

MARCH 2024



One Stop Destination For UPSC/IAS Preparation

Baba's Monthly CURRENT AFFAIRS MAGAZINE

Women's Reservation

Uttar Poorva Transformative
Industrialisation Scheme 2024

Katchatheevu

Carbon Capture & Storage (CCS)

Agni V

Critical Tech Sectors



**TOPPER'S
RECOMMENDED**

BEST CHOICE

Evening Batch



Extended Portal
access upto
2026 Prelims

GURUKUL FOUNDATION 2025 **(Prelims + Mains + Interview)**

FOR WORKING PROFESSIONALS & COLLEGE STUDENTS



ADMISSIONS OPEN **STARTS 24th JUNE**

 **BENGALURU**

 **ONLINE**



Contents

PRELIMS	4
POLITY & GOVERNANCE	4
ANTI-DEFECTION LAW	4
ARTICLE 371 (A-J).....	6
THE CONSUMER PROTECTION ACT, 2019	7
DELIMITATION.....	7
WOMEN'S RESERVATION ACT, 2023	9
LOK ADALAT	10
INTERNATIONAL RELATIONS	12
PANCHESHWAR MULTIPURPOSE PROJECT.....	12
INDIA – BHUTAN	14
17TH ANNUAL INTERNATIONAL BIOCURATION CONFERENCE (AIBC-2024).....	16
ECONOMY	18
UTTAR POORVA TRANSFORMATIVE INDUSTRIALIZATION SCHEME, 2024.....	19
ETHANOL 100 OR E100	22
ALTERNATIVE INVESTMENT FUNDS.	25
CHIT FUND.....	26
FOREX RESERVES	27
GEOGRAPHY	27
KATCHATHEEVU	28
KAVERI RIVER	28
BLACK SEA.....	29
VOLCANIC WINTER	30
HAITI	31
SPRATLY ISLANDS AND SECOND THOMAS SHOAL	32
DESERT SAND DUNES	33
ENVIRONMENT AND ECOLOGY	36
LEOPARD	36
BUREAU OF ENERGY EFFICIENCY.....	36
HANGUL	37
SIMILIPAL TIGER RESERVE.....	37
CARBON CAPTURE AND STORAGE (CCS)	38
NITROGEN POLLUTION	40
RISING SEA SURFACE TEMPERATURE	44

AMENDMENT IN PLASTIC MANAGEMENT RULES 2024	45
SCIENCE & TECHNOLOGY	47
.....	47
NANO UREA	48
BIOSIMILARS	50
DIGITAL INTELLIGENCE PLATFORM (DIP).....	50
METHANESAT	51
INDIA ARTIFICIAL INTELLIGENCE (AI) MISSION	52
AGNI-V	53
ANTHROPOCENE	56
DARK SKY RESERVE.....	57
HISTORY AND ART & CULTURE	59
SANGEET NATAK AKADEMI.....	59
WOMEN IN CONSTITUTION ASSEMBLY OF INDIA	59
DEFENCE & SECURITY	61
GOVT. INITIATIVES, SCHEMES AND POLICIES, ORGANISATION	62
PRADHAN MANTRI ANUSUCHIT JAATI ABHYUDAY YOJANA(PM-AJAY)	62
INDIA'S FIRST UNDERWATER METRO.....	62
e-KISAN UPAJ NIDHI	63
SELA TUNNEL.....	64
NARI SHAKTI VANDAN ABHIYANAM	64
MISCELLANEOUS	69
MAINS	73
PAPER 1	74
LA NINA LINKS WITH AIR QUALITY	74
KONARK SUN TEMPLE	74
PAPER 2	76
INDIA - BHUTAN	76
DELIMITATION.....	76
GLOBAL BURDEN OF CANCER IN 2022.....	77
CHINA AND NEPAL.....	78
NATIONAL HIGHER EDUCATION QUALIFICATIONS FRAMEWORK	79
WOMEN'S RESERVATION ACT, 2023	80
THE BIRTH AND DEATH (AMENDