cosmics in the Abyss).

• **IceCube Neutrino Observatory**

- The IceCube Neutrino Observatory is a pioneering astrophysical observatory located at the South Pole.

- Location:

- Situated within the Antarctic ice sheet near the Amundsen-Scott South Pole Station.
- Utilizes over 1 cubic kilometer of ice as a detection medium.

- IceCube, which has been operational since 2011, was the first telescope to detect high-energy neutrinos.

Source: [Indian Express](https://www.indianexpress.com)

**NOROVIRUS**

**Context:**A surge in the outbreak of Norovirus has been detected in parts of the United States.

**Background:** -

- In India, norovirus has previously affected people in Kerala, although on a much smaller scale compared to the numbers in the US.

**Key takeaways**

- Norovirus is a highly contagious virus that is also sometimes referred to as the ‘winter vomiting bug’.
- Also referred to as the stomach flu or the stomach bug, norovirus causes inflammation in the intestines or stomach, also known as acute gastroenteritis.
- It is similar to diarrhoea-inducing rotavirus and infects people across age groups.
- It can be transmitted through contaminated food, water, and surfaces. The primary route is oral-faecal.

**Symptoms of norovirus?**

- The initial symptoms of norovirus are vomiting and/or diarrhoea, which show up one or two days after exposure to the virus.
- Patients also feel nauseous and suffer from abdominal pain, fever, headaches and body aches. In

extreme cases, loss of fluids could lead to dehydration.

#### What precautions can one take against norovirus?

- One may get infected multiple times as the virus has different strains.
- Norovirus is resistant to many disinfectants – such as hand sanitisers – and can withstand heat up to 60°C. Therefore, merely steaming food or chlorinating water does not kill the virus.
- The basic precaution is to repeatedly wash hands with soap after using the lavatory or changing diapers. It is important to wash hands carefully before eating or preparing food. During outbreaks, surfaces must be disinfected with a solution of hypochlorite at 5,000 parts per million.

#### What is the treatment for norovirus?

- The disease is self-limiting. The infection usually lasts only two or three days, and most individuals who are not very young, very old, or malnourished can ride it out with sufficient rest and hydration.

Source: [Hindustan Times](#)

### DI-AMMONIUM PHOSPHATE (DAP)

**Context:** The Union Cabinet extended the one-time special subsidy on fertilizer Diammonium Phosphate (DAP) at a rate of ₹3,500 per metric tonne till from January 1, 2025 till further orders.

#### Background: -

- The extension is aimed at maintaining price stability and addressing the challenges posed by global market fluctuations and geopolitical tensions.

#### Key takeaways

- **Di-Ammonium Phosphate (DAP)** is a widely utilized fertilizer in India, second only to urea in popularity. It provides essential nutrients—nitrogen (N) and phosphorus—crucial for plant growth.
- It's highly soluble and thus dissolves quickly in soil to release plant-available phosphate and ammonium.
- In the financial year 2023, India produced approximately 4.3 million metric tons of DAP. Despite domestic production, India also imports DAP to meet the high demand from the agricultural sector.
- **DAP has additional uses, including:**
  - As a fire retardant. For example, a mixture of DAP and other ingredients can be spread in advance of a fire to prevent a forest from burning. It then becomes a nutrient source after the danger of fire has passed.
  - In various industrial processes, such as metal finishing
  - An addition to wine to sustain yeast fermentation

Source: [PIB](#)

## LID-568 AND EDDINGTON LIMIT

**Context:** An international team using NASA's James Webb Space Telescope and Chandra X-ray Observatory has discovered LID-568, a low-mass supermassive black hole from 1.5 billion years after the Big Bang, offering insights into the formation and growth of supermassive black holes.

**Background:** -

- Supermassive black holes, found at the centers of most galaxies, have masses ranging from millions to billions of times that of the Sun. Sagittarius A\*, the Milky Way's central black hole, is about 4.3 million solar masses. However, the mechanisms behind their immense growth remain uncertain.

**Key takeaways**

- LID 568 was feeding on a surrounding cloud of matter at 40 times the Eddington limit (theoretical maximum rate).
- The Eddington Limit, named after British astrophysicist Sir Arthur Eddington, is a theoretical concept that defines the balance between two opposing forces acting on matter near a luminous object, such as a black hole or star.
- **Forces at Play:**
  - Gravitational Force: Pulls matter inward toward the object (e.g., a black hole).
  - Radiation Pressure: Outward pressure created by the intense energy and radiation emitted by the accreting material.
- **Equilibrium Point:**
  - The Eddington Limit is reached when the radiation pressure exactly balances the gravitational pull.
  - At this point, the accreting matter no longer falls inward because the outward pressure prevents further accumulation.
- **Significance in Black Hole Accretion:**
  - **Feeding and Luminosity:**
    - Black holes accrete matter, which forms a hot accretion disk around them.
    - The heating of the disk emits radiation, especially X-rays, that contributes to the outward radiation pressure.
    - The Eddington Limit governs the maximum rate of accretion and brightness of the black hole.
- **Super-Eddington Accretion:**
  - Occurs when accretion rates exceed the Eddington Limit.
  - In such cases, black holes feed much faster, emitting higher radiation levels than the limit would suggest.

Source: [The Hindu](#)

## VIKAS ENGINE

**Context:** The Indian Space Research Organisation (ISRO) has successfully carried out a demonstration of restarting its Vikas liquid engine at a test facility at Propulsion Complex in Mahendragiri.

**Background:** -

- This test marks a milestone in the development of technologies for recovery of stages, leading to reusability in future launch vehicles, according to an ISRO statement.

**Key takeaways**

- The Vikas Engine is a liquid-fuel rocket engine developed by the Indian Space Research Organisation (ISRO).
- It is an essential part of India's space launch vehicle program and has been used in multiple launch vehicles, including the Polar Satellite Launch Vehicle (PSLV), Geosynchronous Satellite Launch Vehicle (GSLV), and GSLV Mk III (now called LVM3).
- Vikas engine is used to power the second stage of PSLV, boosters and second stage of GSLV Mark I and II and also the core stage of LVM3.
- The engine uses Unsymmetrical Dimethylhydrazine (UDMH) as fuel and Nitrogen Tetroxide (N<sub>2</sub>O<sub>4</sub>) as the oxidizer.

Source: [India Today](#)

## DEEPSEEK

**Context:** Chinese startup DeepSeek's launch of its latest AI models, which it says are on a par or better than industry-leading models in the United States at a fraction of the cost, is threatening to upset the technology world order.

**Background:** -

- DeepSeek is a Hangzhou-based startup whose controlling shareholder is Liang Wenfeng, co-founder of quantitative hedge fund High-Flyer, based on Chinese corporate records.
- What sets DeepSeek models apart is their performance and open-sourced nature with open weights, which essentially allows anyone to build on top of them.

**Key takeaways**

- **The release of OpenAI's ChatGPT in late 2022 caused** a scramble among Chinese tech firms, who rushed to create their own chatbots powered by artificial intelligence.
- But after the release of the first Chinese ChatGPT equivalent, made by search engine giant Baidu, there was widespread disappointment in China at the gap in AI capabilities between U.S. and Chinese firms.
- The quality and cost efficiency of DeepSeek's models have flipped this narrative on its head. The two models, DeepSeek-V3 and DeepSeek-R1, are on par with OpenAI and Meta's most advanced models. They are also cheaper to use.
- **DeepSeek-V3** stands out because of its architecture, known as Mixture-of-Experts (MOE). The MOE models are like a team of specialist models working together to answer a question, instead of a single big model managing everything.



- The DeepSeek-V3 has been trained on a meager \$5 million, which is a fraction of the hundreds of millions pumped in by OpenAI, Meta, Google, etc., into their frontier models.
- DeepSeek developed its AI models amidst US sanctions on China for Nvidia chips, which were intended to restrict the country's ability to develop advanced AI systems.

Source: [The Hindu](#)

## BENU SAMPLE UNLOCKS SECRETS OF LIFE'S ORIGINS

**Context:** Studies of rock and dust from asteroid Bennu delivered to Earth by NASA's OSIRIS-REx spacecraft have revealed molecules that, on our planet, are key to life, as well as a history of saltwater that could have served as the "broth" for these compounds to interact and combine.

**Background:** -

- The findings do not show evidence for life itself, but they do suggest the conditions necessary for the emergence of life were widespread across the early solar system, increasing the odds life could have formed on other planets and moons.
- Asteroids like Bennu are remnants from the formation of the solar system, offering a snapshot of conditions that existed more than 4.5 billion years ago.

**Key takeaways**

- Scientists have revealed that rocks from Bennu contain key components of life: Amino acids, nucleobases and traces of ancient saltwater — the essential ingredients for biological processes.
- Among the most striking discoveries in the Bennu samples are 14 of the 20 amino acids that life on Earth uses to build proteins, as well as all five nucleobases needed for genetic material like DNA and RNA. However, its amino acids show something unusual. Life on Earth mostly uses 'left-handed' amino acids, but Bennu has nearly equal amounts of both left- and right-handed types.
- The presence of ammonia and formaldehyde — compounds that can react to form more complex molecules — further strengthens the case for asteroids as potential incubators for prebiotic chemistry.
- Beyond the molecular building blocks, Bennu's samples also contain traces of water in the form of mineral salts. Scientists detected 11 different evaporite minerals. These minerals suggest that Bennu once harboured briny water that evaporated over thousands, if not millions, of years.
- Similar salty water reservoirs have been detected elsewhere in the solar system, such as beneath the icy crust of Saturn's moon Enceladus and on the dwarf planet Ceres. The presence of these minerals on Bennu further supports the idea that watery environments, which could facilitate chemical reactions leading to life, were once widespread.

**Origins, Spectral Interpretation, Resource Identification, and Security—Regolith Explorer (OSIRIS-REx)**

- The Origins, Spectral Interpretation, Resource Identification, and Security—Regolith Explorer (OSIRIS-REx) is a NASA mission designed to study and return samples from the near-Earth asteroid 101955 Bennu.

**Key Milestones:**

- Arrival at Bennu: OSIRIS-REx reached Bennu on December 3, 2018, initiating detailed mapping and analysis of the asteroid's surface.
- Sample Collection: On October 20, 2020, the spacecraft successfully collected surface material from Bennu using the Touch-And-Go Sample Acquisition Mechanism (TAGSAM).
- Return to Earth: The sample capsule re-entered Earth's atmosphere and landed in Utah on September 24, 2023, marking the United States' first successful asteroid sample return mission.
- Following the successful delivery of Bennu's samples, the spacecraft was renamed OSIRIS-APEX (Apothis Explorer). It is now tasked with a new mission to study the asteroid 99942 Apophis during its close approach to Earth in 2029.

Source: [Down To Earth](#)

## PROMISE OF NUCLEAR FUSION

**Context:** An experimental nuclear fusion reactor in China triggered a lot of excitement by keeping its operational state maintained for more than 1,000 seconds, or over 17 minutes, which is a new record.

**Background:** -

- Nuclear fusion is what produces the energy in the Sun, or any other star. Scientists across the world have been trying to recreate this process to produce electricity. The technology can eliminate the world's energy crisis, and the problem of climate change, but it has not been mastered yet.

**Key takeaways**

- Nuclear fusion is a process where two light atomic nuclei combine to form a heavier nucleus, releasing a tremendous amount of energy. This is the same process that powers the Sun and other stars.
- **How Does It Work?**
  - Fusion Fuel: The most common fusion reaction involves hydrogen isotopes: Deuterium ( $^2\text{H}$ ) and Tritium ( $^3\text{H}$ )
  - When these isotopes fuse under extremely high temperature and pressure, they form helium ( $^4\text{He}$ ) and release a neutron along with a vast amount of energy.

**Conditions for Fusion - To achieve fusion, the following conditions are required:**

- High Temperature: Atomic nuclei are positively charged, so they naturally repel each other due to the electrostatic force. To overcome this repulsion, extremely high temperatures (millions of degrees Celsius) and pressures are required.
- High Pressure: The plasma must be confined at high density to increase the likelihood of collisions.
- Confinement Time: The plasma must be held together long enough for fusion reactions to occur.

Experimental Advanced Superconducting Tokamak (EAST) reactor

- The Chinese reactor did not produce electricity or carry out a fusion reaction. However, the reactor managed to maintain plasma in a steady state of confinement for a long time, longer than it had previously been possible.
- Fusion requires very high temperatures. At such temperatures, matter exists only in the plasma

state. But such hot plasma cannot be handled by or contained in any material. Within the reactor, this plasma needs to be kept suspended in a confined space, surrounded by very strong magnetic fields acting as walls.

- Charged particles respond to magnetic fields, and this property is used to guide the flow of plasma within an enclosed space, separated from any matter. This condition, necessary for facilitating fusion reactions, is extremely delicate. Scientists have not been able to maintain these conditions for longer than a few seconds.
- Real-life electricity-generating reactors would require this state to be maintained for hours, even days, at a stretch.

#### **Advantages of Fusion**

- The fusion process produces far greater amounts of energy than any other source — one gram of fuel can yield as much energy as burning about eight tonnes of coal.
- It uses cheap input materials, available in almost limitless supply (deuterium and tritium, two heavier isotopes of hydrogen that are used as fuel, are easily available in nature), has a zero emission footprint.
- Unlike the fission process, it does not leave dangerous nuclear waste.

#### **International Thermonuclear Experimental Reactor (ITER)**

- The largest fusion reactor, an international collaborative project called ITER, is coming up in southern France.
- More than 30 countries are participating with India being one of the seven member countries contributing to the reactor's construction and research.
- According to its current timeline, it would begin deuterium-tritium fusion reactions by 2039, producing 500 MW of fusion power.

Source: [Indian Express](#)



## HISTORY AND ART &amp; CULTURE



## TASHKENT DECLARATION

**Context:** Lal Bahadur Shastri, India's second Prime Minister, died in Tashkent, Uzbekistan, on January 11, 1966 after he signed the Tashkent Declaration, ending the 1965 India-Pakistan War.

**Background:** -

- The official cause of death was a heart attack. However, the circumstances surrounding his death remain a mystery, with persistent rumors of poisoning.

**Key takeaways**

- The 1965 war started when the Pakistan Army began to wage an undeclared war in Jammu and



Prime Minister Lal Bahadur Shastri shakes hands with Soviet Prime Minister Alexei Kosygin after the signing of the Tashkent declaration which summed up the result of Shastri's meetings here with Pakistani President Ayub Khan towards peaceful negotiations between India and Pakistan. The picture was taken on 10 January only hour before the Indian leader Collapsed and died from a heart attack. United Press International (London Bureau)

Kashmir in August of that year, believing India would not be able to fight back after its 1962 loss to China. On September 1, Pakistan launched an attack in the Akhnoor sector near Jammu.

- In retaliation, the Indian Army launched an attack across the International Border in Punjab after Lal Bahadur Shastri gave a go-ahead for it.

- The Tashkent Declaration is the peace agreement signed between India and Pakistan on January 10, 1966, marking the end of

the Indo-Pakistani War of 1965.

**Mediation:**

- The Tashkent Declaration was facilitated by the Soviet Union, with Premier Alexei Kosygin acting as the mediator. The summit was held in Tashkent, then part of the Uzbek Soviet Socialist Republic, from January 4 to January 10, 1966.
- The declaration was signed by Lal Bahadur Shastri (Prime Minister of India) and Ayub Khan (President of Pakistan).

**Provisions of the Declaration**

- **Restoration of Peace:** Both nations agreed to restore pre-war positions by withdrawing troops to positions held before 5 August 1965.
- **Non-Interference:** Agreed not to interfere in each other's internal affairs.

- **Improved Relations:** Commitments were made to restore economic and diplomatic relations, including communications, trade, and cultural exchanges.
- **Respect for Sovereignty:** Pledged to work towards maintaining international peace and respecting each other's territorial integrity.
- **Resolution of Disputes:** Both sides agreed to resolve disputes through peaceful means, avoiding the use of force.
- **Repatriation of Prisoners of War:** Ensured the humane treatment and repatriation of all prisoners of war.

Source: [Indian Express](#)

## KASHI TAMIL SANGAMAM

**Context:** Union Education Minister Dharmendra Pradhan announced that the main theme of the third edition of Kashi Tamil Sangamam, a cultural exchange programme scheduled to be held from February 14 to 25, will be Rishi Agastya.

### Background:

- The first edition of the programme was held in 2022.

### Key takeaways

- Kashi Tamil Sangamam is an annual month-long programme organized by the Ministry of Education, Government of India to celebrate, reaffirm and rediscover the age-old links between Tamil Nadu and Varanasi. The event underscores the connections between these two ancient centers of learning and spirituality.
- The most recent third edition of the Kashi Tamil Sangamam is scheduled from February 15 to 24, 2025.
- The main theme in this year's event is highlighting the significant contributions of Sage Agasthyar to the Siddha System of Medicine (Bharatiya Chikitsa), Classical Tamil Literature, and also his contributions in the cultural unity of the Nation.
- In this edition, around 1000 people under 5 categories (Students, Teachers, Farmers & Artisans, Professionals and small Entrepreneurs, women, and Researchers) will participate.
- An online registration portal has been launched, and the selection of participants will be done through a quiz. Seminars and cultural programmes will be held during the programme. Participants will visit Varanasi, Prayagraj, and Ayodhya, and with the event coinciding with the Maha Kumbh, they will also visit the Kumbh.

### Objectives:

- **Strengthen Cultural Bonds:** Deepen the understanding and appreciation of each other's cultural practices and heritage.
- **Promote Knowledge Exchange:** Facilitate the exchange of traditional knowledge systems and contemporary innovations.

- Encourage Tourism and Education: Boost tourism between the regions and promote educational interactions across universities.

Source: [Indian Express](#)

## EXCAVATION IN RATNAGIRI

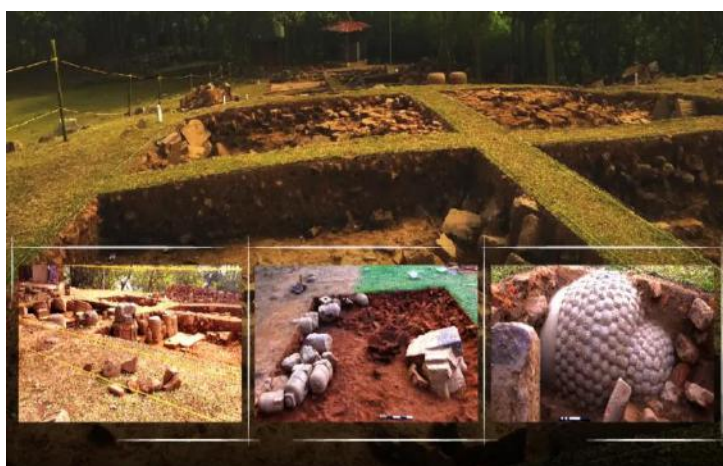
**Context:** The Archaeological Survey of India recently resumed excavations at Odisha's Ratnagiri Buddhist complex, uncovering a colossal Buddha head, a massive palm, an ancient wall, and inscribed relics from the 8th-9th Century AD.

**Background:** -

- The discoveries are significant, especially given Odisha's historical relationship with Buddhism beginning with Mauryan Emperor Ashoka (304-232 BCE), one of Buddhism's greatest patrons whose invasion of the kingdom of Kalinga – the ancient name for Odisha – led to him embracing the religion.

**Key takeaways**

**Ratnagiri — the centre of ancient Buddhist learning**



- Located 100 km northeast of Bhubaneswar and part of the famous Diamond Triangle of Odisha along with Udaygiri and Lalitgiri, Ratnagiri – translated as the 'Hills of Jewels' – was first documented as a historical site in 1905.

- The last excavations carried out between 1958 and 1961 led to the discovery of many remains — including a brick stupa, three monastic complexes and over hundreds of votive and commemorative stupas.

- However, with the ASI eventually shifting focus on sites such as Lalitgiri, where the oldest Buddhist monastery in the state was found, the Ratnagiri excavation was put on the backburner.
- Experts date Ratnagiri to the 5th and 13th Century, although the peak period of construction is dated between the 7th and 10th centuries. Ratnagiri rivalled Nalanda as a learning centre.
- There are some studies that suggest that the renowned Chinese Buddhist monk and traveller, Hiuen Tsang, who visited Odisha, during 638-639 AD, might have visited Ratnagiri.

**Odisha, Southeast Asia and Buddhism**

- Odisha has long enjoyed maritime and trade links with Southeast Asian countries: pepper, cinnamon, cardamom, silk, camphor, gold, and jewellery were popular items of trade between the ancient kingdom of Kalinga and Southeast Asia.
- Even though there was no evidence of Buddha visiting Odisha during his lifetime, Kalinga played a great role in popularising Buddhism, especially in Southeast Asia, because of its trade link: experts believe that Tapassu and Bhallika, the two merchant brothers who became the first disciples of



Lord Buddha, having their origins from Utkala, another ancient name of Odisha.

- Mauryan Emperor Ashoka is believed to have invaded Kalinga in 261 BC but, deeply moved by the bloodshed, he embraced Buddhism, which he eventually helped spread not only to his own empire but also to Sri Lanka, and Central and Southeast Asia.
- In Odisha, Buddhism is stated to have particularly flourished under the Bhaumakara dynasty, which ruled parts of the state in between the 8th and 10th Century.
- Odisha annually holds Baliyatra, literally 'voyage to Bali' – a seven-day festival to commemorate the 2,000-year-old maritime and cultural links between Kalinga and Bali and other South and Southeast Asian regions such as Java, Sumatra, Borneo, Burma (Myanmar) and Ceylon (Sri Lanka).

Source: [Indian Express](#)

## KALARIPAYATTU

**Context:** Kalaripayattu has become a bone of contention ahead of the 38th edition of the National Games which is scheduled to commence from January 28 in Uttarakhand.

**Background:** -

- The Indian Kalaripayattu Federation has accused the Indian Olympics Association (IOA) of "relegating" the martial art to the demonstration section of the event. In the 37th edition of the National Games, held in Goa in 2023, Kalaripayattu was included in the competition section.

**Key takeaways**

- Kalaripayattu is one of the oldest and most scientific martial art forms in the world, aimed at mind and body coordination. It originated and is widely practiced in Kerala.
- The term "Kalaripayattu" is derived from two Malayalam words: "kalari" (training ground or battleground) and "payattu" (training of martial arts), which together mean "practice in the arts of the battlefield".
- **Practices:**
  - Combines strikes, kicks, weaponry, and healing techniques.
  - Practitioners are trained in physical agility, meditation, and knowledge of vital body points (Marmas).
- **Styles:** Divided into Northern (Vadakkan), Southern (Thekkan), and Central styles based on regional practices.
- **The four stages of Kalaripayattu are:**
  - (i) Maipayattu: It is the body conditioning phase where the person is schooled to prepare their body for a fight. Only after qualifying this stage can the practitioner proceed to the next phase of training.
  - (ii) Kolthari: In this stage, a person is taught attack and self-defense with the help of wooden weapons such as short sticks, and long sticks.

- (iii) Angathari: Once the person overcomes the fear of fighting with wooden weapons, sharp metal objects are introduced — in the third stage.
- (iv) Verumkai: This stage includes bare-hand fighting. Students are taught body anatomy so that they know what points they can hit and what they cannot.
- Weaponry: Involves the use of various weapons like swords, spears, shields, and urumi (flexible whip sword).

Source: [Indian Express](#)

## GUILLAIN-BARRE SYNDROME

**Context:** Pune on January 27 reported nine more suspected cases of Guillain-Barré Syndrome (GBS), taking the tally in Maharashtra's second largest city to 110.

**Background:** -

- Earlier, a man suspected to have contracted Guillain-Barré syndrome (GBS) died in Maharashtra's Solapur district. The 40-year-old, a native of Solapur, had come to Pune, where he is believed to have contracted the disease. This is possibly the first death in Maharashtra suspected to have been caused by GBS.

**Key takeaways**

- **Guillain-Barré Syndrome (GBS)** is a rare autoimmune disorder where the body's immune system mistakenly attacks the peripheral nerves.
- **Cause:** GBS is often triggered by an infection, such as respiratory or gastrointestinal infections, including *Campylobacter jejuni*, influenza, and Zika virus.
- **Symptoms:** The syndrome typically starts with tingling and weakness in the feet and legs, which can spread to the upper body. Severe cases can lead to paralysis.
- **Onset:** Symptoms usually develop rapidly over days to weeks.
- **Symptoms**
  - Initial Symptoms: Tingling and weakness in the extremities, often starting in the feet and legs.
  - Progression: Weakness can spread to the upper body, leading to difficulty walking, climbing stairs, or performing daily activities.
  - Severe Symptoms: In severe cases, GBS can cause paralysis, difficulty breathing, and changes in heart rate and blood pressure.
- **Diagnosis**
  - Clinical Evaluation: Diagnosis is based on symptoms, medical history, and physical examination.
  - Tests: Nerve conduction studies and examination of cerebrospinal fluid can help confirm the diagnosis.
- **Treatment**
  - Supportive Care: Treatment focuses on managing symptoms and preventing complications.

- Immunotherapy: Intravenous immunoglobulin (IVIG) and plasmapheresis are used to reduce the severity and duration of GBS.
- Recovery: Most people recover fully, but recovery can take weeks to years, and some may have lasting effects such as weakness or fatigue.
- **Prevention**
  - Infection Control: Preventing infections that can trigger GBS is crucial. This includes practicing good hygiene, safe food handling, and staying up-to-date with vaccinations.

Source: [The Hindu](#)

## NAGOBA JATARA

**Context:** Nagoba Jatara, the pilgrimage event of Mesram clan Adivasi Gonds, started at Keslapur village in north Telangana's tribal heartland of Indervelli mandal in Adilabad district on the night of January 28.

**Background:** -

- Mesram clan Raj Gonds and Pardhans from far and wide, including the erstwhile composite Adilabad district, neighbouring Maharashtra and the vast tribal region in Central India, will congregate in Keslapur to celebrate the annual mega holy fete.

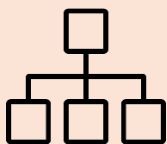
**Key takeaways**

- Nagoba Jatara is a major tribal festival celebrated by the Gond tribal community in the state of Telangana, India. It is one of the largest tribal fairs in South India.
- **Who Celebrates?**
  - The Gond tribe, particularly the Mesram clan, organizes and participates in the festival.
- Location: Held at Keslapur village, Indervelli Mandal, Adilabad district, Telangana.
- Time of Celebration: Takes place in January or February during the Hindu Pushya Masam (winter season).
- **Religious Significance:**
  - Dedicated to Nagoba, a serpent deity worshipped by the Gond community.
  - The festival marks the renewal of ties between the Gond clans and is seen as a symbol of unity and tradition.

**Rituals & Events:**

- Holy Water: Elder clan members collect holy water from the Godavari River and bring it to the temple. This water is used for various purification rituals.
- Nagoba Darshan & Puja:
  - Worship of the Nagoba deity, performed by the Mesram priests.
  - Devotees offer coconuts, jaggery, and prayers to seek blessings.
- **Persa Pen Ceremony:** A special ritual performed to honor the ancestors of the Gond tribes.
- **Gudi Dansace:** The traditional dance performed by Gond men wearing peacock feathers and tribal attire.

Source: [The Hindu](#)



## UNIQUE IDENTIFICATION AUTHORITY OF INDIA (UIDAI)

**Context:** Bhuvnesh Kumar took charge as the Chief Executive Officer of the Unique Identification Authority of India (UIDAI)

**Background:** -

- These telescopes are much like the IceCube Neutrino Observatory, which can detect high-energy neutrinos from deep space but is under the frozen ice in the Antarctic rather than being in the water.

**Key takeaways**

- The Unique Identification Authority of India (UIDAI) is a statutory authority established under the provisions of the Aadhaar (Targeted Delivery of Financial and Other Subsidies, Benefits and Services) Act, 2016 on 12 July 2016 by the Government of India, under the Ministry of Electronics and Information Technology (MeitY).
- Its primary role is to issue Aadhaar numbers, a unique 12-digit identification number, to all residents of India.
- UIDAI is responsible for Aadhaar enrolment, authentication, and managing the entire Aadhaar lifecycle.
- **Historical Background**
  - Initial Approval: The project for Unique Identification for Below Poverty Line (BPL) families was approved on March 3, 2006.
  - First UID Number: The first UID number was issued on September 29, 2010, to a resident of Nandurbar, Maharashtra.
  - Before its establishment as a statutory authority, UIDAI was functioning as an attached office of the then Planning Commission (now NITI Aayog).
- **Services Provided**
  - Aadhaar Enrolment: Enrolling residents for Aadhaar numbers.
  - Aadhaar Authentication: Verifying the identity of Aadhaar holders for various services.
  - Aadhaar Update: Updating demographic and biometric information.
  - Aadhaar PVC Card: Issuing Aadhaar cards in the form of PVC cards.
  - Virtual ID (VID) Generator: Providing a temporary, revocable number for privacy.

Source: [The Hindu](#)

## SVAMITVA SCHEME

**Context:** Prime Minister Narendra Modi said that once property cards under the Centre's SVAMITVA scheme

have been distributed in all the villages of the country, it could unlock economic activity worth over Rs 100 lakh crore.

**Background: -**

- The Prime Minister was addressing an event to distribute over 65 lakh property cards to property owners in over 50,000 villages through video conferencing.

**Key takeaways**

- The SVAMITVA stands for Survey of Villages and Mapping with Improved Technology in Village Areas. It aims to provide a 'record of rights' to those having houses in villages, and issue them a property card.
- The scheme was launched by PM Modi on National Panchayati Raj Day, on April 24, 2020.
- The plan is to survey all rural properties using drones and prepare GIS -based maps for each village.

**Benefit of a SVAMITVA.**

- First, property cards enables rural households to use their property as a financial asset for taking loans and other financial benefits.
- The cards help increase liquidity of land parcels in the market and increase the financial credit availability to the village.
- Second, it helps in determination of property tax, which accrues to the Gram Panchayats directly in states where they are empowered to collect such taxes.
- The scheme also paves the way for creation of accurate land records for rural planning. All the property records and maps are available at the Gram Panchayat level, which helps in taxation of villages, construction permits, elimination of encroachments, etc.

Source: [Indian Express](#)

## NATIONAL HEALTH MISSION

**Context:** The National Health Mission (NHM) has significantly contributed to improving public health, including lowering of the maternal mortality ratio, incidence of tuberculosis (TB), and sickle cell anaemia. It has also contributed to expanding human resources while fostering an integrated response to health emergencies, the Union government said in its assessment report (2021-24) presented to the Cabinet.

**Background: -**

- The National Health Mission (NHM) was launched by the government of India in 2013 subsuming the National Rural Health Mission and National Urban Health Mission.

**Key takeaways**

**Components of NHM:**

- Health System Strengthening: Focuses on improving healthcare infrastructure and services in both rural and urban areas.
- Reproductive-Maternal-Neonatal-Child and Adolescent Health (RMNCH+A): Addresses the health needs of women and children, aiming to reduce mortality rates.

- **Communicable and Non-Communicable Diseases:** Works on controlling and preventing both communicable diseases (like malaria and tuberculosis) and non-communicable diseases (like diabetes and hypertension).

#### Major Initiatives:

- **Accredited Social Health Activists (ASHA):** Over 9.15 lakh ASHAs are deployed across the country to provide community-level care, especially for marginalized sections.
- **Rogi Kalyan Samiti/Hospital Management Society:** Committees involving community members manage hospital affairs and ensure better facilities for patients.
- **Mainstreaming of AYUSH:** Integrates traditional medicine practices (Ayurveda, Yoga, Unani, Siddha, and Homeopathy) into the healthcare system
- **Janani Suraksha Yojana (JSY)** aims to reduce maternal mortality among pregnant women by encouraging them to deliver in government health facilities.
- **National Ambulance Services (NAS):** People can dial 108 or 102 telephone number for calling an ambulance. Dial 108 is predominantly an emergency response system, primarily designed to attend to patients of critical care, trauma and accident victims etc. Dial 102 services essentially consist of basic patient transport aimed at the needs of pregnant women and children though other categories are not excluded.

Source: [The Hindu](#)

## SCHEMES RELATED TO GIRL CHILD

**Context:** National Girl Child Day, an initiative of the Ministry of Women and Child Development, is celebrated every year on January 24.

#### Background: -

- The day is aimed at promoting awareness about the rights of the girl child and to increase awareness on the importance of girls' education, their health and nutrition. It also aims at promoting the position of girls in the society to make their living better.

#### Key schemes for girl child

##### NPS Vatsalya Scheme

- The scheme was launched in 2024. It is a new pension scheme for children in the age group of 0 to 18 years.
- A parent can deposit a minimum of 1000 per month and a maximum with no limit. This account will be operated by the parents until the child turns 18, after which the account will be in the name of the children.
- Once the child turns 18, the account can be seamlessly converted into a regular NPS account or a non-NPS scheme. It is regulated and administered by the Pension Fund Regulatory Authority of India (PFRDA).

##### Beti Padhao, Beti Bachao:

- On January 22, the BBBP scheme completed 10 years since its launch in 2015.



- The Beti Bachao, Beti Padhao Scheme, launched to address the decline in Child Sex Ratio and related issues of empowerment of girls, is implemented by states with 100% central assistance.
- It set several targets concerning the nutritional status of girls, their attendance in schools, the provision of adequate infrastructure in schools and so on.

#### **Sukanya Samridhi Yojana:**

- Launched in 2015 as part of the Indian government's 'Beti Bachao, Beti Padhao' campaign, Sukanya Samridhi Yojana is a small savings scheme designed to help parents of girl children accumulate a corpus for their daughter's education and marriage.
- Parents of a girl child aged 10 years or younger can invest in this scheme. The scheme allows for a minimum and maximum annual deposit of Rs.250 and Rs.1.5 lakh, respectively.
- Deposits to the account can be made for 15 years from the account opening date. The account, however, has a lock-in period of 21 years, implying that deposits mature after 21 years.

#### **CBSE Udaan Scheme:**

- Launched in 2014 by Central Board of Secondary Education (CBSE) under the guidance of the Ministry of Education aims to address low enrollment of women in STEM (science, technology, engineering, and mathematics), specifically in the Indian engineering colleges.
- The CBSE provides free tutorials for students of class 11 and class 12 to crack engineering entrance exams including the Joint Entrance Exam (JEE).

Source: [Indian Express](#)

## **ANNUAL STATUS OF EDUCATION REPORT (ASER)**

**Context:** The Annual Status of Education Report (ASER) 2024 was released, revealing improvements in basic reading and arithmetic among students of classes 3 and 5 in rural areas reverting back from the post-pandemic damage.

#### **Background:**

- Unlike most other large-scale learning assessments, ASER is a household-based rather than school-based survey. This design enables all children to be included – those who have never been to school or have dropped out; those who are in government schools, private schools, religious or other types of schools; as well as those who are absent from school on the day of the assessment.

#### **Key takeaways**

- The Annual Status of Education Report (ASER) is a nationwide household survey conducted by Pratham Foundation, an NGO, to assess the status of children's enrollment and learning outcomes in rural India.
- The 'basic' ASER survey tracks enrollment for children aged 3-16 and assesses basic reading and arithmetic of children aged 5-16. It was conducted every year from 2005 to 2014 in almost all rural districts of India.
- Beginning in 2016, an alternate-year model was introduced, where the 'basic' ASER survey is conducted in alternate years and in the gap years, a different lens is employed to examine different

age groups and/or new aspects of children's learning.

### Key findings from ASER 2024

- Significant improvement in learning levels: The proportion of Class III students in government schools who can read a Class II textbook rose to 23.4 per cent in 2024, up from 16.3 per cent in 2022. Basic arithmetic levels among Class III students improved to 33.7 per cent in 2024, from 28.1 per cent in 2018, across both government and private schools.
- **Enrolment trends:** Government school enrolment, which surged during the pandemic, is now returning to pre-pandemic levels. It rose to 72.9 per cent in 2022, from 65.6 per cent in 2018, but has since dropped to 66.8 per cent in 2024. Overall school enrolment for 6 to 14-year-olds stands at 98.1 per cent, close to 98.4 per cent in 2022.
- **Decline in underage enrolment :** The proportion of underage children (aged five or younger) enrolled in Class I has dropped to 16.7 per cent, the lowest level ever recorded.
- **Out-of-school numbers:** The number of out-of-school children in older age groups has continued to decline, remaining well below 2018 levels. However, there has been a slight increase compared to 2022 estimates.
- **Gender gap in smartphone use :** Among 14-16-year-olds, 85.5 per cent of boys and 79.4 per cent of girls reported knowing how to use a smartphone.
- **Smartphone ownership on the rise :** Household smartphone ownership in rural areas has grown significantly: 36 per cent in 2018, 74 per cent in 2022, 84 per cent in 2024.
- While access to smartphones at home is nearly saturated, personal ownership among 14-16-year-olds has climbed to 31 per cent in 2024, from 19 per cent in 2022. Since Aser surveyed smartphone access, ownership, and digital skills for the first time, there are no earlier numbers for comparison.
- **Social media vs education**
  - Despite the rise in digital access, smartphone use for education remains limited.
  - 82.2 per cent of teenagers know how to use a smartphone.
  - Only 57 per cent use it for educational purposes.
  - 76 per cent use it for social media.

Source: [Business Standard](#)

## MISCELLANEOUS

### UDISE DATA REVEALS SHIFT IN EDUCATION TRENDS

**Context:** For the first time in many years, enrolment of students in schools, as per a UDISE+ report, has declined by over a crore in 2022-23 and 2023-24 compared to an average of about 26 crore every year over the previous four years.

**Background:** -

- For the first time, enrolment figures fell to 25.17 crore in 2022-23 and further declined to 24.8 crore in 2023-24. This represents a drop of about 1.55 crore students (nearly 6 per cent) from the 2018-19 to 2021-22 period, when enrolment averaged 26.36 crore.

**About UDISE +**

- The Unified District Information System for Education (UDISE) Plus is a data aggregation platform maintained by the education ministry to collate school education data from across the country.
- UDISE+ has a mandate of collecting information from all recognized schools imparting formal education from Pre-primary to XII.
- The Schools which get onboarded successfully on the platform are provided a UDISE Code, which acts as a national level unique identifier. UDISE+ has the school as the unit of data collection and district as the unit of data distribution.
- UDISE+, collects information through an online Data Collection Form (DCF) on parameters ranging from school, Infrastructure, teachers, enrolments, examination results etc. spread across 11 sections.
- UDISE serves as a crucial tool for monitoring and evaluating the quality of education.

**Drop in numbers**

- Ministry officials acknowledged the drop in enrolment but said it stemmed from revised data collection methods implemented in 2022-23.
- Under the new system, schools must now provide student-specific information rather than just school-level numbers. This requires detailed records for each student, including their name, parent's name, address, and Aadhaar number, instead of simply reporting total class numbers.

Source: [Indian Express](#)

### SPORTS AWARDS

**Context:** Double Olympic medallist Manu Bhaker has been chosen for the Major Dhyan Chand Khel Ratna award along with World chess champion D. Gukesh, men's hockey captain Harmanpreet Singh and Paralympic gold medallist Praveen Kumar. The government has listed 32 athletes for the Arjuna Award, with 16 of them being Paralympians.

**Background:** -

- Manu's initial exclusion from the award list, attributed to the lack of self-application under the

government's revised process, sparked controversy. With the Union Sports Minister having the final say, it was not a surprise to find Manu's name being added to the list. This mirrors a past precedent where Saina Nehwal was granted the Khel Ratna without any application.

### Key takeaways

#### Major Dhyan Chand Khel Ratna

- Major Dhyan Chand Khel Ratna was instituted in the year 1991–1992. It was formerly known as the Rajiv Gandhi Khel Ratna Award and is the highest sporting honour of India.
- The first recipient of the award was chess Grandmaster Viswanathan Anand, who was honoured for the performance in the year 1991–1992. In 2001, sport shooter Abhinav Bindra, then aged 18, became the youngest recipient of the award.
- The award is given for the spectacular and most outstanding performance in the field of sports by a sportsperson over the period of the previous four years. The award comprises "a medallion, a certificate, and a cash prize of ₹25 lakh.

#### Arjuna Award

- 'Arjuna Award for outstanding performance in Sports and Games' is given for good performance over a period of the previous four years and for showing qualities of leadership, sportsmanship and a sense of discipline.
- The Award consist of a statuette, a certificate, ceremonial dress, and a cash Award of Rs. 5.00 lakh
- Arjuna Award (Lifetime) is given to honour and motivate those sportspersons who have contributed to sports by their performance and continue to contribute to promotion of sports even after their retirement from active sporting career.

#### Dronacharya Award

- 'Dronacharya Award for outstanding coaches in Sports and Games' is given to coaches for doing outstanding and meritorious work on a consistent basis and for enabling sportspersons to excel in International events.

#### Maulana Abul Kalam Azad (MAKA) Trophy

- The overall top performing university in Khelo India University Games is given the Maulana Abul Kalam Azad (MAKA) Trophy.

Source: [The Hindu](#)

## INDIAN ARMY DAY 2025

**Context:** Indian Army Day is observed every year on January 15.

### Background: -

- Army Day is celebrated to mark the occasion when General (later Field Marshal) K M Cariappa took over the command of the Indian Army from General Sir F R R Bucher, the last British Commander-in-Chief, in 1949 and became the first Indian Commander-in-Chief of Independent India.

### Key takeaways

- Pune is hosting the Army Day parade for the first time, marking a historical event.
- This will be the third occasion on which a city other than New Delhi will host the Army Day Parade, keeping in line with the Union government's decision to hold events of national importance outside the national capital.
- This is the second occasion when the Pune-headquartered Southern Command is hosting the event in its area of responsibility after Bengaluru, where it was held in 2023.
- In addition to being home to the strategically significant Southern Command, Pune is also home to some major defence establishments. The over-200-year-old Bombay Engineer Group and Centre, which will coincidentally host the Army Day Parade, stands as a major centre of military engineering.
- Premier defence training establishments like the National Defence Academy, Armed Forces Medical College, College of Military Engineering, Military Intelligence Training School and Depot, and INS Shivaji put Pune on the global map of military training.

### Additional Information - Year of Defence Reforms

- India has declared 2025 the year of defence reforms. The focus will be on rolling out integrated theatre commands to boost tri-services synergy and ensure simpler and time-sensitive military procurement, with a broader aim of transforming the military into a technologically advanced force.

Source: [Indian Express](#)

## BHARAT RANBHOO MI DARSHAN

**Context:** In a historic move to showcase India's military heritage, Defence Minister Rajnath Singh unveiled the Bharat Ranbhoomi Darshan on January 15, 2025, during the 77th Army Day celebrations in Pune.

### Background: -

- This initiative is a joint effort between the Ministry of Defence and the Ministry of Tourism to highlight India's rich military heritage and honor the sacrifices made by the armed forces

### Key Aspects of Bharat Ranbhoomi Darshan:

- **Historical Battlefield Sites:** The initiative includes iconic war zones like Siachen (the world's highest battlefield), Galwan (site of the 2020 India-China clash), and Longewala (highlighted in the 1971 India-Pakistan war), Kibithoo and Bum La Pass (locations in Arunachal Pradesh from the 1962 war with China) among others.
- **Digital Tools:** A dedicated app and website provide detailed insights into the historical significance of these sites, including virtual tours, historical narratives, and multimedia content. For those planning visits, the platform offers comprehensive travel information.
- **Economic and Educational Benefits:** By opening these regions to tourism, the initiative aims to boost local economies, provide educational opportunities, and inspire patriotism among visitors. The program aligns with the broader "Incredible India" campaign, merging tourism with

educational experiences.

### Additional Information

- Most of these sites fall along India's borders with China (Line of Actual Control) and Pakistan (Line of Control) that have had a history of wars after independence and other clashes in recent times.
- **What is the Line of Actual Control?**
  - The LAC is the demarcation that separates Indian-controlled territory from Chinese-controlled territory. India considers the LAC to be 3,488 km long, while the Chinese consider it to be only around 2,000 km. It is divided into three sectors: the eastern sector which spans Arunachal Pradesh and Sikkim, the middle sector in Uttarakhand and Himachal Pradesh, and the western sector in Ladakh.
- **How is the LAC different from the Line of Control with Pakistan?**
  - The LoC emerged from the 1948 ceasefire line negotiated by the UN after the Kashmir War. It was designated as the LoC in 1972, following the Shimla Agreement between the two countries. It is delineated on a map signed by DGMOs of both armies and has the international sanctity of a legal agreement. The LAC, in contrast, is only a concept – it is not agreed upon by the two countries, neither delineated on a map or demarcated on the ground.

Source: [Indian Express](#)

## SLEEPING SICKNESS

**Context:**The World Health Organization (WHO) has announced that Guinea has successfully eliminated the gambiense form of human African trypanosomiasis (HAT), also known as sleeping sickness, as a public health problem.

### Background: -

- The only form of human African trypanosomiasis found in Guinea has become the first neglected tropical disease to be eliminated in the country.

### Key takeaways

- Sleeping sickness, or African Trypanosomiasis, is a vector-borne parasitic disease caused by the protozoan *Trypanosoma brucei*.
- It is transmitted by the tsetse fly (*Glossina* species), which is found only in sub-Saharan Africa.
- **There are two types of *Trypanosoma brucei* that cause the disease:**
  - ***Trypanosoma brucei gambiense* (T.b. gambiense)**
    - Found in West and Central Africa.
    - Causes chronic infection that progresses slowly over months or years.
    - Accounts for over 95% of cases.
  - ***Trypanosoma brucei rhodesiense* (T.b. rhodesiense)**
    - Found in East and Southern Africa.



- Causes acute infection, progressing rapidly over weeks.
- **Transmission** : The tsetse fly bites an infected person or animal and then transmits the parasite to another host.
- **The disease can also spread through:**
  - Blood transfusion
  - Organ transplantation
  - Congenital transmission (from mother to child)
- **Symptoms and Stages - Sleeping sickness has two stages:**
  - Early Stage (Haemolymphatic Phase)
    - Fever, headache, joint pain, and itching.
    - Swollen lymph nodes, especially at the back of the neck (Winterbottom's sign).
  - Late Stage (Neurological Phase) : The parasite invades the central nervous system (CNS).
- **Symptoms include:**
  - Sleep disturbances (sleeping during the day, insomnia at night).
  - Confusion, mood changes, personality alterations.
  - Loss of coordination and paralysis.
  - If untreated, it leads to coma and death.
- Guinea's accomplishment is part of a broader trend, with seven other countries — Togo, Benin, Côte d'Ivoire, Uganda, Equatorial Guinea, Ghana, and Chad — also validated by WHO for eliminating the gambiense form of HAT. Additionally, the rhodesiense form of HAT has been eliminated in Rwanda.

Source: [Down To Earth](#)

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## MAINS

### PAPER 1

#### NARAYANA GURU

##### GS I – Important Personalities

**Context:** The ruling CPI(M) in Kerala and BJP have locked horns now over Sree Narayana Guru. Under contention are Chief Minister Pinarayi Vijayan's remarks that the towering social reformer and spiritual leader was not a proponent of "Sanatan Dharma".

##### Narayana Guru (1856-1928):

- He was a renowned spiritual leader, social reformer, and philosopher from Kerala, India.
- He was born on **22nd August 1856** to Madan Asan and his wife Kuttiamma in Chempazhanthy, a village near Thiruvananthapuram, Kerala.
- His family belonged to the **Ezhava caste** and was considered '**avarna**' according to the social mores of the time.
- He learned Vedas, Upanishads, literature, logical rhetoric of Sanskrit, Hatha **Yoga, and other philosophies.**
- He was well-versed in Malayalam, Sanskrit, and Tamil, which he learned from traditional gurukulas and scholars of his time.

##### Contributions:

- He advocated for **social equality**, emphasizing the principle of "**One caste, One Religion, One God for all human beings.**"
- **In Aravipuram Movement (1888)**, he installed the Siva idol at Aravipuram. It serves as a symbol of resistance against social injustice, as traditional norms restricted temple entry to higher castes.
- He was at the forefront of the **movement for universal temple entry** and against societal ills like the social discrimination of untouchables.
- In one temple he consecrated at Kalavancode, **he kept mirrors instead of idols.** This symbolised his message that **the divine was within each individual.**
- At Ardhanareeswara Temple in Karamukku, for example, Guru installed in 1927 a 'Belgium mirror' purchased from Kochi, inscribed with the word "OM" and virtues like "Sathyam (truth)", "Dharmam (righteousness)", "Daya (compassion)", and "Shanthi (peace)", instead of a conventional idol. This underlined his belief that spirituality lay in self-reflection, not in ritualistic idol worship.
- He became one of the greatest proponents and re-evaluators of **Advaita Vedanta**, the principle of non-duality put forward by Adi Shankara.
- In 1913, he **founded the Advaita Ashram** at Aluva. This Ashram was dedicated to a great principle – **Om SahodaryamSarvatra** (all men are equal in the eyes of God).
- He founded **Shree Narayan Dharma Pratipalana (SNDP) Yogam** to uplift the socially backward classes and propagate and promote moral teachings.
- **His literary works include** Advaita Deepika, Atmavilasam, DaivaDasakam, BrahavidyaPanchakam, etc.
- He captured the **essence of Indianness in his poems** which highlighted the unity that lies beneath the world's apparent diversity.
- He provided the **impetus for Vaikom agitation** which was aimed at temple entry in Travancore for the lower castes.
- He emphasized the practice of ideals of cleanliness, promotion of education, agriculture, trade, handicrafts, and technical training.
- His **Adyaropadarsanam** (Darsanamala) explains the **creation of the universe.**
- **Daivadasakam** and **Atmopadesasatakam** are a few examples of how mystic reflections and insights closely

resemble **recent advances in physics.**

- His philosophy of Universal Oneness has special relevance in the contemporary global context where the social fabric of many countries and communities is being eroded by hatred, violence, bigotry, sectarianism, and other divisive tendencies.

## DECLINING FERTILITY

### GS I– Population and associated issues

**Context:** Recently, a Lancet paper showed global population trends are changing, with declining birth rates instead of overpopulation.

#### Factors behind declining fertility:

- Higher education levels and increased empowerment among women lead to smaller family sizes.
- The high cost of child-rearing and lack of job security discourage having children. This trend is observed even in wealthy countries with generous parental support policies.
- Young people are reluctant to bring children into a world threatened by environmental issues like climate change.
- In India, 90% of the youth are in low-paying, informal jobs, contributing to uncertainty about the future.
- India's extreme wealth inequality, with the richest 1% owning 40% of the wealth, creates societal instability. India's low ranking in the World Happiness Report and concerns about its democratic status further impact decisions about starting a family.

#### Way Forward:

- Policies should focus on instilling hope in young people about their future.
- Enhancing education and ensuring job security can address economic uncertainties.
- Implement progressive taxation and improve social security systems to create a more equitable society.
- Universal health coverage should be provided, especially for long-term care of chronic conditions.
- Tackling issues like climate change can alleviate young people's fears about the future world of their children.
- Improving the democratic health of a country can positively impact societal outlook and stability

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### Major findings on global population trends in the Lancet:

- The Lancet paper projects a significant decrease in the global population. Most countries, including India, are expected to see lower birth rates.
- By 2100, China's population might drop by up to 50%.
- Sub-Saharan Africa is the exception, likely to experience population growth.
- The decline in birth rates suggests a future with more elderly people and fewer young ones.
- The change could affect job markets, healthcare, and social systems, as there will be more old people needing care but fewer young people to support them.

## KUMBH MELA

### GS I – Indian Culture

**Context:** In a world marked by the hustle of modernity, few events hold the power to bring millions together in pursuit of something greater than themselves. The Maha Kumbh Mela, a sacred pilgrimage that is celebrated four times over the course of 12 years, stands as a unique embodiment of such power.

### Kumbh Mela:

- It is the world's largest peaceful gathering and draws millions of pilgrims who bathe in sacred rivers seeking to purify themselves from sins and attain spiritual liberation.
- The Maha Kumbh Mela, transcribed by Adi Shankaracharya, originates from the Puranas, describing gods and demons battling for the sacred pitcher of Amrit, with Lord Vishnu (as Mohini) securing it from demons.
- Prayagraj is hosting the Maha Kumbh this time, or the Poorna Kumbh, held every 12 years.
- The Sanskrit word kumbh means pitcher or pot. The story goes that when Devas (gods) and Asuras (loosely translated as demons) churned the ocean, Dhanvantri emerged carrying a pitcher of amrita, or the elixir of immortality. To make sure the Asuras don't get it, Indra's son, Jayant, ran off with the pot. The Sun, his son Shani, Brihaspati (the planet Jupiter), and the Moon went along to protect him and the pot.
- As Jayant ran, the amrita spilled at four spots: Haridwar, Prayagraj, Ujjain, and Nashik-Trimbakeshwar. —He ran for 12 days, and as one day of the Devas is equal to one year of humans, Kumbh Mela is celebrated at these locations every 12 years, based on the relative positions of the Sun, the Moon, and Jupiter.
- During the Maurya and Gupta periods, the Kumbh Mela began as smaller gatherings of pilgrims from across the Indian subcontinent. Its significance increased with the rise of Hinduism, particularly under rulers like the Guptas who elevated its status.
- Harshavardhana, King of the Pushyabhuti dynasty, started the organization of the Kumbh fair at Prayagraj.
- During medieval times, it was supported by royal dynasties like the Chola and Vijayanagar empires, the Delhi Sultanate, and the Mughals.
- During the colonial rule, the British administrators, fascinated by the Kumbh Mela's scale and diversity, observed and documented the festival. In the 19th century, James Prinsep chronicled its ritualistic practices and socio-religious dynamics.

### Significance:

- The Kumbh Mela symbolises national unity and India's cultural heritage, recognized by UNESCO in 2017 as an intangible cultural heritage of humanity for its enduring ancient traditions.
- It has spiritual relevance as bathing at the Triveni Sangam (Ganges, Yamuna, Sarasvati confluence) is believed to purify sins and lead to spiritual liberation (Moksha).
- At the Kumbh Mela, devotional kirtans, bhajans, and traditional dances like Kathak, Bharatanatyam, and Kuchipudi, highlight themes of spiritual unity and divine love.
- It is determined by the alignment of the Sun, Moon, and Jupiter, making the event highly auspicious for spiritual activities.
- It encapsulates the science of astronomy, astrology, spirituality, ritualistic traditions, and social and cultural

customs and practices, making it extremely rich in knowledge.

#### Different Types of Kumbh:

- The Kumbh Mela is celebrated 4 times over the course of 12 years.
- At Haridwar and Prayagraj, Ardh-Kumbh Mela is held every 6th year.
- The Maha Kumbh Mela is celebrated at Prayag after 144 years (after 12 'Purna Kumbh Melas').
- Maagh Kumbh is celebrated every year in the month of Maagh (Jan-Feb) in Prayagraj.

#### Rituals:

- Shahi Snan (Royal Bath) is the procession of saints and Akharas (spiritual orders) performing ceremonial baths. It is also known as 'RajyogiSnan,' which signifies the start of the Maha Kumbh Mela.
- The word 'akhara' originates from 'akhand,' meaning indivisible. Adi Guru Shankaracharya sought to unify ascetic organizations to safeguard the 'Sanatan' way of life. It symbolizes social order, unity, culture, and ethics, focusing on spiritual and ethical values. They emphasize virtue, morality, self-restraint, compassion, and religiosity, and are symbols of unity in diversity.
- Shaiva Akharas worship Lord Shiva in various forms.
- Vaishnava Akharas worship Lord Vishnu in various forms.
- Udaseen Akharas was founded by Chandra Dev (son of Guru Nanak, the first Sikh Guru).
- Peshwa processions are a grand spectacle featuring the traditional procession of Akharas, known as 'Peshwai,' which includes participants on elephants, horses, and chariots.
- It also features spiritual discourses led by revered saints and spiritual leaders, alongside a vibrant convergence of Indian music, dance, and crafts.

#### Three Guinness World Records was created during the Kumbh 2019. They are:

- It saw the largest traffic and crowd management plan.
- It is known for the biggest painting exercise of public sites under the Paint My City Scheme.
- It had the biggest sanitation and waste disposal mechanism.

## INDUS SCRIPT

### GS I—Indian Culture

**Context:** Tamil Nadu Chief Minister M.K. Stalin announced a \$1-million prize for experts or organizations in the event of their success in deciphering the scripts of the Indus Valley Civilization (IVC).

#### Indus Valley Civilisation (IVC):

- The IVC, also called the Harappan Civilisation, spanned 2,000 sites across 1.5 million sq. km. in the territories of modern-day India, Pakistan, and Afghanistan during the Bronze Age (3000-1500 BCE).
- It had a wider geographical area than the combined areas of its contemporary civilisations — Egyptian and Mesopotamian. The IVC introduced urban life for the first time in the valley when similar civilisations had developed on the banks of the Nile and the Tigris-Euphrates valleys.

#### Significance of Deciphering the Indus Script:

- **It will help in** providing a comprehensive picture of Harappan society, governance, and daily life.
- Scholars like Iravatham Mahadevan and Asko Parpola have linked the Indus script to **proto-Dravidian languages**, suggesting cultural continuity between the IVC and South India.
- The survival of **Brahui**, a Dravidian language in the Indus region, and Dravidian loanwords in the **Rigveda** point to linguistic connections.
- **It** could provide insights into trade networks, religious practices, and societal hierarchies of the IVC.



**Key Findings from Recent Studies:**

- A study by the **Tamil Nadu State Department of Archaeology (TNSDA)** found that **90% of graffiti marks** on pottery excavated in Tamil Nadu have parallels with the Indus script. These marks were categorized into **42 base signs, 544 variants, and 1,521 composite forms**, showcasing their potential evolution from the Indus signs.
- The presence of **carnelian, agate beads, and high-tin bronze objects** in South Indian Iron Age graves points to trade links.
- The study differentiates between **graffiti marks** (on pottery) and **script** (on seals and objects) but notes their common origins and undeciphered status.

**The Dravidian Hypothesis:**

- It argues that the Indus script represents an early form of Dravidian language. This view is supported by:
- The structural similarities of the Indus script to Dravidian linguistic patterns, such as suffix-based grammar.
- The influence of Dravidian substratum on **Prakrit dialects** and **Indo-Aryan languages**.

**Issues/Challenges in Deciphering the Script:**

- **There are** no signs of bilingual inscriptions to aid the decoding of the Indus script.
- The brevity of Indus inscriptions, with an average length of **4-5 symbols**, makes pattern recognition difficult.
- It is difficult to link the symbols to their meanings **due to lack of** understanding about the cultural or linguistic context.

## PAPER 2

## INDIA'S VISION FOR THE GLOBAL SOUTH

**GS II** – Regional and global groupings and agreements involving India and/or affecting India's interests

**Context:** India's increased emphasis on Africa is significant as it reflects India's growing stature as a major global power, providing an opportunity to champion the interests of the Global South.

**India's Vision for the Global South:**

- India sees itself as a representative for developing countries, ensuring their issues are heard at forums like **G20**. This includes initiatives like the "**Voice of Global South Summit**" aimed at creating a platform for developing countries to discuss common challenges.
- India advocates for reforms in global institutions to better reflect the interests of developing countries. This could involve changes in areas like international taxation, climate finance, or giving greater decision-making power to developing nations within organisations like the **United Nations Security Council**.
- India promotes cooperation among developing countries by sharing best practices, technologies, and resources. The **India-UN Development Partnership Fund**, launched in 2017 aids Southern-led **sustainable development** projects, prioritising **least developed countries and small island developing states**.
- India's vision for the Global South includes collaborative efforts to address **climate change** through initiatives like the **International Solar Alliance (ISA)**, India aims to promote renewable energy adoption in countries across **Asia, Africa, and Latin America**, contributing to sustainable development and climate resilience.

**Challenges for India as a leader in the Global South:**

- Critics argue India should prioritise its domestic development issues like **unequal wealth distribution, unemployment, and inadequate infrastructure**, before leading others. India's vast rural population lacks access to quality healthcare and education, raising questions about its capacity to address similar issues in other developing nations.
- The Global South is not a **homogenous group**. Different countries have varying needs and priorities. Balancing these diverse demands can be difficult. African nations might prioritise debt relief, while Southeast Asian nations might focus on technology transfer. India needs to find ways to address these distinct needs while promoting a unified front.
- India enjoys strong **economic ties with developed nations like the US and Japan**. This can create a conflict between advocating for the Global South and maintaining these vital relationships. India might shy away from pushing for stricter trade regulations that could potentially harm its exports to developed countries.
- India is the world's **third-largest emitter of CO2**, despite low per capita CO2 emissions. This weakens its position when advocating for stricter climate action within the Global South.

**Global South:**

- It refers to a group of countries generally characterised as **developing, less developed, or underdeveloped**.
- It encompasses countries **with lower GDPs, higher poverty rates, and less developed infrastructure** than the "Global North."
- These nations are typically located in Africa, Latin America, the Caribbean, and Asia (**excluding high-income countries like Japan, South Korea and Australia**).

## NEIGHBOURHOOD FIRST POLICY (NFP)

**GS II** – India and its neighbourhood- relations

**Context:** Calling the Maldives a "very concrete expression" of India's neighbourhood first policy, the External Affairs

Minister of India said the two countries have finalised a framework to promote the use of local currencies for cross-border trade and signed a pact on high-impact community development projects.

### Neighbourhood First Policy (NFP):

- Neighbourhood First construct as a policy came around 2008. It aims to forge strong neighbourhood relations based on a consultative, non-reciprocal, and outcome-oriented approach.
- It focuses on delivering benefits like greater connectivity, improved infrastructure, stronger development cooperation in various sectors, security, and broader people-to-people contacts.
- It is a dynamic policy that adjusts to our renewed interests in the region and evolving regional circumstances.

### Significance of NFP:

- It is strategically imperative as it enhances regional integration in South Asia and is important to counter external influences such as China and promote India's vision of a free and open Indo-Pacific.
- Cooperation within the neighbourhood is critical for India to voice for reforms of the Global Governance system and institutions such as UNSC, IMF, etc.
- It will help strengthen multilateralism through regional/ sub-regional organizations such as SAARC, BIMSTEC, etc.
- India's rich cultural and historical ties with its neighbours help to promote its diverse cultural values and soft power influence in the region.
- Successful management of regional relationships marked by peace and cooperation positions India as a responsible and constructive actor, which is crucial for India's aspirations of global leadership.
- Improved trust and cooperation build capacity to address traditional and non-traditional (resource scarcity, illegal migration, climate change, etc.) security threats.
- It facilitates increased regional trade, investment, and cross-border infrastructure leading to economic growth, employment generation, and improved standards of living.
- It is also important to ensure India's energy security, particularly in the context of northern neighbours – Nepal and Bhutan – with significant hydropower potential.

### Issues/Challenges in India's Neighbourhood First Policy:

- Unresolved border disputes with countries like Pakistan result in frequent tensions and mistrust. It also, sometimes, results in anti-India sentiments in the neighbourhood and strained bilateral relations due to the perceived 'Big-Brother' attitude due to India's size and strategic position.
- India's domestic politics and federal dynamics also act as determinants of its neighbourhood. For example, Tamil sentiments determine India's Sri Lanka policy.
- Political instability, weak governance, and internal conflicts hinder sustained cooperation and implementation of long-term projects. For example, political instabilities in Afghanistan and Myanmar.
- Regime change in neighbouring countries also affects India's bilateral relations with them. For example, recent tensions in India-Maldives relations after regime change in Maldives.
- Delayed implementation of development projects can lead to frustration, and mistrust and reduce India's influence in the region.
- Dysfunctional regional multilateral institutions like SAARC are affected by India-Pakistan tensions, limiting their capacity to promote regional cooperation.

## H-1B VISA PROGRAM

**GS II – Effect of Policies and Politics of Developed and Developing Countries on India's interests**  
Indian Diaspora

**Context:** Weeks before he returns as US President, Donald Trump's supporters are locked in a public row about skilled immigration and H-1B visas.

**H-1B Visa Program:**

- It allows American employers to hire immigrant workers in occupations that require a high level of skill and at least a bachelor's degree.
- The program was started in 1990, with the intention of helping employers who cannot otherwise obtain needed business skills and abilities from the US workforce by authorising the temporary employment of qualified individuals who are not otherwise authorised to work in the United States.
- An H-1B visa can be issued for a maximum of six years at a stretch, after which the visa holder has to either leave the US for a period of at least 12 months before returning or apply for and receive permanent residence ("Green Card").
- Currently, there is an annual numerical limit (regular cap) of 65,000 new statuses/ visas under this program each fiscal year, with an extra 20,000 visas available to those with a master's degree or higher from a US university.

**Benefits of the H-1B Visa Program:**

- It has shaped India's IT consulting and services sector, fostering innovative models like the Global Delivery Model.
- **It has helped** Indian professionals such as Sundar Pichai (Google) and Satya Nadella (Microsoft) to excel in leadership roles globally.
- It developed cities like Bangalore, Hyderabad, and Pune to emerge as tech hubs due to this global exposure.
- Indian H-1B workers contribute significantly to India's economy, with \$111 billion received in remittances in 2022.
- It gives exposure to global practices like the five-day workweek that enhances professionalism.

**Issues/Concerns related to the H-1B Visa Program:**

- The migration of highly skilled professionals to the U.S. leads to talent depletion in India, potentially creating an innovation gap.
- Changes in U.S. visa policies, such as those during the Trump administration, disrupt Indian IT firms and professionals. Over one million Indians are currently stuck in green card backlogs, leading to legal limbo and instability.
- There are instances where H-1B workers are often paid less than their American counterparts, leading to concerns about wage stagnation and job displacement.
- The presence of foreign workers in sensitive sectors raises concerns about data security and technological vulnerabilities, especially in the context of global competition with countries like China.

**BILATERAL INVESTMENT TREATIES (BITS)**

**GS II** – Global Groupings and Agreements involving India and/or affecting India's interests.

**Context:** India is negotiating BITs with trade partners to boost the inflow of foreign direct investments (FDI).

**Bilateral Investment Treaties (BITs):**

- They are reciprocal agreements between two countries to promote and protect foreign private investments in each other's territories.
- India had signed BITs with 83 countries of which 74 were in force till 2015.
- India revised its Model BIT in 2016. Since 2015, India has signed new BITs only with four countries and is negotiating with 37 countries, and terminated its older BITs with 77 countries.

**Key features of Model BIT 2016:**

- "Enterprise" based definition of investment means an enterprise that has been constituted, organised, and operated in good faith by an investor in accordance with the domestic laws of the country.

- Non-discriminatory treatment through due process as each party shall accord full protection and security to the investments and investors.
- National treatment and protections against expropriation as neither party may nationalize or expropriate an investment of an investor directly or through measures having an effect equivalent to expropriation.
- A foreign investor should first exhaust local remedies at least for a period of five years before going for the Investor-State Dispute Settlement (ISDS) mechanism.

#### Existing issues/concerns with Model BIT:

- Experts suggest that India brought in Model BIT 2016 in reaction to a series of notices that India received. It has too many exceptions which limit the liability of the host state and raise the bar required to bring a claim under the BIT.
- The Arbitration Mechanism is considered to be the most contentious issue which insists on the investor exhausting the domestic remedies for at least five years before commencing arbitration under the BIT.
- Enterprise-based definition of investment narrows down the definition of investment. Moreover, it is considered to have vague qualifications such as “certain duration” and “significance for the development of the party in whose territory the investment is made.”
- Omission of “fair and equitable treatment” standard. It has been replaced with protections that require steep thresholds to be triggered and/or invoked. Moreover, the doctrines of Most-Favoured Nation and “legitimate expectation” are also absent.
- Exemption of taxation measures from the protections offered under BIT seems to be a restatement of sovereignty rather than a treaty meant to protect cross-border commercial transactions.
- Lack of professionals as India does not have a sufficient number of lawyers/judges with the requisite expertise and experience. Thus, huge fees are paid to foreign law firms that represent India in investment arbitration.

## UJALA SCHEME

### GS II – Government policies and interventions

**Context:** The UJALA scheme, launched on 5th January 2015 by Prime Minister Narendra Modi, marked its 10th anniversary as a groundbreaking initiative in energy efficiency.

#### Unnat Jyoti by Affordable LEDs for All (UJALA) Scheme:

- It was launched in January 2015, to promote energy efficiency by replacing traditional lighting systems (incandescent lamps (ICLs) and Compact Fluorescent Lamps (CFLs)) with energy-saving LED bulbs.
- It is a joint project between the Government of India's Public Sector Undertakings, the Union Ministry of Power's Energy Efficiency Services Limited (EESL), and DISCOMs (Distribution Companies).
- It is **implemented by Energy Efficiency Services Limited (EESL)** under the **Ministry of Power**.
- Objectives of the UJALA Scheme:
  - To build up a phased distribution of LEDs throughout the country.
  - To raise widespread public knowledge about the necessity of energy efficiency.
  - To promote energy efficiency at the domestic level throughout India.
  - To spread the message about how energy efficiency affects environmental preservation in the long run.
- It aims to save 85 lakh kWh of electricity and reduce 15,000 tonnes of Carbon dioxide (CO<sub>2</sub>) by replacing 77 crore traditional bulbs and 3.5 crore street lights with LEDs.
- Every **domestic household having a metered connection from their respective Electricity Distribution Company** is eligible to get the LED bulbs under the UJALA Scheme.
- The consumer **can purchase the LED on EMI payment** (monthly/bimonthly installments in the electricity bill) **or upfront payment by paying the full amount**.
- As part of its inclusive growth strategy to enable growth in lower-income communities, EESL has **also enrolled Self-Help Groups (SHGs) for the distribution of LED bulbs** under the UJALA programme.
- The **annual energy savings** from the scheme stand at 47,883 million kWh, with a reduction in peak demand by 9,586 MW and an **annual reduction of 3.87 crore tonnes in carbon dioxide emissions**. These savings

were achieved through e-procurement and bulk purchasing, which allowed LED bulbs to be made affordable for millions of households.

**Achievements of UJALA Scheme:**

- Over 36.87 crore LED bulbs have been distributed across the country, leading to:
- It has saved 47,883 million kWh of energy annually.
- It has saved Rs. 19,153 crores annually.
- It has reduced 3.88 million tonnes of CO2 annually.
- It has avoided peak demand of 9,586 MW.

**YARLUNGSANGPO PROJECT**

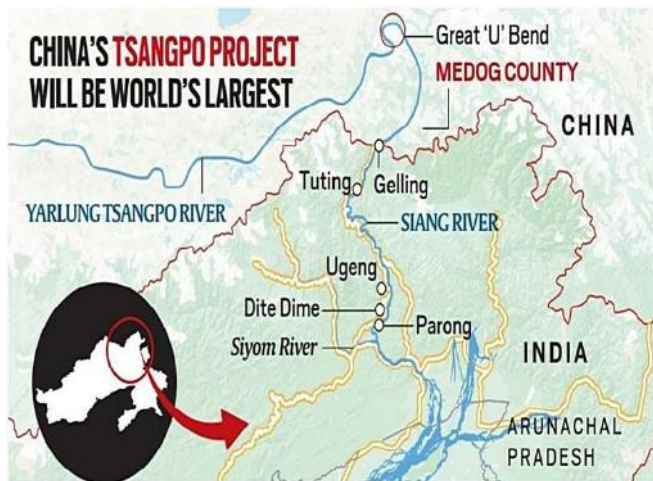
**GS II – India and its Neighborhood- Relations**

**Context:** On December 25, China approved the construction of the world’s largest hydropower project on the YarlungTsangpo (or Zangbo) river in Tibet.

**YarlungTsangpoProject:**

- It involves the construction of a mega-dam in Medog County, Tibet Autonomous Region.
- The dam is strategically located at the “Great Bend,” where the river takes a dramatic U-turn before entering India’s Arunachal Pradesh.
- The location of the dam is mentioned in China’s 14th Five-Year Plan (2021-2025) — at the “Great Bend”, where the YarlungTsangpo makes a U-turn in Medog county before entering Arunachal Pradesh.

**YarlungTsangpo:**



- From Tibet, it enters Arunachal Pradesh, where it is known as the Siang.
- In Assam, it is joined by tributaries such as Dibang and Lohit, and is called the Brahmaputra.
- The river then enters Bangladesh, and makes its way to the Bay of Bengal.

**Issues/Concerns of China’s Tibet Dam Project on India:**

- The Brahmaputra, or YarlungTsangpo in Tibet plays an important role for people of Assam and Arunachal Pradesh as it is crucial in enriching soil with silt. So construction of large dam could disrupt silt flow, reducing soil fertility and harming agricultural productivity downstream.
- It could disrupt water flow leading to water shortages in dry seasons and floods in monsoons, putting lives and livelihoods in nearby areas at risk.
- **It can be used as a geopolitical weapon by China** as China’s upstream position on the Brahmaputra gives it control over the river, and past actions, like withholding hydrological data during the 2017 Doklam standoff.
- The Himalayan region is among the most seismically active in the world so building a mega-dam in this earthquake-prone area amplifies the risks of infrastructure failure, potentially leading to catastrophic flooding downstream.
- Its construction and operationalisation threaten the fragile Himalayan ecosystem which is home to several critically endangered species due to deforestation, climate change, and soil erosion.

**Coordination Mechanism between India and China on Transboundary Rivers:**

- **There is an umbrella Memorandum of Understanding (MoU)** on cooperation for transboundary rivers,



signed in 2013. It remains in place but lacks substantive engagement.

- **Brahmaputra MoU** is renewable every five years, focuses on hydrological data sharing during monsoons. The last renewal lapsed in 2023, and discussions are ongoing.
- **Sutlej MoU** was prompted by the Parechu Lake incident in 2004. It facilitates data sharing to monitor glacial lake outbursts. However, it does not provide for year-round data sharing.

## FEMALE GENITAL MUTILATION

**GS II** – Welfare schemes for vulnerable sections of the population

**Context:** The UN agencies stated that in 2024, nearly 4.4 million girls are at risk of female genital mutilation around the world.

**Female Genital Mutilation (FGM):**

- It comprises all procedures that involve altering or **injuring the female genitalia for non-medical reasons** and is recognised internationally as a violation of the human rights, health, and integrity of girls and women.
- It is concentrated primarily in **Western, Eastern, and North-Eastern Africa**, as well as select **Middle Eastern and Asian nations**. However, with increased migration, FGM has become a global concern, affecting girls and women in **Europe, Australia, and North America** as well.

**Issues/challenges in eradicating FGM:**

- It is often deeply rooted in cultural and social norms, with communities practicing it as a tradition passed down through generations. Changing these deeply ingrained beliefs and practices can be challenging.
- Many individuals within communities where FGM is practiced may not fully understand the harmful consequences of the practice. Lack of awareness and education about the physical and psychological health risks associated with FGM can perpetuate its continuation.
- Limited data collection and reporting on FGM prevalence hinder efforts to understand the scope of the issue and target interventions effectively.

**Global initiatives towards the eradication of FGM:**

- **United Nations Population Fund** and **United Nations Children's Fund (UNICEF)**, have co-led the largest global programme on the elimination of female genital mutilation (FGM) since **2008**.
- In 2012, the UN General Assembly designated **6th February** as the **International Day of Zero Tolerance for Female Genital Mutilation**, with the aim to amplify and direct the efforts on the elimination of this practice. Its theme for **2024** was “Her Voice. Her Future”.
- The United Nations strives for its full elimination by **2030**, following the spirit of **Sustainable Development Goal 5. SDG 5.3 aims to eliminate all harmful practices**, such as child, early and forced marriage, and female genital mutilation.

**Status of FGM in India:**

- Presently, no legislation bans the FGM practice in the country. In 2017, in response to a petition in the Supreme Court, the Ministry of Women and Child Development said that “**at present there is no official data or study which supports the existence of FGM in India.**”
- However, according to some other unofficial reports, procedures of FGM are prevalent amongst the **Bohra community**, primarily in the states of Maharashtra, Kerala, Rajasthan, Gujarat, and Madhya Pradesh.

## HONOUR KILLING

**GS II** – Issues Related to Women

**Context:** A 20-year-old woman was allegedly shot dead by her father, four days before her wedding in Madhya

Pradesh's Gwalior. The incident reportedly took place because the victim wanted to marry someone else.

### Honour Killing:

- It is a form of violence against women committed with the motive of protecting or regaining the honour of the perpetrator, family, or community.
- These acts are often rooted in strict cultural, social, and religious norms regarding family honour, morality, and social behaviour.

### Honour Killings in India:

- As per the **National Crime Records Bureau data (NCRB)**, the number of honour killings reported in India was 25 each in 2019 and 2020, and 33 in 2021.

### Reasons/Causes:

- It is driven by fear of losing caste status, especially against inter-caste or same-gotra marriages.
- The right to choose a partner is often denied to women in our society as marriage is seen as a family honour transaction.
- Caste Panchayats controlled by dominant caste males, impose punishments, including killings, for violating caste norms.
- The skewed sex ratios especially when marriage choices defy traditional norms lead to violence against women.

### Implications/Consequences:

- It violates the fundamental human right to life.
- It perpetuates gender inequality, reinforcing patriarchal norms.
- It creates deep psychological trauma and long-term mental health issues among the surviving families.
- It undermines the rule of law due to weak legal frameworks or societal acceptance that results in perpetrators evading justice.
- It leads to cultural backwardness by reinforcing regressive traditions as it prevents women's education and employment.
- It impacts diplomatic relations as it draws global human rights scrutiny.

### Legal Provisions to Check Honour Killing:

- Sections 299-304 of IPC penalises any person guilty of murder and culpable homicide not amounting to murder.
- Section 307 of IPC penalises an attempt to murder with imprisonment for up to 10 years and a fine.
- Sections 34 and 35 of the IPC penalises criminal acts done by several persons in furtherance of common intention.

### Judicial Pronouncements on Honour Killing:

- In the *Lata Singh vs State of UP* Case of 2006, the Supreme Court (SC) condemned the harassment and violence faced by young couples in inter-caste marriages, calling honour killings barbaric and stressing harsh penalties for perpetrators.
- In the *State Of U.P vs Krishna Master* Case of 2010, the Supreme Court held the perpetrators of honour killing accountable and sentenced them to life imprisonment.
- In the *Arumugam Servai vs. State Of Tamil Nadu* Case of 2011, the Supreme Court clarified that parents can sever ties but cannot intimidate or harass children for inter-caste marriages.
- In the *Shakti Vahini* Case of 2018, the Supreme Court ruled that honour killings are a violation of fundamental rights and emphasized the need for strict action against such crimes.

## INDIC IDEA OF GOOD GOVERNANCE

### GS II – Governance

**Context:** Our ancient scriptures, history as well as culture are important inspirations to make good governance more meaningful. They make the concept more purposeful and result-oriented.

#### Good Governance:

- According to the United Nations, good governance has eight major characteristics, viz, participatory, consensus-oriented, accountable, transparent, responsive, effective, equitable, and inclusive, all while adhering to the rule of law.

#### Indic Idea of Good Governance:

- Brihadaranya Upanishad stresses the duty of the king to protect Dharma, the public good so that all citizens get equal opportunity and that the weak are not exploited.
- Mundaka Upanishad includes the phrase “Satyamev Jayate” which translates to truth alone triumphs, a basic part of good governance.
- Ramayana talks about Ram-Rajya or ideal governance and offers essential insights into the crucial art of leadership. According to Ram Rajya, a leader is expected to look after everyone who needs help and support instead of accumulating wealth for himself.
- Bhagwat Gita talks about the concept of Adhishthan, which is an important element at the foundation of everything, including governance.
- Atharvaveda contains a hymn known as the Bhumi Suktam, dedicated to the Earth. This hymn venerates the Earth as the universal mother who nourishes all creatures, and it emphasizes the need to live in harmony with nature.
- Thirukural deals with the orderly development of society, including regulation to ensure reasonableness of prospecting and exploitation of resources and protection of the environment.
- Kautilya’s Arthashastra deals with Yogakshema, or the welfare of the citizens, and Raj Dharma describes the king as the servant of the citizens who look after the sick, children, old, etc.
- Antyodaya is based on the ideas of Mahatma Gandhi that imply the welfare of all through the weakest of the society to achieve Sarvodaya or ‘development of all’.

#### Significance/Relevance of the Indic Ideas of Good Governance:

- It revives the idea that good governance may fill up the vacuum in the areas of public order and welfare as globalization has limited the authority of government with the rise of various transnational organizations and supranational organizations.
- It underlines the importance of sustainable development practices, as seen in India’s commitment to SDGs and Lifestyle for Environment (LiFE).
- It ensures cooperation between the government and citizens. Project Karmayogi for building capacities of government is governed by the same impulse.
- The concept of Antodaya aligns with the modern concept of inclusive development. It is seen in programs like MGNREGA, the Public Distribution System (PDS), and Ayushman Bharat aimed at uplifting marginalized communities.
- The ideas of Kautilya, focusing on pragmatism assess the strategic opportunities, threats, and risks while dealing with foreign countries.
- It offers an alternative to adversarial legal systems through the Nyaya system of jurisprudence, which focuses on justice, fairness, and mediation. It could help modern governance to adopt this approach to resolve conflicts more amicably, reducing the burden on judicial systems.

## INDIA-SINGAPORE RELATIONS

**GS II** – Bilateral, regional, and global groupings and agreements involving India and/or affecting India's interests

**Context:** India and Singapore are cooperating in critical sectors like advanced manufacturing and semiconductors as the relations are on a “new trajectory” of growth, Singapore President Tharman Shanmugaratnam said.

### India-Singapore Relations:

- **Sir Stamford Raffles** established Singapore as a trading station in 1819 and it was governed from Kolkata. India was one of the first countries to recognize Singapore in 1965.
- Singapore is **India's largest trade partner** in **ASEAN**; it's **India's 6th largest trade partner** (2023-24).
- Bilateral trade expanded after the conclusion of the **Comprehensive Economic Cooperation Agreement (CECA)** to **USD 35.6 billion** (2023-24).
- India signed **Direct Tax Avoidance Agreement (DTAA)** with Singapore in 2016 to check tax evasion.
- Defence collaboration with Singapore enhances India's regional strategic maritime reach as far as the South China Sea and reinforces Singapore's role as a security partner in the Indian Ocean.
- The bilateral exercises between the two countries by the three services include **Exercise Agni Warrior** (Army), **Exercise SIMBEX** (Navy), and **Air Force Exercise Joint Military Training (JMT)**.
- India and Singapore **have made significant progress in the area of cross-border Fintech through RuPay card & UPI-Paynow Linkage**.
- India and Singapore are part of multilateral groups like the **East Asia Summit, Commonwealth, IORA (Indian Ocean Rim Association), and IONS (Indian Ocean Naval Symposium)**.
- Singapore has joined the **International Solar Alliance** and **Global Bio-fuel Alliance**.
- Both closely cooperate on, and support the **Indo-Pacific Economic Framework for Prosperity (IPEF)**.
- Ethnic Indians constitute about **9.1 % of the resident population in Singapore**. In addition, among the **1.6 million foreigners residing** in Singapore, about **1/5th** are Indian citizens.

### Issues/Challenges Faced in India-Singapore Relations:

- China is Singapore's **third-largest trading partner** and Singapore's investments in China account for **nearly 85 percent of the total inbound investments** China has received from Belt and Road countries.
- **Even though \$ 11.7 billion** was invested in FY 2023-24, a significant portion of this can be due to **roundtripping as Singapore is known as a tax haven**.
- **India's trade concerns include** inadequate market access for **service exports and greater mobility of people** including professional talent migration.
- Smugglers in Singapore have been approaching Indian migrant workers flying home to act as 'gold mules' by carrying jewellery.
- **There are cases of anti-India sentiments** where Indian workers working in Singapore **were bullied on social media and in the workplace**.

### Semiconductor Industry in Singapore:

- Singapore has a well-developed semiconductor industry, the outcome of an early start and the vision of its first Prime Minister Lee Kuan Yew.
- By the early 1980s, the electronics industry was already accounting for 7% of Singapore's GNP and a quarter of its manufacturing jobs, Miller notes.
- Today, Singapore contributes around 10% of the global semiconductor output, along with 5% of the global wafer fabrication capacity (silicon wafer is a circular piece of ultra-pure silicon, usually 8-12 inches in diameter, out of which chips are carved) and 20% of semiconductor equipment production.
- Nine of the world's top 15 semiconductor firms have set up shop in Singapore, and the semiconductor sector contributes significantly to the country's economic growth.
- Singapore has players in all segments of the semiconductor value chain: integrated circuit (IC) design, assembly, packaging and testing; wafer fabrication, and equipment/ raw material production.

## ISRAEL-PALESTINE CONFLICT

**GS II** – Effect of policies and politics of developed and developing countries on India's interests

**Context:** After 15 months of devastating war between Israel and Hamas, a ceasefire took effect on Sunday — albeit a few hours after the scheduled time — marking a critical moment in a conflict that has reshaped West Asia. The agreement, brokered through months of painstaking diplomacy by Egypt, Qatar, and the United States, aims to halt the bloodshed and initiate a release of hostages held by Hamas in exchange for Palestinian prisoners held by Israel.

#### Background of Current Conflict:

- On **October 7, 2023**, Hamas launched an attack on Israel under **Operation Al-Aqsa Storm**, coinciding with the 50th anniversary of the Yom Kippur War.
- It **prompted Israel to declare war against Hamas** and subsequent military operations in Gaza.

#### Reasons for the Israel-Palestine Conflict:

- Hamas wants to disrupt the normalisation of the relationship between Israel and the Arab countries created through the Abraham Accords between Israel, UAE, Bahrain, Sudan, and Morocco. Saudi Arabia and Israel have been coming together for various economic projects like IMEC.
- Hamas through this attack has been trying to take leadership of the Palestinian cause from the Palestinian Authority (PA) which is riddled with corruption, and misgovernance and has lost its legitimacy.
- Hamas is being provided logistical, technological, and intelligence support by terrorist organizations like Hezbollah operating in Lebanon and funding by Iran and Qatar.
- **The unresolved Jerusalem dispute between Israel and Palestine.**
- Since 1967, Israel has built about 140 settlements in the occupied West Bank and East Jerusalem which are considered illegal by most of the international community, though Israel disputes this.
- The Palestinians remain politically divided between Fatah and Hamas and thus are unable to negotiate jointly.
- Israel and Palestine have a dispute on the border. Palestinians insist on borders based on ceasefire lines which separated Israel and East Jerusalem, the West Bank, and Gaza between 1949 and 1967. However, Israel insists on an extended eastern border stretching up to the Jordan River.
- No consensus has been developed over the status of Palestinian Statehood among PLO and Israeli officials. Further Israel insists that any peace deal must include Palestinian recognition of it as the “nation-state of the Jewish people”.

#### Israel-Hamas Ceasefire Agreement:

- It marks a significant breakthrough in the 15-month-long conflict that began with Hamas’s attack on Israel on October 7, 2023.
- It was mediated by Qatar, the United States, and Egypt which focuses on ending hostilities, facilitating the exchange of hostages and prisoners, and delivering humanitarian aid to Gaza.
- *Qatar, Egypt, the United States, and the United Nations will oversee the implementation of the agreement.*
- It unfolds in three stages over 126 days as below:

##### First Stage (42 days):

- Mutual halt of military operations.
- Israeli forces withdraw from densely populated areas to positions near the Gaza border.
- Restrictions on Israeli air operations for 10-12 hours daily.
- Immediate entry of humanitarian aid, including 600 trucks daily, 50 carrying fuel. Resumption of essential services like electricity and healthcare; plans for rubble clearance and shelter for displaced persons.
- Hamas releases 33 Israeli detainees (alive or dead), including women, children, and the elderly, in return for an agreed number of Palestinian prisoners.
- Phased release schedule, including provisions for women and minors detained after October 2023.
- Israel lifts penalties against prisoners and improves their conditions.
- Discussions on the second phase begin by day 16, addressing further prisoner exchanges and conditions.

##### Second Stage (42 days):

- A formal ceasefire will be declared.

- Exchange of all remaining Israeli men (civilians and soldiers) for additional Palestinian prisoners.
- Full withdrawal of Israeli forces from Gaza.

**Third Stage (42 days):**

- Exchange of the bodies of the dead from both sides.
- Long-term reconstruction of Gaza's homes and infrastructure over 3-5 years, with international oversight.
- Complete lifting of the Gaza blockade.

**Issues with the Ceasefire Agreement:**

- It remains uncertain how many hostages are alive, whether Hamas knows the locations of all hostages, and which prisoners Hamas insists on freeing.
- The complex timetable and distrust between the parties mean even minor incidents could derail the process.
- Israel has weakened Hamas's operational and governing capabilities but it has not completely destroyed them which raises questions about the long-term implications of the ceasefire.

## LOKPAL

**GS II – Statutory Bodies & Transparency and Accountability**

**Context:** Social activist Anna Hazare, Justice (ret'd) N. Santosh Hegde, former judge of Supreme Court of India and former Lokayukta, Karnataka, and R. Venkataramani, Attorney-General of India, are the three personalities who will be felicitated on January 16 on the occasion of Lokpal Foundation Day.

**Lokpal:**

- It is an independent statutory body established under the Lokpal and Lokayuktas Act of 2013, to combat corruption in public offices and ensure accountability among public functionaries.
- The concept of the Lokpal/Lokayukta originates from the Ombudsman system in Scandinavian countries.
- In India, the Administrative Reforms Commission (1966-70) recommended the establishment of the Lokpal at the central level and Lokayuktas in the states.
- Several states had already created the Lokayukta institution through state laws before the enactment of the Lokpal and Lokayuktas Act of 2013.
- The salary and allowances of Chairpersons are equivalent to those of the Chief Justice of India, while the Members receive benefits similar to those of a Judge of the Supreme Court of India.
- On receiving a complaint, the Lokpal may initiate a preliminary inquiry through its Inquiry Wing or refer cases to agencies like the Central Bureau of Investigation (CBI) or Central Vigilance Commission (CVC). The CVC reports back to Lokpal for Groups A and B officials, while it takes independent action for Groups C and D under the CVC Act of 2003.

**Significance of the Lokpal:**

- It deters corrupt practices and promotes ethical governance by addressing systemic corruption by providing a dedicated platform for investigating complaints against public officials.
- It restores public trust in government by enhancing the accountability of public officials responsible for their actions.
- It offers protection from retaliation by powerful officials by empowering citizens to file complaints against corruption.
- It encourages officials to act in the public's best interest by ensuring the effective use of public resources.

**Issues/Limitations Related to Lokpal:**

- The complaints against public servants must be filed within 7 years from the date of the alleged corruption or when the complainant becomes aware of it which may lead to the exclusion of older cases of corruption, especially those discovered much later.



- The heavy penalties for filing false complaints may discourage individuals from lodging complaints, even when justified.
- It faces challenges regarding its independence, with concerns over political influence affecting its ability to function impartially.
- Its authority related to international relations, security, public order, atomic energy, and space is scurbed due to the exemptions clause.
- Its accountability has been questioned as there is no comprehensive mechanism to evaluate Lokpal's functioning.

**Lokpal Foundation Day:**

- It was held for the first time on 16th January at Manekshaw Centre, New Delhi in the August presence of the Chief Justice of India, Shri Justice Sanjiv Khanna.
- It is this day, that the Lokpal of India was established under Section 3 of the Lokpal and Lokayuktas Act of 2013, on 16.01.2014.

**NATIONAL MONETISATION PIPELINE (NMP)**

**GS II –Government Policies and Interventions for Development in various sectors**

**Context:** The NITI Aayog has increased the asset monetisation target for 2024-25 (FY25) by Rs 23,000 crore to Rs 1.9 trillion, moving closer to the overall Rs 6 trillion target set under the National Monetisation Pipeline (NMP) for a four-year period.

**National Monetisation Pipeline (NMP):**

**MONETISATION: KEY SECTOR WATCH**

Approximate figures in ₹ crore  
 ■ Revised target (2021-24)  
 ■ Achieved



Source: Govt officials, NITI Aayog

- It envisages an **aggregate monetisation potential of Rs 6-lakh crore through the leasing of core assets of the Central government** in sectors such as roads, railways, power, oil and gas pipelines, telecom, civil aviation, etc., over four years (**FY 2022-25**).

- The **monetization through NMP only includes core assets**, excluding monetization through the **disinvestment of non-core assets**. Currently, only assets of **central government line ministries and CPSEs** in infrastructure sectors have been **included**.

- It is intended to **support investments under the National Infrastructure Pipeline (NIP) worth Rs 111 trillion in six years through FY25**.

**Need for NMP:**

- It aims to optimize resources by introducing private sector efficiency and market-driven approaches, ensuring better alignment of inputs and outputs.
- It encourages collaboration between the public and private sectors, fostering a more coordinated and streamlined approach to infrastructure development.
- Reluctance to implement labour reforms, poor decision-making, and ineffective governance contribute to the failure of public infrastructure assets.
- The optimum **input-output ratio is seldom observed** in a majority of government infrastructure projects leading to their overcapitalisation.

**Significance of NMP:**

- It is the first-of-its-kind initiative that will boost the economy, generate better employment opportunities, and drive the competitiveness of the Indian economy.
- It is linked with the **PM Gati Shakti**, which is a **holistic and integrated approach** to infrastructure development in India. Gati Shakti focuses on building a comprehensive and well-connected infrastructure network, while the NMP aims to monetize existing infrastructure assets to fund new projects.
- It advocates **unlocking idle capital from non-strategic underperforming** government-owned assets.
- It also **envisages reinvesting the funds**, thus received, into new infrastructure projects and **augmentation of assets such as greenfield infrastructure creation**.

#### Concerns/Challenges associated with NMP:

- It is quite likely to create a vicious **cycle of creating new assets and then monetising the same** when they become liabilities for the Government at a later stage.
- Taxpayers have expressed **concerns about potential double charges on public assets**. After funding the creation of these assets, they now **face an additional cost for utilizing them through payments to private entities** following their monetization.
- Low level of capacity utilization in gas and petroleum pipeline networks, regulated tariffs in power sector assets, low interest among investors in national highways below four lanes, and multiple stakeholders which own stake in the entity.
- It has the **potential for monopolization through consolidation of ownership resulting** from the transfer of assets, which could lead to increased prices.

## PM-VIDYALAXMI SCHEME

### GS II –Government policies and interventions

**Context:** The Union Cabinet approved the PM-Vidyalaxmi scheme that makes students who get admission to Quality Higher Education Institutions (QHEIs) eligible for a collateral-free and guarantor-free education loan.

#### PM-Vidyalaxmi Scheme:

- It is a central sector scheme that seeks to provide financial support to students so that financial constraints do not prevent anyone from pursuing higher studies.
- It aims to expand and deepen the impact of the Government of India's education and financial inclusion initiatives from the past decade, with a focus on broadening access to quality higher education for India's youth.
- It will complement the Central Sector Interest Subsidy (CSIS) and the Credit Guarantee Fund Scheme for Education Loans (CGFSEL), both part of the PM-USP, overseen by the Department of Higher Education.
- Under the scheme, any student who gets admission to a Quality Higher Education Institution (QHEIs) will be eligible to get collateral-free and guarantor-free loans from banks and financial institutions to cover the full amount of tuition fees and other expenses related to the course.
- It is another key initiative stemming out of the National Education Policy, 2020, which recommended that financial assistance should be made available to meritorious students through various measures in both public and private HEIs.
- The Department of Higher Education will have a unified portal "PM-Vidyalaxmi" on which students will be able to apply for the education loan as well as interest subvention, through a simplified application process to be used by all banks. Payment of interest subvention will be made through E-vouchers and Central Bank Digital Currency (CBDC) wallets.
- It will be administered through a simple, transparent, and student-friendly system that will be interoperable and entirely digital.
- It will be available to India's top-quality higher educational institutions (HEIs) based on NIRF rankings.
- Eligible institutions include all government and private HEIs ranked within the top 100 across overall, category-specific, and domain-specific NIRF rankings, as well as state government HEIs ranked between 101-200, and all institutions governed by the central government. This list will be refreshed annually with the latest NIRF rankings.
- A budget of Rs 3,600 crore has been allocated for 2024-25 to 2030-31, with 7,00,000 new students expected

to benefit from the interest subsidy over this period.

- For loans up to Rs 7.5 lakh, students can receive a 75 percent credit guarantee on outstanding defaults, supporting banks in providing these educational loans under the scheme.
- Students with an annual family income of up to Rs 8 lakh, who are not eligible for other government scholarships or interest subsidies, can receive a 3 percent interest subsidy on loans up to Rs 10 lakh during the moratorium period.
- The interest subvention support will be given to one lakh students every year. Preference will be given to students who are from government institutions and have opted for technical/ professional courses.
- The Department of Higher Education will launch a unified portal – PM-Vidyalaxmi, where students can apply for education loans and interest subsidies through a streamlined application process accessible to all banks. The interest subsidy will be disbursed via E-vouchers and Central Bank Digital Currency (CBDC) wallets.

## UNDERTRIALS IN INDIA

**GS II** –Government policies and interventions for development in various sectors and issues arising out of their design and implementation

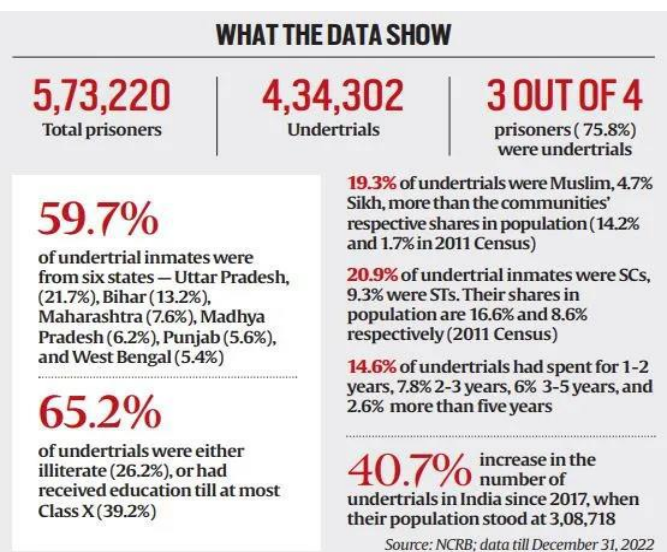
**Context:** According to the National Crime Records Bureau’s report Prison Statistics India 2022, of the 5,73,220 people incarcerated in Indian prisons, 4,34,302 (75.8%) are undertrials against whom cases are still pending.

### Undertrial:

- An undertrial is a person who is currently on trial or who is imprisoned on remand whilst awaiting trial or a person who is on trial in a court of law.

### Status of Undertrial Prisoners in India:

According to the National Crime Records Bureau (NCRB) Prison Statistics India 2022 Report:



- Out of the 5,73,220 total incarcerated prisoners, 4,34,302 (75.8% of the total prison population) were undertrials.
- Out of the 23,772 women prisoners, 18,146 (76.33% of the total women prisoners) are undertrials.
- 8.6% of undertrials have been in prison for over three years (long-term undertrials).

Source: Indian Express

### Reasons for the high number of Undertrials in India:

- The major reason for the high number of undertrials in India is due to the low capacity of the judicial

system along with the lack of judicial infrastructure that leads to the pendency of cases. India has 21 judges per million population, while the Law Commission has recommended 50 per million.

- Lack of financial resources to afford legal aid and unable to pay bail amount as a large number of those under trial are poor, illiterate, and belonging to marginalized communities.
- Law Commission (268th Report) has highlighted that over 60% of arrests are unnecessary. It also highlighted that the affluent get bail with ease.
- Due to the poor ‘Police-Population’ Ratio, there have been delays in investigation and trial processes by police and prosecution functionaries. According to PRS, the sanctioned police strength was 181 police personnel per lakh persons in 2016, the actual strength was 137. The United Nations recommended standard is 222 police personnel per lakh persons.

### Issues/Problems Faced by Undertrials in India:

- One of the major issues is the intermingling of prisoners as there is an absence of scientific classification methods to separate hardened criminals/convicts from young, first-time new criminals leading to exposure of circumstantial/young offenders to hardcore criminals making them vulnerable.
- The prisons in India are vulnerable to violence due to group violence and riots.
- There is a shortage of adequate space to lodge prisoners in safe and healthy conditions due to overcrowding of prisons.
- Long incarceration without conviction, especially when the undertrial eventually turns out to be innocent, leads to mental health issues.
- The 'Right to Speedy Trial' was recognized by the Supreme Court in Hussainara Khatoon vs. Home Secretary, State of Bihar (1979). Prolonged incarceration without bail violates this right.
- People booked under anti-drug laws constitute a substantial percentage of the prison population. Isolation inside prison leads to increased desperation to access banned substances which increases the danger of other prisoners being inducted into drug abuse.

**News:**

- Section 479 of the BNSS lays down the "Maximum period for which [an] undertrial prisoner can be detained". It states that a prisoner who is not accused of offences punishable with death or life imprisonment shall be released on bail if she has "undergone detention for a period extending up to one-half of the maximum period of imprisonment specified for that offence under that law".
- The Supreme Court ruled that Section 479 of the BNSS should apply retrospectively to first-time offenders in cases registered before the BNSS's implementation (July 1, 2024). The court emphasized that the provision is "more beneficial" and directed state governments and Union Territories (UTs) to identify eligible prisoners and ensure their release.

## PAPER 3

### OPERATION GREENS

#### GS III – Agricultural Marketing

**Context:** The government's flagship Operation Greens scheme, designed to stabilize crop prices and benefit farmers, has spent just 34 percent of its allocated budget for 2024-25, according to a parliamentary report, even as onion farmers in Maharashtra reel from massive losses and potato shortages grip eastern states.

#### Operation Greens:

- It is a central sector scheme launched in 2018, under the Pradhan Mantri Kisan SAMPADA Yojana.
- It aims to stabilize the prices of perishable crops and enhance farmers' earnings by drawing inspiration from "Operation Flood (White Revolution)".

Its objectives include:

- Long-term interventions to enhance farmers' value realization through support for production clusters and Farmers' Producer Organisations (FPOs).
  - Reduce post-harvest losses via farm gate infrastructure, agri-logistics, and storage facilities.
  - Boost food processing and value addition by linking production clusters with the market.
- Short-term interventions to protect growers from distress sales and reduce post-harvest losses.
- It is implemented by the Ministry of Agriculture and Farmers Welfare, with funding provided by the National Agricultural Cooperative Marketing Federation of India (NAFED).
- It initially focused on Tomato, Onion, and Potato (TOP). But its scope is expanded to include 22 perishable crops such as fruits (e.g., Mango, Banana, Grapes), vegetables (e.g., Carrot, Beans, Okra), gourd family (e.g., Bottle Gourd, Bitter Gourd), and other crops like Garlic, Ginger, and Shrimp as a part of the 15th Financial Commission Cycle (2021-26).

#### Key findings of a Parliamentary Standing Committee (PSC) on Agriculture, Animal Husbandry and Food Processing:

- It reported underutilization of budget as only 34% (Rs 59.44 crore) of the Rs 173.40 crore allocated for the 2024-25 financial year has been spent by October 2024 and 65.73% of the allocated budget remains unspent, which raises concerns about meeting expenditure guidelines for the remaining fiscal year.
- Even though the scheme's objective is to stabilize crop prices, onion farmers in Maharashtra are facing a price crash, with onion prices falling by nearly 50%.
- There have been policy inconsistencies like the export ban and its extension, and the imposition of export duties by the government which caused distress to farmers affecting their ability to secure fair prices.
- It has struggled to meet its dual objectives due to the underfunding and lack of progress highlighting the challenges in stabilizing agricultural markets and addressing infrastructure gaps in post-harvest management.

### GROUNDWATER CONTAMINATION

#### GS III – Environmental Conservation

**Context:** There are 440 districts with excessive nitrates in their groundwater as of 2023, an increase from 359 such districts in 2017, according to a report by the Central Groundwater Board (CGWB).

#### Causes of Groundwater Contamination:

- Rapid industrialization has led to the unregulated disposal of hazardous waste into water bodies. Industries such as textiles, chemicals, and pharmaceuticals often release toxic substances seeping into groundwater.
- The excessive use of fertilisers and pesticides in agriculture contributes significantly to groundwater contamination. Nutrients like nitrates and phosphates leach into the soil, eventually reaching the water table. Additionally, improper irrigation and over-extraction of water further exacerbate the issue.



- The rapid growth of urban areas often results in inadequate waste management systems. Sewage and solid waste are frequently dumped untreated, leading to leachate contaminating groundwater.
- Deforestation and changes in land use disrupt the soil's natural filtration processes. This can lead to increased runoff and the subsequent entry of pollutants into groundwater systems.
- Mining operations can introduce heavy metals and other harmful substances into the environment. When these contaminants reach groundwater sources, they pose serious health risks.

#### Implications of Groundwater Contamination:

- The economic implications of groundwater contamination are substantial as it affects agricultural productivity, leading to lower crop yields and increased food insecurity.
- It poses serious health risks as contaminants such as fluoride, nitrates, and heavy metals lead to waterborne diseases.
- Nitrate pollution can disrupt local ecosystems, impacting plant and aquatic life through soil contamination and salinization.
- It requires costly treatment processes to make it safe for consumption.

#### Indian Government Initiatives for Groundwater Management:

- Atal Bhujal Yojana (ABY) scheme aims to improve groundwater management in priority areas of seven states by involving local communities in the process.
- The National Aquifer Mapping and Management Programme (NAQUIM) aims to identify and map aquifers across the country which helps in understanding the groundwater availability and quality in different regions and facilitates better planning and management of groundwater resources.
- The Central Ground Water Board (CGWB) has been working to monitor and assess the groundwater levels across the country. It provides technical support and guidance to state governments for the sustainable management of groundwater resources.
- The Jal Jeevan Mission (JJM) aims to provide safe and adequate drinking water to rural households. It focuses on water source sustainability, groundwater recharge, and greywater management.
- Har Khet Ko Pani (HKKP) is a part of the Pradhan Mantri Krishi Sinchayee Yojana (PMKSY) to expand cultivable land by improving and restoring water bodies.

#### Key Findings of the CGWB Report:

- As of 2023, 440 districts reported excessive nitrate levels in groundwater, up from 359 districts in 2017.
- Rajasthan (49%), Karnataka (48%), and Tamil Nadu (37%) reported the highest levels of nitrate contamination.
- Nitrate contamination increases after the monsoon, with 32.66% of samples exceeding safe limits during the rainy season, compared to 30.77% pre-monsoon.
- Fluoride contamination remains a major issue in Rajasthan, Haryana, Karnataka, Andhra Pradesh, and Telangana.
- Uranium contamination exceeds safe levels in Rajasthan, Punjab, Haryana, Gujarat, Tamil Nadu, Andhra Pradesh, and Karnataka, particularly in over-exploited groundwater zones.
- 60.4% of groundwater is being extracted across India, maintaining a steady rate since 2009.

## SPACE-TECH START-UPS IN INDIA

### GS III – Space Technology

**Context:** Under the Seed fund scheme, In-Space will provide support to start-ups for developing and scaling up solutions in the urban development and disaster management sector using space technology.

#### Need/Significance to promote Space-tech start-ups in India:

- Foreign private companies like SpaceX, Blue Origin, Arianespace, etc. have transformed the global space



industry by cutting costs and turnaround time. However, India's private space players have mainly served as vendors or suppliers to the government's space program. Therefore to provide them a level playing field, the center allowed them to carry out end-to-end activities in the space domain.

- At present India's share in this is only 2% which needs to be enhanced. Innovative start-ups could complement the government's resources to enhance our space economy.
- According to the government data, India's import costs in the space technology sector are twelve times higher than the earnings from exports. The major imported items include electronic and electrical engineering components, high-strength carbon fibers, space-qualified solar cells, detectors, optics, and power amplifiers among others
- Start-up participation could free up ISRO to focus on the core areas of research and development, interplanetary exploration, and strategic launches.
- By finding innovative solutions to pressing challenges in areas such as agriculture, disaster management, or communication, the private sector can bring significant improvement to people's lives.
- Collaboration between space-tech private players of India and partner countries, such as the US, will empower India as a counterbalance to China. Indian space-tech start-ups could enable India to strategically offset the influence of China in the space arena.

#### Challenges in the promotion of Space-tech start-ups in India:

- The absence of an assured market and long incubation periods lead to a cautious approach by private organizations.
- Inadequate funding, especially in later stages, poses a significant challenge. Lack of indigenous materials and high reliance on imports increase costs and cause production delays.
- The lowest-cost-wins mentality of start-ups overlooks hidden expenses and future impacts, leading to unsustainable business models.
- The scarcity of skilled professionals adds to existing challenges.

#### Status of India in the global space market:

- As of 2021, according to SpaceTech Analytics, **India is the sixth-largest player in the industry internationally having 3.6% of the world's space-tech companies.** U.S. accounts for **56.4% of all companies** in the space-tech ecosystem.

## LAND RECORD DIGITISATION

### GS III – Land Reforms in India

**Context:** The Unique Land Parcel Identification Number (ULPIN) scheme is among the slew of technology-driven land reform initiatives implemented under the Centre's broader Digital India Land Records Modernization Programme (DILRMP) that aims to digitize the country's complex agricultural land records and bring transparency to land transactions.

#### Digital India Land Record Modernisation Programme (DILRMP):

- It is a **central sector scheme** that has been extended to 2023-24, to complete its original targets as well as expand its ambit with a slew of new schemes.
- It is being implemented by the Department of Land Resources under **the Ministry of Rural Development.**
- It attempts to build upon the commonalities that exist in the arena of land records in various States to develop an appropriate Integrated Land Information Management System (ILIMS) across the country.
- Its **major components include the computerization of land records, survey/re-survey, and computerization of registration.**

#### Rationale Behind Land Record Digitisation:

- It minimizes the potential for manipulation, tampering, and unauthorized alterations of land records, thus

promoting transparency and reducing corruption in land administration.

- It reduces conflicts arising from land claims, boundary disputes, or unauthorized encroachments by maintaining accurate and up-to-date land records.
- It ensures transparent recording of ownership details and transaction history, thereby protecting the rights of landowners and supporting economic development.
- It enables informed decision-making in land use, infrastructure development, and urban planning.
- It provides citizens with quick and convenient access to land-related information, improving service delivery.

#### Issues/Challenges associated with Land Record Digitisation:

- It faces challenges due to India's linguistic diversity that can hinder rural populations' understanding of digitization, as farmers and landowners struggle with digital systems not available in their native languages.
- Community-based land ownership in many northeastern states complicates digitizing and standardizing land records.
- The DILRMP relies on active participation from stakeholders like landowners, buyers, sellers, and tenants, but lacks awareness and sensitization about its benefits and procedures among them.
- India's complex land management systems, involving multiple departments and regulations, hinder seamless digitization and stakeholder alignment.
- It faces challenges due to insufficient funds and inadequate infrastructure to modernize land records effectively.

#### Note:

- As of 2024, 98.5% of rural land records have been digitized, marking a significant milestone in India's efforts toward land reforms and transparency.

## BALANCED FERTILIZATION

### GS III – Agriculture

**Context:** Balanced fertilization — discouraging farmers from applying too much urea, di-ammonium phosphate (DAP), or muriate of potash (MOP), which only have primary nutrients in high concentrations — is likely to be a key policy goal for the government in the long run.

#### Balanced Fertilization:

- It is a practice in agriculture that focuses on providing plants with the **optimal amounts of nutrients** that are needed for their healthy growth and development.
- Balanced fertilization emphasizes supplying these essential nutrients in the correct ratios based on several factors:
  - Different soil types have varying levels of inherent nutrients. Testing the soil reveals its **nutrient profile, guiding fertilizer selection and application rates.**
  - Different crops have **specific nutrient needs at different stages of growth.** For example, legumes might require more nitrogen for nitrogen fixation, while fruits might benefit from additional potassium for better quality.

#### Benefits/Significance of Balanced Fertilization:

- By providing the **optimal mix of nutrients**, plants can grow to their full potential, leading to higher yields.
- Balanced nutrients contribute to stronger plants with **better resistance to pests and diseases**, ultimately improving the quality of the harvest.
- Overuse of **single-nutrient fertilizers** can disrupt soil health. Balanced fertilization helps maintain a **healthy soil ecosystem**, promoting long-term sustainability.
- Excessive fertilizer application can contribute to **nutrient runoff, polluting water bodies.** Balanced use minimizes this risk.

- By **preventing over-fertilization** and nutrient deficiencies, balanced fertilization can optimize resource utilization and reduce overall fertilizer costs.

#### Issues/Challenges related to Balanced Fertilization:

- **Urea**, a single-nutrient nitrogen fertilizer, is heavily subsidized by the government, making it **cheaper than other fertilizers like DAP** (diammonium phosphate) containing phosphorus and MOP (muriate of potash) containing potassium. This incentivizes the overuse of urea and neglects other crucial nutrients.
- The current system for setting **fertilizer prices fails to consider market forces**, leading to imbalances. For example, the price of Muriate of Potash (MOP), a key source of potassium, is **too high for both** farmers using it directly and fertilizer companies including it in blends. This **discourages MOP use**, contributing to widespread potassium deficiencies in Indian farms.
- **The lack of adequate soil testing facilities** in the rural and remote areas of India makes it difficult for farmers to access them for balanced fertilization. Even if tests are done, **interpreting the results and translating them** into fertilizer recommendations requires proper training and mechanisms for both farmers and extension workers.
- Traditional practices and limited knowledge mostly hinder the adoption of balanced **fertilization techniques**. It is due to the lack of precise fertilizer application techniques resulting in issues of over-fertilization and under-fertilization along with **a limited focus on micronutrients**.
- The **Nutrient-Based Subsidy (NBS) Scheme**, meant to encourage balanced use, failed because it didn't address urea pricing. Urea consumption continued to rise despite NBS.

#### Essential Nutrients for Plant Growth:

- **Primary Nutrients: Nitrogen (N), Phosphorus (P), and Potassium (K)** are the most crucial nutrients needed in larger quantities. They play **vital roles in plant** structure, energy production, and overall health.
- **Secondary Nutrients:** Sulphur (S), Calcium (Ca), and Magnesium (Mg) are also essential but **required in smaller amounts** compared to primary nutrients.
- **Micronutrients:** Trace elements like Iron (Fe), Zinc (Zn), Copper (Cu), Manganese (Mn), Boron (B), and Molybdenum (Mo) are needed in very small quantities but are still critical for specific plant functions.

## FUNGI

### GS III – Environmental Conservation

**Context:** United Nations Biodiversity has urged people globally to use the word 'funga' whenever they say 'flora and fauna', to highlight the importance of fungi.

#### Fungi:

- **Fungi or fungus** are a diverse group of **eukaryotic microorganisms or macroscopic organisms** that belong to their **biological kingdom**, distinct from **plants, animals, and bacteria**.

#### Characteristics of Fungi:

- Like **plants, animals, and protists, fungi** have complex, **membrane-bound cell organelles and a true nucleus**.
- **Fungi** are primarily **decomposers or saprophytes**, meaning they obtain nutrients by **absorbing organic matter** from their **surroundings**.
- Fungi secrete enzymes to **break down complex organic compounds** into simpler substances, **which they can then absorb**.

#### Benefits of Fungi:

- **Fungi** can convert nutrients to make them accessible to **plants**, acting as **decomposers** by **breaking down organic matter**, thereby enhancing **nutrient cycling** and **soil fertility**.

- **Fungi** play a vital role in **soil carbon storage** by participating in the **carbon cycle**. They decompose **organic matter**, **cycle carbon** from **dead plants**, and form **symbiotic relationships** with **plant roots**.
- Fungi have **numerous beneficial applications**. **Yeasts**, for instance, are used in **baking** and **brewing**. **Fungi** also produce **antibiotics** like **penicillin**.
- Some **fungi**, like **mushrooms** and **truffles**, are **edible** and **prized in cuisine**. Others, like **molds**, are used in **cheese production**.
- **Fungi** have been found to help degrade **various pollutants** from the **environment**, such as **plastic** and other **petroleum-based products**, **pharmaceuticals** and **personal care products**, and **oil**.

#### Harmful Effects of Fungi:

- **Fungi** can cause a variety of diseases in **humans** and **animals**. **Examples** include **athlete's foot (caused by dermatophytes)**, **ringworm**, **histoplasmosis**, and **aspergillosis**. Some fungi produce **toxic compounds** known as **mycotoxins**, which can **contaminate food** and lead to **health problems** when consumed.
- **Fungal pathogens** can infect and damage **crops** and **plants**, leading to **significant economic losses** in agriculture. **Examples** include **rust**, **powdery mildew**, and various types of **fungal blights**.
- Exposure to **fungal spores**, especially in **indoor environments** with **high humidity**, can **trigger allergies** and **respiratory problems** in some individuals. Conditions like **allergic rhinitis** and **allergic bronchopulmonary aspergillosis** are associated with **fungal allergens**.
- **Fungi** can **break down** materials such as **textiles**, **leather**, and **paper**, which can be detrimental if these materials are not properly preserved or stored.

#### Why has the UN Biodiversity urged to use the word 'Funga'?

- According to **UN Biodiversity**, "It is time for **fungi** to be recognised and protected on an equal footing with **animals** and **plants** in **legal conservation frameworks**".
- There would be **no life on Earth** without **fungi**, **yeasts**, **molds**, and **mushrooms** as they are critical to **decomposition** and **forest regeneration**, **mammalian digestion**, **carbon sequestration**, **the global nutrient cycle**, and **antibiotic medication**.

## CAR-T CELL THERAPY

### GS III – Indigenization of Technology

**Context:** NexCAR19 is India's first indigenously-developed CAR-T cell therapy

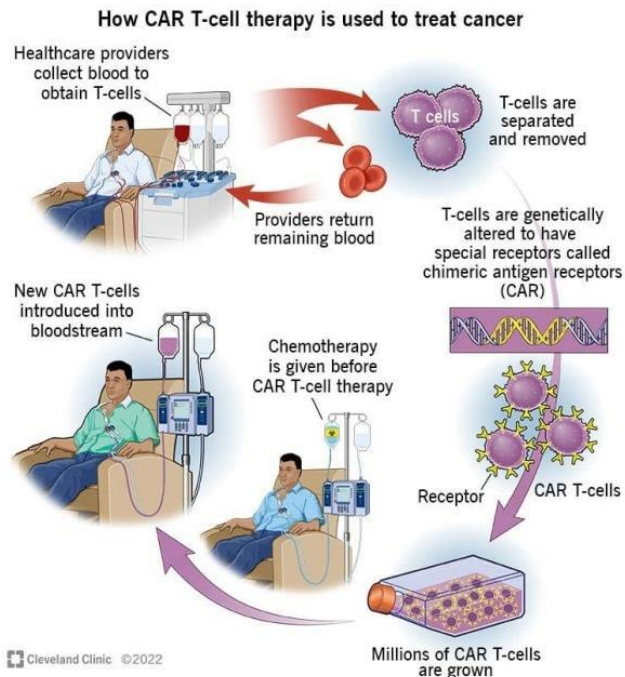
#### Chimeric Antigen Receptor (CAR) T- Cell Therapy:

- It is a revolutionary therapy that modifies immune cells, specifically T-cells, by turning them into potent cancer fighters known as CAR-T cells.
- It is a **breakthrough** in cancer treatment.
- It has **been approved for leukaemias** (cancers arising from the cells that produce white blood cells) and **lymphomas** (arising from the lymphatic system).

#### Significance of CAR-T Cell Therapy:

- Unlike chemotherapy or immunotherapy, which require mass-produced injectable or oral medication, CAR T-cell therapies use a **patient's cells**.
- They **are even more specific than targeted agents** and directly stimulate the patient's immune system to fight cancer, leading to greater clinical efficacy. That's why they're referred to as "living drugs."
- The cells are even more specific than targeted agents and directly activate the patient's immune system against cancer, making the treatment more clinically **effective**
- Chemotherapy or immunotherapy comprises molecules that bind to the tumour or block chemical pathways that allow the tumour to grow or multiply but **don't directly affect the immune system**.
- In CAR T-cell therapy, the immune system is activated when the modified T-cells are reintroduced into the body so the **immune system can't resist** such drugs as in old treatment methods.

**Advantages of CAR-T Cell Therapy:**



- It can regulate the unregulated cells by strengthening the immune system.
- It is used where patients with cancers that have returned after an initial successful treatment or haven't responded to previous combinations of chemotherapy or immunotherapy.
- In certain kinds of leukaemias and lymphomas, the efficacy is as high as 90%.
- For prostate, lung, colon, and some other organs, CAR T-cell therapy can cure patients who have evaded multiple lines of treatment.

**Concerns/Challenges related to CAR-T Cell Therapy:**

- The difficulty of **preparing CAR T-cell therapies** has been a major hindrance to their widespread use. The first successful clinical trial was published a decade ago, and the first indigenously developed therapy in India was performed in 2021.

- Introducing any new therapy faces the twin challenges of cost and value as CAR T-cell therapy will be unaffordable to most Indians.
- In certain kinds of leukaemias and lymphomas, the efficacy is as high as 90%, whereas, in other types of cancers, it is significantly lower.
- Having access to the global standard of care is every patient's right but the treatment incurs out-of-pocket expenses for their treatment since insurance coverage is minimal.

**T Cells:**

- They also known as **T lymphocytes**, are a type of white blood cell that play a central role in the immune response.
- T cells are involved in **cell-mediated immunity, which means they help the body recognize and respond to foreign substances**, such as viruses, and bacteria, and abnormal cells, such as cancer cells.

**SEPARATISM**

**GS III – Challenges to Internal Security**

**Context:** The External Affairs Minister of India suggested focusing on the nexus between separatism and organized crime.

**Separatism:**

- It is a political phenomenon where political actors from one or more sub-systems shift their loyalties, expectations, and political activities away from a central jurisdiction and towards their own center.

**Factors responsible for the rise of separatist tendencies:**

- Regional imbalance in economic development, for example, regional aspirations from Northeast India were mainly because the region suffered neglect in developmental terms after independence.
- Cultural identity that led to the demand for Nagalim which is based on the preservation of their different culture and social practices.
- Historical reasons like after independence one of the reasons for the movement for secession in Mizoram



was that some Mizos believed that they were never a part of British India and therefore did not belong to the Indian union.

- Loss of public confidence in the capacity of the state to protect their life and property. For example, the demand for separate states in the West African states of Mali, Guinea, and Burkina Faso.
- Some people of Ukraine believe that it should integrate into the EU and NATO and others believe in close cooperation with Russia.
- Many secessionist movements have support from the international community in the form of ideological and financial support.

#### India's approach to separatist movements and other regional aspirations:

- India has responded to regional aspirations through democratic negotiations rather than through suppression for example signing the Mizo accord to bring peace in Mizoram.
- Groups and parties from the region are given a share in power so that they have a say in their development.
- Special attention and planning to ensure sustainable development of areas with inadequate infrastructure, and limited access to resources by programs like the Aspirational District Programme.
- There are special provisions for some states and regions to have autonomy. The Sixth Schedule of the Constitution allows different tribes complete autonomy in preserving their practices and customary laws.
- Force is used against groups such as the United Liberation Front of Assam for maintaining peace in the region.

## DRAFT DIGITAL PERSONAL DATA PROTECTION (DPDP) RULES

### GS III – Awareness in the fields of IT

**Context:** The Ministry of Electronics and Information Technology (MeitY) released the much-anticipated Draft Digital Personal Data Protection (DPDP) Rules — a key moment in India's journey to regulate digital personal data. This step follows the passage of the DPDP Act, 2023, bringing India closer to operationalizing its framework for safeguarding personal data.

#### Draft Digital Personal Data Protection (DPDP) Rules 2025:

- It is a set of rules that operationalize the Digital Personal Data Protection Act (DPDP Act) of 2023, to protect citizens' digital personal data while fostering India's digital economy and innovation.
- It allows the transfer of certain personal data outside India, as approved by the government.
- It granted citizens to demand data erasure, appoint digital nominees, and have user-friendly mechanisms to manage their data-by-datafiduciaries.
- Data retention is allowed for up to three years from the last interaction with the Data Principal (Users) or the effective date of the rules, whichever is later.
- It prescribes a digital by-design Data Protection Board of India (DPBI) for consent mechanisms and grievance redressal, for faster resolution of complaints and grievances online.
- Graded responsibilities cater to Startups and MSMEs with lower compliance burdens, while Significant Data Fiduciaries have higher obligations.
- It allows the digital platform to collect consent through consent managers.
- It has spelled out a framework for setting up the DPBI that will have civil court powers for personal data breach complaints.

#### Significance/Advantages of the Digital Personal Data Protection Rules 2025:

- It provides clear legal guidelines for businesses and individuals, reducing ambiguity and legal risks.
- **It builds** trust between individuals and organizations by demonstrating a commitment to data privacy and security.
- **It aligns** with international data protection standards, facilitating cross-border data flows and fostering a competitive digital economy.
- **It promotes** consistency and predictability in data protection practices across different sectors and



jurisdictions.

- **It empowers** individuals with control over their data, fostering a sense of agency and trust in the digital world.
- **It encourages** the development of privacy-preserving technologies that enable innovation while respecting individual rights.

#### Issues/Challenges associated with the Digital Personal Data Protection Rules 2025:

- The emergence of AI, IoT, and other disruptive technologies presents unique challenges for data protection, such as algorithmic bias, lack of transparency, and the potential for misuse.
- There are challenges in implementing robust security measures to protect data from cyber threats like hacking, ransomware, and data breaches.
- It exacerbates existing digital divides, impacting marginalized communities and limiting their access to digital services and opportunities.
- There are difficulties in implementing and enforcing data protection regulations within organizations.
- There is a lack of awareness and training among employees on data protection best practices.
- There are issues in coordinating data protection policies and enforcement across borders.

## BIG DATA ANALYTICS

### GS III – IT and Computers

**Context:** India has joined the UN Committee of Experts on Big Data and Data Science for Official Statistics (UN-CEBD), which underscores the country's growing stature in the global statistical community and highlights its commitment to leveraging data and technology for informed decision-making.

#### Big Data:

- It involves collecting and analyzing vast amounts of information to uncover patterns, trends, and insights, often requiring advanced technology due to its size and complexity.

#### The 5Vs that drive big data are:

- **Volume** denotes the quantity of data accumulated, encompassing both structured and unstructured formats.
- **Velocity** indicates the speed at which new data is generated and collected.
- **Variety** describes the diverse range of data types and formats that are gathered for analysis.
- **Value** highlights the practical worth or benefit of the data acquired.
- **Veracity** pertains to the reliability and accuracy of data originating from various channels.

#### Significance of Big Data Analytics:

- **It helps** organisations in making data-driven decisions, leading to improved outcomes by providing deep insights.
- It enables predictive analytics which can forecast future events and behaviours by identifying trends and patterns.
- **It helps** businesses to understand customer preferences and behaviours better by allowing for targeted marketing and personalised customer experiences.
- **It can help** streamline operations, reduce costs, and increase efficiency across various business processes by analysing large data sets.
- It can drive innovation, influencing new products and service development by identifying needs and opportunities.
- **It can provide** a competitive edge by uncovering opportunities and optimising strategies by analysing big data.

#### Issues/Challenges with Big Data Analytics:

- It can infringe on privacy through issues like data privacy and the principle of net neutrality.

- It faces technical challenges such as inadequate infrastructure for data handling, storage constraints, and difficulties with scalability and real-time processing.
- **It raises** questions about rights and monetisation in determining who owns data, especially when it is generated by users but collected by platforms.
- **It can** perpetuate existing biases if they're not carefully designed and monitored, leading to discrimination.
- It may widen the gap between those who can analyse and leverage it and those who do not.

#### **UN Committee of Experts on Big Data and Data Science for Official Statistics (UN-CEBD):**

- It was created to further investigate the benefits and challenges of Big Data, including the potential for monitoring and reporting on sustainable development goals.
- As part of the committee, India will contribute to shaping global standards and practices in harnessing Big Data and data science for official statistical purposes.
- This membership is a strategic opportunity for India to align its domestic advancements in Big Data and data science with international goals, showcasing the country's capability to lead transformative initiatives in the data domain.
- It will also complement India's ongoing efforts to streamline statistical production and drive innovation in data collection, processing, and analysis to reduce the time lag in data availability.
- It will also improve decision-making and provide policymakers with real-time insights for evidence-based decisions, addressing key socio-economic challenges.

## **INLAND FISHERIES**

### **GS III – Infrastructure**

**Context:** India has recently overtaken China to become the largest contributor of inland capture water fisheries, thereby emerging as one of the top three fish-producing countries in the world.

#### **Inland Fisheries:**

- It refers to the harvesting, management, and conservation of fish generally in freshwater bodies such as rivers, lakes, reservoirs, ponds, etc.
- It is mainly done by two methods:
  - Capture fisheries: It is the method of obtaining fish directly from lakes, rivers, or ponds with the help of fishing gear or nets, etc.
  - Culture fisheries: It is the method of obtaining fish by raising and harvesting them in controlled environments with tools of breeding or feed management, etc.

#### **Significance/Benefits of Inland Fisheries:**

- It provides nutritional and food security as fishes are rich in protein, omega-3 fatty acids, and Vitamin D. They act as cheap alternatives and help in dietary diversity and nutritional requirements.
- It provides economic benefits like employment opportunities, development of rural infrastructure, diverse supply chain, exports of processed products increasing foreign exchange earnings, etc.
- It helps to maintain healthy ecosystems by controlling invasive species and supporting biodiversity. Bioremediation helps in habitat restoration and removal of excess nutrients from urban or agricultural runoff and reduces the likelihood of toxic algal blooms.
- Ecological balance is sustained as fishes being an important component of aquatic food webs benefit other species as well.
- Traditional knowledge systems of the community and their strong cultural ties contribute to cultural heritage.
- Recreational fishing also promotes physical and mental well-being.

#### **Issues/Challenges associated with Indian Inland Fisheries:**

- Slow adoption of cutting-edge technologies such as innovative hatchery technologies, water-efficient aquaculture practices, etc.
- Limited extension services such as lack of standardised prices, and shortage of soil and water testing facilities limit the scope of development of the sector.
- Like lack of timely credit, inadequate price discovery mechanism due to lack of efficient electronic trading platform, post-harvest losses, etc.
- Like inadequate cold chain facilities, inadequate post-harvest infrastructure, etc.
- Inadequate mechanisation and use of traditional boats often result in water pollution and improper aquaculture management.
- Sustainability issues due to the rising demand for animal protein, fish stocks are often being fully exploited, overfished, or severely depleted at various places.

## LAND RECORD DIGITISATION

### GS III – Land Reforms in India

**Context:** The Unique Land Parcel Identification Number (ULPIN) scheme is among the slew of technology-driven land reform initiatives implemented under the Centre's broader Digital India Land Records Modernization Programme (DILRMP) that aims to digitize the country's complex agricultural land records and bring transparency to land transactions.

#### Digital India Land Record Modernisation Programme (DILRMP):

- It is a **central sector scheme** that has been extended to 2023-24, to complete its original targets as well as expand its ambit with a slew of new schemes.
- It is being implemented by the Department of Land Resources under **the Ministry of Rural Development**.
- It attempts to build upon the commonalities that exist in the arena of land records in various States to develop an appropriate Integrated Land Information Management System (ILIMS) across the country.
- Its **major components include the computerization of land records, survey/re-survey, and computerization of registration.**

#### Rationale Behind Land Record Digitisation:

- It minimizes the potential for manipulation, tampering, and unauthorized alterations of land records, thus promoting transparency and reducing corruption in land administration.
- It reduces conflicts arising from land claims, boundary disputes, or unauthorized encroachments by maintaining accurate and up-to-date land records.
- It ensures transparent recording of ownership details and transaction history, thereby protecting the rights of landowners and supporting economic development.
- It enables informed decision-making in land use, infrastructure development, and urban planning.
- It provides citizens with quick and convenient access to land-related information, improving service delivery.

#### Issues/Challenges associated with Land Record Digitisation:

- It faces challenges due to India's linguistic diversity that can hinder rural populations' understanding of digitization, as farmers and landowners struggle with digital systems not available in their native languages.
- Community-based land ownership in many northeastern states complicates digitizing and standardizing land records.
- The DILRMP relies on active participation from stakeholders like landowners, buyers, sellers, and tenants, but lacks awareness and sensitization about its benefits and procedures among them.
- India's complex land management systems, involving multiple departments and regulations, hinder seamless digitization and stakeholder alignment.
- It faces challenges due to insufficient funds and inadequate infrastructure to modernize land records effectively.

**Note:**

- As of 2024, 98.5% of rural land records have been digitized, marking a significant milestone in India's efforts toward land reforms and transparency.

**SACRED GROVES**

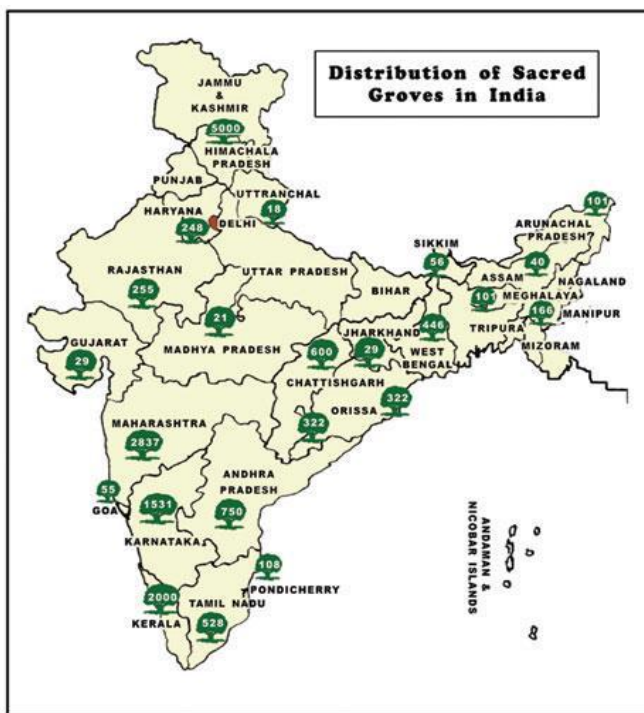
**GS III – Environmental Conservation**

**Context:** The Supreme Court asked the Centre to create a comprehensive policy for the governance and management of sacred groves across the country while underlining their ecological importance.

**Sacred Groves:**

- It includes patches of forests or natural vegetation that hold deep religious and spiritual meaning to indigenous communities.
- These spaces are protected by local communities because of their religious beliefs and traditional rituals.
- India is estimated to have around 100,000 to 150,000 sacred groves (IUCN).

**Significance/Importance of Sacred Groves:**



- They are often associated with deities who are believed to protect the community and the groves which are deeply rooted in cultural traditions.
- They serve as venues for festivals, weddings, and youth socialization. For example, Sabarimala in Kerala.
- They often serve as the last refuge for endemic species in the region. For example, at least 50 rare and endangered plant species of Meghalaya are confined to sacred groves.
- They enhance the soil stability and prevent soil erosion in the area.
- They help Indigenous communities by providing edible fruits, leaves, fibers, gums, resins, and medicinal plants.

**Issues/Threats faced by Sacred Groves:**

- The disappearance of the traditional belief systems which were fundamental to sacred groves which are now considered as superstition has led to the

destruction of sacred groves.

- Due to rapid urbanization and developmental interventions, including roads, railways, dams, and commercial forestry, have led to the destruction of sacred groves in many parts of the country.
- Overgrazing and trampling by livestock leads to soil erosion. For instance, in Punjab, sacred forests are shrinking due to over-grazing and agricultural expansion.
- Invasion by exotic weeds such as *Eupatorium odoratum*, *Lantana camara*, and *Prosopis juliflorais* posing a serious threat to endemic species of the groves.

**Key Directives of the Supreme Court:**

- It proposed to grant legal protection to Sacred Groves under the Wildlife Protection Act of 1972, especially through Section 36I (declaration of community reserves).
- The MoEFCC shall create a comprehensive policy for the governance and management of sacred groves

across the country.

- The MoEFCC shall also develop a plan for a nationwide survey of sacred groves, identifying the area, and extent of the groves.
- The MoEFCC should create policies and programmes that protect the rights of the communities and involve them in sacred groves and forest conservation. The court has also suggested the Rajasthan government to empower traditional communities as custodians of sacred groves under the Scheduled Tribes And Other Traditional Forest Dwellers (Recognition Of ForestRights) Act of 2006.
- Governments must take proactive measures to promote sustainable development and gender equality through the implementation of ideas like the Piplantri model in other regions.

**Note:**

- Piplantri is a village in the Rajsamand district of Rajasthan, which went on to gain international recognition for its unique model where the villagers plant 111 trees whenever a girl child is born.

## TAXATION SYSTEM IN INDIA

### GS III – Government Budgeting

**Context:** The present tax system retards growth and discourages fresh investment. This leads to lower revenue collection, which is then sought to be remedied by higher taxes, which, in turn, leads to lower growth. The dangers of such a downward spiral are real and require urgent attention.

#### Tax System in India:

- It consists of a mix of Direct Taxes, Indirect Taxes, and Other Taxes.

**Direct Taxes** are paid by individuals or entities to the government and cannot be transferred to others.

- Income Tax is imposed on progressive income, with different slabs for various taxpayer categories.
- Capital Gains Tax includes a tax on gains from investments, with different rates for short-term and long-term holdings.
- Securities Transaction Tax is a tax on transactions involving securities in the stock market.
- Perquisite Tax is a tax on benefits provided by an employer to employees.
- Corporate Tax is tax paid by companies on their earnings, with different slabs for various income levels.

**Indirect Taxes** are levied on goods and services, collected by intermediaries from consumers at the point of sale, and remitted to the government.

- Goods and Services Tax is a consumption-based tax on value-added goods and services (ad valorem tax), levied at each stage of the supply chain. It is regressive as it is imposed at the same rate on all individuals irrespective of income.
- Value Added Tax (VAT) is a tax on goods sold, applied at each stage of the supply chain. It is imposed on goods that are excluded from the GST regime like alcoholic beverages, petroleum products, etc.
- Custom Duty & Octroi are taxes on imported goods (Custom Duty) and on goods crossing state borders (Octroi).
- Excise Duty is a tax on goods manufactured within India.

**Other Taxes** are levied for specific purposes, often funding infrastructure or welfare programs.

- Education Cess is a 2% tax to fund educational initiatives like developing classrooms, and libraries, providing scholarships, etc.
- Swachh Bharat Cess is a tax to fund cleanliness initiatives like the Swachh Bharat Mission.
- Krishi Kalyan Cess is a tax to support agricultural welfare like irrigation projects, subsidized seeds, etc.

#### Issues/Challenges in the Current Taxation System:

- The 55th GST Council's recommendation for a retrospective tax amendment erodes investor confidence and

discourages long-term investments, as companies cannot rely on consistent rules.

- It leads to business frustration and inefficiencies due to the GST Council's single-minded focus on maximizing revenue resulting in arbitrary and exaggerated tax demands.
- The denial of input tax credits, particularly in sectors like real estate, is economically detrimental. This increases the final price for consumers, distorts market competition, and dampens sectors that could stimulate growth.
- The multiple tax rates in both indirect and direct taxes, complex tax notifications, complicated system of exemption and concessions, and circulars create an environment that benefits tax professionals rather than businesses.
- Corporations, particularly multinationals, use transfer pricing to shift profits from high-tax to low-tax jurisdictions, reducing their tax liabilities which forces the government to generate revenues from other sources like high indirect tax rates, surcharges, and cess.

#### Consequences of Complex Tax Structure:

- It makes domestic manufacturing less competitive compared to imported goods, leading to over-reliance on foreign products.
- It also leads to an inverted duty structure where the rate of tax on inputs used is higher than the rate of tax on the finished goods.
- It creates higher costs for businesses leading to reduced competitiveness and suppressed growth. It weakens the Indian rupee which escalates the trade deficit.
- Due to unclear and retrospective amendments to tax structure, there arises uncertainty for investors which negatively impacts the ease of doing business.
- It may lead to either underreporting or tax evasion as businesses struggle to navigate the complex tax system which forces the government to resort to higher taxes to meet fiscal targets, which leads to a cycle of stagnation.

## GRAVITY ENERGY STORAGE

### GS III –Energy

**Context:** Gravity energy storage is emerging as a viable solution to address a major challenge of solar and wind power which is intermittent supply.

#### Gravity Energy Storage:

- It is a new technology that stores energy using gravity. It has the potential to be a cornerstone of sustainable energy systems, with its capacity for long-term energy storage and low maintenance.
- The core principle of Gravity Energy Storage lies in potential energy. It involves lifting a heavy mass during **excess energy generation** and releasing it to produce electricity when demand rises or solar energy is unavailable.
- It avoids chemical-based energy storage, making it environmentally sustainable and long-lasting.

#### Significance/Advantages:

- It can **last for decades with minimal maintenance as it has** minimal mechanical degradation.
- It avoids **harmful chemical reactions**, reducing environmental impact and disposal issues, which enhances the move towards a greener planet.
- It can be **more cost-effective for large-scale applications**, with lower-level costs of energy and storage.
- It can be adapted to different energy capacities, making them ideal for grid-scale storage.
- It is particularly advantageous in areas with space constraints or environmental concerns that restrict the deployment of other storage systems.

## CENTRE – STATE REVENUE

### GS III –Fiscal Policy

**Context:** In the last decade (FY16 to FY25), 23-30% of the total revenue of States was collected from the Centre as



transfers. However, in the 2000s and the first half of 2010, the share was 20-24%.

#### Key Trends in States' Revenue Composition:

- States' revenue expenditures increased by 14% during the COVID-19 pandemic due to welfare measures.
- The state's debt-to-GDP ratio is at 28.5% in March 2024. This indicates that states' fiscal health is still under strain.
- State debt levels exceed the Fiscal Responsibility and Budget Management Committee's recommended debt-to-GDP ratio of 20% for states, highlighting the unsustainable debt burden faced by states.
- States' revenue from central transfers has increased to 23-30% of their total revenue in the last decade, compared to 20-24% in the 2000s and early 2010s.
- States' own tax revenue has consistently remained below the 50% mark as a share of total revenue over the last decade, whereas it often exceeded 50% in the 2000s.
- The share of non-tax revenue in total revenue is projected to fall below 24% in FY25, the lowest in 25 years.
- Revenue from avenues like stamp duty, registration fees, and motor vehicle taxes has been insufficient due to sporadic and inefficient collection efforts.

#### Implications of Increasing Dependency of States on Centre:

- States often depend heavily on the centre for funding due to the uneven distribution of revenue-raising powers. It restricts states' fiscal independence, limiting their capacity to tailor policies to local needs.
- Weaker fiscal states often face inadequate resources as central allocations may prioritize performance over need, deepening inter-state inequalities and widening regional disparities.
- It creates political tensions as centralised decision-making in tax policies leads to disagreements between the centre and opposition-ruled states.
- States' increasing dependence on the Centre could strain the nation's overall fiscal health, limiting the Centre's ability to support states during economic downturns or crises.

#### Sources of Revenue for States:

- State's Own Tax Revenue (OTR) includes taxes levied by state governments such as State GST (SGST), State Excise Duty on alcohol, Sales Tax or Value Added Tax (VAT) on items not covered by GST, Stamps, and Registration Duty on property transactions, Vehicle Registration Tax, and Entertainment Tax on movie tickets.
- States' Non-Tax Revenue includes earnings from the lease or sale of natural resources, economic services like irrigation, health, and education, sale of lotteries, and interest receipts from loans provided to public sector undertakings or local bodies.
- Grants from the Central Government support states in areas like welfare, infrastructure, and disaster relief, providing critical financial assistance.
- States' Share of Central Taxes refers to the portion of tax revenue collected by the Union Government and shared with the states as mandated by Article 270 of the Indian Constitution.

## WORLD EMPLOYMENT AND SOCIAL OUTLOOK (WESO): TRENDS 2025

### GS III – Employment

**Context:** Economic growth was at 3.2 percent in 2024, down from 3.3 percent and 3.6 percent in 2023 and 2022, respectively. A similar expansion is expected in 2025 and then a gradual deceleration to set in over the medium term. Rapidly decelerating inflation rates and strong growth in a few major economic centres have helped the global economy to stabilize, the report on World Employment and Social Outlook: Trends 2025 (WESO Trends) flagged.

#### Key Highlights of the World Employment and Social Outlook (WESO): Trends 2025:

- The global unemployment rate held steady at 5% in 2024, with youth unemployment notably high at 12.6%.
- Youth unemployment is highest in upper-middle-income countries at 16%, and lower in low-income

countries at 8%, often due to underemployment and informal work.

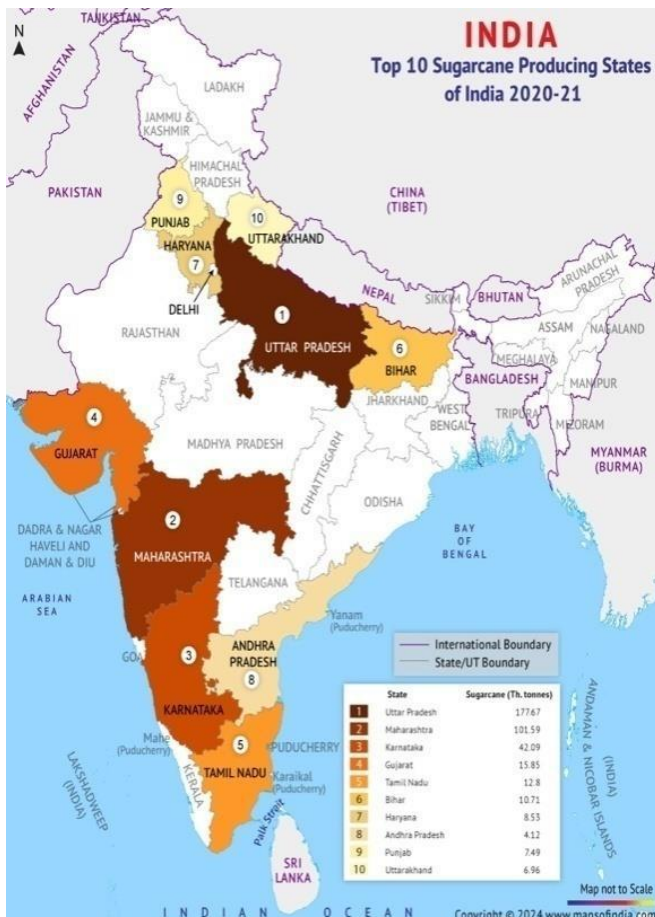
- Low-income countries (LIC) face challenges in generating decent jobs, and informal employment has returned to pre-pandemic levels.
- In Sub-Saharan Africa, employment growth is largely in the informal sector, where workers lack stability and social protection, where around 62.6% of households live on less than USD 3.65 per day.
- Economic growth for 2024 was recorded at 3.2%, slightly down from 3.3% in 2023 and 3.6% in 2022. It forecasts a similar economic expansion in 2025, followed by a gradual deceleration in the medium term.
- The global jobs gap stood at 402 million in 2024. This includes 186 million unemployed individuals, 137 million discouraged workers, and 79 million who are unable to seek employment due to caregiving responsibilities.
- Labour force participation has increased in advanced economies, particularly among older workers and women and it has declined in low-income nations, contributing to slower employment growth globally.
- In 2024, the global NEET (Not in Education, Employment, or Training) population reached 259.1 million, with 85.8 million young men (13.1%) and 173.3 million young women (28.2%).
- High interest rates and economic challenges have resulted in unsustainable public debt, particularly in developing countries.
- Real wage growth remains weak post-pandemic due to low employment growth and a shift in labor market power toward employers.
- The renewable energy sector saw global employment rise from 13.7 million in 2022 to 16.2 million in 2023, driven by investments in solar and hydrogen energy, but benefits are unevenly distributed, with 46% in China.

## SUGAR INDUSTRY IN INDIA

### GS III – Industry

**Context:** The Centre allowed the export of 10 lakh metric tonnes (LMT) of sugar during the 2024-25 season (October-September). Union Minister for Consumer Affairs, Food and Public Distribution Pralhad Joshi said the measure “will benefit 50 million farmer families and 500,000 workers”.

### Sugar Industry in India:



- India is the largest consumer and the second-largest producer of sugar in the world contributing around 19% of global sugar production.
- India’s sugar production in the current sugar season is estimated to be 27 million tonnes in 2024-25, a decline from 32 million tonnes last year.
- The sugar industry is broadly distributed over Uttar Pradesh, Bihar, Haryana and Punjab in the north and Maharashtra, Karnataka, Tamil Nadu and Andhra Pradesh in the south.
- The statutory minimum price (SMP) is announced by the central government based on the cost of cultivation estimated by the Commission for Agricultural Costs and Prices (CACP). This is the basic price which the sugar mills must pay sugarcane growers.

### Geographical Conditions for the Growth of Sugar:

- It requires temperature between 21-27°C with hot and humid climate.
- It requires rainfall around 75-100 cm.
- It requires deep rich loamy soil.

### Significance of the Sugar Industry in India:

- It is a highly labour-intensive industry providing livelihoods for approximately 50 million farmers and their families.
- It supports various sectors and promotes economic development at the local and national levels as it spans the entire value chain, from sugarcane cultivation to the production of sugar and alcohol.
- It generates several byproducts, including ethanol, molasses, and bagasse, which further enhance economic growth.
- It provides nutrition to livestock as Molasses, a byproduct of sugar production, is highly. It is also used in alcohol production, contributing to the agricultural economy.
- It reduces reliance on crude oil imports through ethanol-blended fuels as the majority of ethanol in India is produced from sugarcane molasses.
- The fibrous residue after sugar extraction, Bagasse, serves as a fuel source and is an essential raw material for the paper industry.

### Issues/Challenges Associated with the Sugar Industry in India:

- It exacerbates water scarcity issues as it is a highly water-intensive crop which is predominantly grown in monsoon dependent areas.
- Delayed payments to sugarcane farmers by sugar mills create financial distress among the farming community due to factors like financial stress on mills, regulatory issues, and complex pricing mechanisms.
- The seasonal availability of sugarcane poses a challenge, as delays in crushing beyond 24 hours after harvest result in sucrose loss.
- The sugar industry relies heavily on manual labour, which contributes to higher production costs and labour-related challenges.
- The sugar recovery rate in Indian sugar mills has remained stagnant at 9.5-10%, much lower than the 13-14% seen in some other countries.
- The sugar industry is characterized by cyclic price fluctuations influenced by factors like global supply and demand, weather conditions, and government policies. These price swings can affect the profitability of sugar mills and impact the income of farmers.
- Sugarcane cultivation competes with other food and cash crops like cotton, oilseeds, and rice, leading to supply fluctuations and price volatility, especially during surplus periods when prices fall.
- Rising health consciousness and concerns related to excessive sugar consumption can impact domestic demand. This calls for diversification of the sector to produce other products like ethanol, which also has environmental benefits.

### Government Initiatives for the Sugar Industry:

- The Fair and Remunerative Price (FRP) is a hybrid approach for fixing sugarcane prices based on the recommendations of Commission for Agricultural Costs and Prices (CACP).
- Under the Ethanol Blending with Petrol (EBP) Programme, ethanol production capacity in molasses/sugar-based distilleries has expanded to 605 crore litres annually, with ongoing efforts to achieve the 20% ethanol blending target by 2025.
- Essential Commodities Act (ECA) of 1955 regulates sugar and sugarcane, giving powers to control the sugar sector.
- Sugarcane (Control) Order of 1966 fixes the FRP for sugarcane and ensures timely payments to farmers and regulates the production, sale, packaging, and international trade of sugar.
- Sugar Price Control Order of 2018 establishes the Minimum Selling Price (MSP) for sugar and allows inspections of sugar mills and storage facilities.

## PAPER 4

## SELF-DRIVING CARS AND ETHICAL DILEMMAS

## GS IV – Ethical concerns and dilemmas

**Context:** There were a series of lawsuits and a criminal case arising out of fatal Tesla accidents.

**Self-Driving Car:**

- It is a **vehicle capable of sensing its environment and operating without human involvement.**
- A **human passenger is not required to take control of the vehicle** at any time, nor is a human passenger required to be present in the vehicle at all.
- It can go anywhere a traditional car goes and does everything that an experienced human driver does.

**Self-Driving Cars and Ethical Dilemmas:**

- One of the biggest dilemmas of self-driving cars is **whether it would be right to hand over the control to the driver at the last instant.** This will not only raise a question about the ethics of self-driving cars but also the ethics of the driver.
- Self-driving cars are **robots that have been programmed using algorithms.** So, they are most likely to follow set rules or patterns in all cases.
- There is a debate about who should decide the ethics of self-driving cars. It can be **argued that no one is the right owner to decide the ethics of self-driving cases.** The decision must lie in the hands of the driver of the car.
- Some also argue that the best way for a **self-driving car is to make an impartial decision in case of accidents.** They **must not discriminate between humans based on age, gender, or other parameters.** They should always make the decision that causes the least impact.
- There is **always a risk of a cyber-criminal hacking** into the car's system to gain access to sensitive data or to carry out a misdeed.

## MEDIA INDEPENDENCE AND ETHICS

## GS IV – Ethics

**Context:** The resignation of Pulitzer Prize-winning cartoonist Ann Telnaes from The Washington Post following the rejection of her cartoon critiquing Jeff Bezos, the paper's owner highlights critical ethical dilemmas.

**Ethical Dilemmas Involved in Media Independence:**

- The rejection of Telnaes's cartoon due to its critique of the paper's owner exposes a clear conflict of interest which undermines editorial integrity and raises concerns about whether the media prioritizes ethical journalism or corporate interests.
- It suppresses the democratic principle of free expression by censoring dissenting voices. In many instances, the authorities challenge editorial cartoonists sparking debate when their work is stifled for corporate or political reasons.
- Media serves as a watchdog, holding power to account. When critiques of influential figures are suppressed, accountability is eroded, and the media risks becoming a tool for selective narratives.
- Media as a credible impartial platform for debate and information will be compromised when actions that prioritize corporate interests over journalistic integrity are chosen.
- Over-reliance on advertising revenue can compromise media independence, as outlets may avoid critical coverage of major advertisers, prioritizing profits over integrity.

**Measures/Suggestions to Strengthen Media Independence:**

- There should be robust policies for media organizations to ensure editorial decisions remain free from corporate or political influence.
- Public trust and credibility can be built by mandating disclosures about potential conflicts of interest within media organizations.
- There is a need for continuous ethical training for journalists and editors that can help them navigate conflicts of interest and uphold professional integrity.
- There is a need for alternative platforms that support independent journalism ensuring that diverse perspectives are represented and critical voices are heard.
- The awareness campaigns that empower citizens to demand accountability from media organizations should be organized.



## Practice Questions



Q1.) With reference to the Wholesale Price Index (WPI) and Producer Price Index (PPI) in India, consider the following statements:

1. WPI includes the prices of both goods and services, while PPI focuses only on goods.
2. The current base year for WPI in India is 2011–12.
3. PPI provides better insights into supply-side inflation compared to WPI.

Which of the statements given above is/are correct?

- (a) 1 and 2 only  
**(b) 2 and 3 only**  
(c) 1 and 3 only  
(d) 1, 2, and 3

Q2.) Consider the following statements regarding Di-Ammonium Phosphate (DAP):

1. DAP is the most widely used fertilizer in India, surpassing urea.
2. It provides both nitrogen and phosphorus, which are essential for plant growth.
3. India meets its entire demand for DAP through domestic production.

Which of the statements given above is/are correct?

- (a) 1 only  
**(b) 2 only**  
(c) 2 and 3 only  
(d) 1, 2, and 3

Q3.) With reference to the Major Dhyan Chand Khel Ratna Award, consider the following statements:

1. It is awarded annually for the most outstanding performance in the field of sports over the previous four years.
2. The award comprises a medallion, a certificate, and a cash prize of ₹1 lakh.
3. It is awarded to only one person in a year.

Which of the statements given above is/are correct?

- (a) 1 and 2 only  
**(b) 1 only**  
(c) 2 and 3 only

(d) 1, 2, and 3

Q4.) Which of the following is true regarding Trinidad and Tobago?

1. It is a twin-island nation located in the Pacific Ocean.
2. Trinidad is the smaller island, while Tobago is the larger one.
3. It is the southernmost island country in the Caribbean.
4. The country is not a member of the Commonwealth of Nations.

Select the correct answer using the code given below:

- (a) 1 and 2 only  
**(b) 3 only**  
(c) 1 and 4 only  
(d) 2, 3, and 4 only

Q5.) Why is underwater neutrino telescopes considered ideal for detecting neutrinos?

- (a) The high salinity of seawater enhances neutrino interactions.  
**(b) The darkness and large volume of optically transparent water allow the detection of Cherenkov radiation.**  
(c) Proximity to tectonic activity aids in better neutrino detection.  
(d) The presence of abundant marine life helps in studying neutrino behavior.

Q6.) Consider the following statements regarding Norovirus:

1. It is also known as the "winter vomiting bug."
2. Norovirus can be effectively killed by hand sanitizers.
3. The primary route of transmission is oral-faecal.

Which of the statements given above is/are correct?

- (a) 1 and 2 only  
(b) 2 and 3 only  
**(c) 1 and 3 only**  
(d) 1, 2, and 3



Q7.) With reference to the Unique Identification Authority of India (UIDAI), consider the following statements:

1. UIDAI was established as a statutory authority under the Aadhaar Act, 2016.
2. It functions under the Ministry of Home Affairs.
3. UIDAI is responsible for the issuance and lifecycle management of Aadhaar numbers.

Which of the statements given above is/are correct?

- (a) 1 and 2 only  
 (b) 2 and 3 only  
**(c) 1 and 3 only**  
 (d) 1, 2, and 3

Q8.) India is the seventh-largest producer of coffee globally. Consider the following statements about coffee cultivation in India:

1. Arabica coffee is grown at higher altitudes and is known for its superior flavor.
2. Karnataka is the largest coffee-producing state in India.
3. Coffee cultivation in India requires temperatures ranging from 5°C to 15°C.

Which of the statements given above is/are correct?

- (a) 1 and 2 only  
 (b) 2 and 3 only  
 (c) 1 and 3 only  
 (d) 1, 2, and 3

Q9.) With reference to the H-1B visa program, consider the following statements:

1. It allows U.S. employers to hire immigrant workers in specialized fields.
2. H-1B visas are issued for a maximum period of six years without the possibility of extension.
3. People born in India account for the majority of H-1B visa approvals annually.

Which of the statements given above is/are correct?

- (a) 1 only  
 (b) 1 and 2 only  
**(c) 1 and 3 only**  
 (d) 1, 2, and 3

Q10.) With reference to the Right to Property in India, consider the following statements:

1. The Right to Property is a Fundamental Right under Article 19 of the Indian Constitution.
2. Article 300-A of the Indian Constitution provides that no person shall be deprived of their property except by the authority of law.

Which of the statements given above is/are correct?

- (a) 1 only  
**(b) 2 only**  
 (c) Both 1 and 2  
 (d) Neither 1 nor 2

Q11.) With reference to the North Sea, consider the following statements:

1. It is bordered by the UK, Norway, and Iceland.
2. It is a major region for offshore oil production in Europe.

Which of the statements given above is/are correct?

- (a) 1 only  
**(b) 2 only**  
 (c) Both 1 and 2  
 (d) Neither 1 nor 2

Q12.) With reference to Savitribai Phule, consider the following statements:

1. Savitribai Phule was involved in setting up India's first school for girls in Pune.
2. She and her husband Jyotirao Phule established the Satyashodhak Samaj to promote widow remarriage and inter-caste marriage.

Which of the statements given above is/are correct?

- (a) 1 only  
 (b) 2 only  
**(c) Both 1 and 2**  
 (d) Neither 1 nor 2

Q13.) Which of the following statements about the Net-Zero Banking Alliance (NZBA) is/are correct?

1. NZBA is an initiative under the United Nations Environment Programme Finance Initiative (UNEP FI).
2. Banks that join NZBA commit to aligning their lending and investment portfolios with net-zero emissions by 2050.

3. The alliance includes all major U.S. banks, such as Goldman Sachs, Bank of America, and Citigroup.

Select the correct answer using the code given below:

- (a) 1 and 2 only  
 (b) 2 and 3 only  
 (c) 1 and 3 only  
 (d) 1, 2, and 3

Q14.) Which of the following is/are correct regarding Crimea?

1. Crimea is located on the northern coast of the Black Sea and is surrounded by the Sea of Azov and the Black Sea.
2. The region is known for its mud volcanoes and mineral springs, contributing to its spa industry.
3. Crimea became part of Russia in 2014 after the construction of the Crimea Bridge.

Select the correct answer using the code given below:

- (a) 1 only  
 (b) 1 and 2 only  
 (c) 2 and 3 only  
 (d) 1, 2, and 3

Q15.) Which of the following statements about Guru Gobind Singh is/are correct?

1. He introduced the five 'K's, also known as the Five Articles of Faith, followed by Sikhs.
2. Guru Gobind Singh declared the Guru Granth Sahib as the permanent Guru of Sikhs.
3. He founded the Khalsa and established the concept of Panj Piare in 1599.

Select the correct answer using the code given below:

- (a) 1 and 2 only  
 (b) 1 and 3 only  
 (c) 2 and 3 only  
 (d) 1, 2, and 3

Q16.) Which of the following statements about the Tashkent Declaration is/are correct?

1. It was signed in 1965 to end the Indo-Pakistani War.
2. The declaration facilitated the restoration of pre-war positions and the withdrawal of troops.
3. It was mediated by the United States.

Select the correct answer using the codes given below:

- (a) 1 and 2 only  
 (b) 2 and 3 only  
 (c) 1 and 3 only  
 (d) 1, 2, and 3

Q17.) Which of the following statements about the Z-Morh Tunnel is/are correct?

1. The Z-Morh Tunnel provides year-round connectivity to Sonamarg in Jammu and Kashmir.
2. It is part of the broader Zojila Tunnel project that connects Srinagar to Kargil.
3. The Z-Morh Tunnel is situated at an altitude of around 12,000 feet.

Select the correct answer using the codes given below:

- (a) 1 and 2 only  
 (b) 2 and 3 only  
 (c) 1 and 3 only  
 (d) 1, 2, and 3

Q18.) Which of the following statements about the Gaddi Dog is/are correct?

1. The Gaddi Dog is a breed native to the Himalayan regions, recognized for guarding livestock.
2. It is known for its ability to fend off predators like Snow Leopards, earning it the nickname 'Indian Panther Hound.'
3. It has been officially recognized by global kennel clubs.

Select the correct answer using the codes given below:

- (a) 1 and 2 only  
 (b) 2 and 3 only  
 (c) 1 and 3 only  
 (d) 1, 2, and 3

Q19.) With reference to the appointment of the Chief Election Commissioner (CEC) in India, consider the following statements:

1. As per the Chief Election Commissioner and Other Election Commissioners Act, 2023, only serving Secretaries to the Government of India are eligible for appointment as CEC.
2. The Selection Committee for appointing the CEC includes the Prime Minister, the Leader of the Opposition, and the Chief Justice of India.

3. The Search Committee for the appointment of the CEC is chaired by the Minister of Law and Justice.

Which of the statements given above is/are correct?

- (a) 1 and 2 only
- (b) 1 and 3 only
- (c) 3 only**
- (d) 1, 2, and 3

Q20.) With reference to the Comptroller and Auditor General of India (CAG), which of the following statements is/are correct?

1. The CAG conducts compliance audits, performance audits, and financial audits.
2. The CAG's audit reports are laid before the legislature within a specified time frame as per Article 151 of the Constitution.
3. The Public Accounts Committee examines selected CAG reports and seeks responses from the government.

Select the correct answer using the code given below:

- (a) 1 only
- (b) 1 and 3 only**
- (c) 2 and 3 only
- (d) 1, 2, and 3

Q21.) Consider the following statements regarding Pravasi Bharatiya Divas (PBD):

1. Pravasi Bharatiya Divas is celebrated every year on January 1st.
2. The Pravasi Bharatiya Samman Award is conferred by the Prime Minister of India.
3. The first Pravasi Bharatiya Divas was celebrated in 2003.

Which of the statements given above is/are correct?

- (a) 1 only
- (b) 1 and 3 only
- (c) 2 and 3 only
- (d) 3 only**

Q22.) Consider the following statements regarding the National Livestock Mission (NLM)

1. The NLM aims to improve feed and fodder availability and focuses on breed development for livestock and poultry.
2. It is implemented only as a Central Sector Scheme (CS).

3. Promotion of livestock insurance and risk management measures is one of its objectives. Which of the statements given above is/are correct?

- (a) 1 and 2 only
- (b) 1 and 3 only**
- (c) 2 and 3 only
- (d) 1, 2, and 3

Q23.) The Nankai Trough is significant because:

1. It is a tectonic subduction zone located near the Indian Ocean.
2. It is responsible for generating megathrust earthquakes.
3. It is part of the Pacific "Ring of Fire."

Select the correct answer using the codes given below:

- (a) 1 and 2 only
- (b) 2 and 3 only**
- (c) 1 and 3 only
- (d) 1, 2, and 3

Q24.) Which of the following is/are associated with Deccan Volcanism?

1. Formation of the Deccan Traps in west-central India.
2. Linked to the Cretaceous-Paleogene (K-Pg) mass extinction.
3. Triggered by the collision of the Indian plate with the Eurasian plate.

Select the correct answer using the codes given below:

- (a) 1 and 2 only**
- (b) 2 and 3 only
- (c) 1 and 3 only
- (d) 1, 2, and 3

Q25.) Consider the following statements:

1. Indian Army Day is celebrated on January 15 to commemorate the first Indian Commander-in-Chief taking charge of the Indian Army.
2. Pune is hosting the Army Day Parade for the first time in 2025.
3. The National Defence Academy is located in Hyderabad, India.

Which of the statements given above is/are correct?

- a) 1 only
- b) 1 and 2 only**
- c) 1, 2, and 3
- d) 2 and 3 only

Q26.) Which of the following factors can lead to rupee depreciation?

1. High crude oil prices
2. Robust economic growth in the US
3. Decreasing foreign investments in Indian equity markets

Select the correct answer using the codes given below:

- a) 1 and 2 only  
 b) 2 and 3 only  
 c) 1 and 3 only  
**d) 1, 2, and 3**

Q27.) With reference to the carnivorous plant Utricularia, consider the following statements:

1. Utricularia is commonly known as bladderwort.
2. It is a genus of carnivorous plants.
3. Utricularia species are found in diverse habitats, ranging from fresh water and wet soils to tropical rainforest canopies.

Which of the statements given above is/are correct?

- a) 1 and 3 only  
 b) 2 only  
 c) 1 and 2 only  
**d) 1, 2, and 3**

Q28.) With reference to Diego Garcia, consider the following statements:

1. Diego Garcia is a coral atoll located in the Atlantic Ocean.
2. It serves as a strategic military base jointly operated by the United Kingdom and the United States.
3. The sovereignty of Diego Garcia has been a subject of international dispute involving Mauritius.

Which of the statements given above is/are correct?

- (a) 1 and 2 only  
**(b) 2 and 3 only**  
 (c) 1 and 3 only  
 (d) 1, 2, and 3

Q29.) Hydroclimate whiplash is characterized by which of the following?

1. Rapid transitions between very wet and very dry conditions.
2. Stable level of atmospheric pressure.

3. Enhanced stability in water resource management.

Select the correct answer using the codes below:

- (a) 1 only**  
 (b) 2 and 3 only  
 (c) 1 and 3 only  
 (d) 1, 2, and 3

Q30.) Which of the following is/are objectives of Mission Mausam?

1. Strengthening India's capability in weather forecasting.
2. Developing high-resolution models for improved accuracy in monsoon predictions.
3. Enhancing collaborative research with World Health Organization (WHO).

Select the correct answer using the codes below:

- (a) 1 and 2 only**  
 (b) 1 and 3 only  
 (c) 2 and 3 only  
 (d) 1, 2, and 3

Q31.) Which of the following statements regarding the Siachen Glacier is/are correct?

1. The Siachen Glacier is the longest glacier in the Karakoram range and the second-longest in the world.
2. The glacier forms the source of the Nubra River, which eventually merges with the Shyok River.
3. Operation Meghdoot was launched by India to secure the Siachen Glacier.

Options:

- (a) 1 and 2 only  
**(b) 2 and 3 only**  
 (c) 1, 2, and 3  
 (d) 1 and 3 only

Q32.) Consider the following statements regarding the Tungabhadra River:

1. It originates from the confluence of the Tunga and Bhadra rivers in the Eastern Ghats.
2. The Tungabhadra Dam provides irrigation to more than 1.25 million hectares of land.
3. The river was historically significant for the Vijayanagara Empire.

Options:

- (a) 1 and 2 only  
**(b) 2 and 3 only**  
 (c) 1, 2, and 3  
 (d) 1 and 3 only

Q33.) With reference to the Pay Commission in India, consider the following statements:

1. The recommendations of the Pay Commission are binding on the government.
2. The 7th Pay Commission was implemented on January 1, 2016.
3. Pay Commissions are generally constituted every 5 years to revise central government employee salaries.

Options:

- (a) 1 and 2 only  
 (b) 2 and 3 only  
**(c) 2 only**  
 (d) 1, 2, and 3

Q34.) Which of the following reports is published by the World Economic Forum (WEF)?

1. Global Risks Report
2. World Development Report
3. Global Gender Gap Report
4. Human Development Report

Select the correct option:

- a) 1 and 3 only**  
 b) 2 and 4 only  
 c) 1, 3, and 4 only  
 d) 1, 2, and 3 only

Q35.) Which of the following straits is the narrowest at the Philips Channel near Singapore?

- a) Sunda Strait  
**b) Strait of Malacca**  
 c) Lombok Strait  
 d) Makassar Strait

Q36.) The Sunda Strait connects which two water bodies?

- a) Andaman Sea and South China Sea  
**b) Indian Ocean and Java Sea**  
 c) Pacific Ocean and Banda Sea  
 d) Timor Sea and Java Sea

Q37.) Which of the following statements about Olive Ridley Turtles is/are correct?

1. Olive Ridley Turtles are classified as Critically Endangered under the IUCN Red List.
2. Odisha's Gahirmatha beach is one of the largest mass nesting sites for Olive Ridley Turtles.

3. The unique mass nesting behavior of Olive Ridley Turtles is called "Arribadas."

Select the correct answer using the codes below:

- a) 1 and 2 only  
**b) 2 and 3 only**  
 c) 1 and 3 only  
 d) 1, 2, and 3

Q38.) Which of the following are the benefits/objectives of the SVAMITVA Scheme?

1. Issuing property cards to rural households for legal ownership of property.
2. Enabling villagers to use property as a financial asset for loans.
3. Improving the financial credit availability in rural areas.
4. Encouraging urban migration for better economic opportunities.

Select the correct answer using the codes below:

- a) 1, 2, and 3 only**  
 b) 1 and 4 only  
 c) 2 and 3 only  
 d) 1, 2, 3, and 4

Q39.) Which of the following statements regarding Asset Reconstruction Companies (ARCs) is/are correct?

1. ARCs are regulated under the SARFAESI Act, 2002.
2. They are regulated by the Reserve Bank of India (RBI).
3. ARCs help banks improve financial stability by acquiring and resolving NPAs.

Select the correct answer using the codes below:

- a) 1 and 3 only  
 b) 2 and 3 only  
 c) 1 and 2 only  
**d) 1, 2, and 3**

Q40.) Mount Ibu, recently in the news, is located in which of the following countries?

- (a) Japan  
**(b) Indonesia**  
 (c) Philippines  
 (d) Papua New Guinea

Q41.) Which of the following statements is/are correct about Boreal Forests?

1. They are predominantly located in the Southern Hemisphere.

2. Boreal forests act as significant carbon sinks, holding more carbon than tropical forests.
3. Coniferous trees like pines and spruces dominate the vegetation in boreal forests.

Select the correct answer using the codes given below:

- (a) 1 only  
**(b) 2 and 3 only**  
 (c) 1 and 3 only  
 (d) 1, 2, and 3

Q42.) Consider the following statements about the World Health Organization (WHO):

1. The WHO was established in 1945 as a specialized agency of the United Nations.
2. Its headquarters is located in Geneva, Switzerland.
3. The Director-General of the WHO is elected by the Executive Board.

Which of the statements given above is/are correct?

- (a) 1 and 2 only  
 (b) 2 and 3 only  
 (c) 1 and 3 only  
**(d) 2 only**

Q43.) Consider the following statements about the Indus Water Treaty (IWT):

1. The Indus Water Treaty was signed in 1960 and brokered by the World Bank.
2. India has exclusive rights over the waters of the Western Rivers under the treaty.
3. The treaty includes a dispute resolution mechanism involving the Permanent Indus Commission, a Neutral Expert, and a Court of Arbitration.

Which of the above statements is/are correct?

- (a) 1 and 2 only  
 (b) 2 and 3 only  
**(c) 1 and 3 only**  
 (d) 1, 2, and 3

Q44.) Which of the following components is/are part of the National Health Mission (NHM)?

1. Reproductive-Maternal-Neonatal-Child and Adolescent Health (RMNCH+A)
2. Accredited Social Health Activists (ASHA)
3. National Ambulance Services (NAS)

Select the correct answer using the codes given below:

- (a) 1 and 2 only  
 (b) 2 and 3 only  
 (c) 1 and 3 only  
**(d) 1, 2, and 3**

Q45.) Which of the following correctly describes the Eddington Limit?

- (a) It is the maximum mass a star can attain before collapsing into a black hole.  
**(b) It is the theoretical maximum rate at which a black hole can accrete matter without being disrupted by radiation pressure.**  
 (c) It is the limit beyond which a black hole cannot emit any radiation.  
 (d) It is the distance from a black hole within which no light can escape its gravitational pull.

Q46.) With reference to the Global Plastic Action Partnership (GPAP), consider the following statements:

1. GPAP was launched by the United Nations Environment Programme (UNEP) in 2019 to tackle global plastic pollution.
2. One of the objectives of GPAP is to promote a circular economy for plastics by encouraging reuse and recycling.
3. The recent expansion of GPAP includes countries such as Angola, Bangladesh, and Kenya.

Which of the statements given above is/are correct?

- (a) 1 and 2 only  
**(b) 2 and 3 only**  
 (c) 1 and 3 only  
 (d) 1, 2, and 3

Q47.) With reference to the Keeling Curve, consider the following statements:

1. It represents the variations in global temperatures over time.
2. It was developed in 1858.
3. The Keeling Curve shows a steady increase in atmospheric carbon dioxide (CO<sub>2</sub>) levels due to human activities.

Which of the statements given above is/are correct?

- (a) 1 and 2 only  
**(b) 3 only**



- (c) 1 and 3 only  
 (d) 1, 2, and 3

Q48.) With reference to the Bhitarkanika National Park, consider the following statements:

1. It is located in the delta region of the Brahmani, Baitarani, and Dhamra rivers in Odisha.
2. It is a designated Ramsar Site, recognized for its significant mangrove ecosystems and wetland biodiversity.
3. Bhitarkanika is known as a major nesting site for Great Indian Bustard.

Which of the statements given above is/are correct?

- (a) 1 and 2 only  
 (b) 2 and 3 only  
 (c) 1 and 3 only  
 (d) 1, 2, and 3

Q49.) Yala Glacier, often mentioned in the context of climate change, is located in which of the following mountain ranges?

- A. Karakoram  
**B. Himalayas**  
 C. Andes  
 D. Alps

Q50.) The term "dark oxygen" refers to the production of oxygen through:

1. Photosynthesis in deep-sea plants
2. Artificial splitting of water molecules in laboratories
3. Biotic and abiotic processes generating oxygen in the absence of light
4. The natural photolysis of ozone in the atmosphere

Options:

- A) 1 and 4 only  
**B) 3 only**  
 C) 2 and 3 only  
 D) 1, 3, and 4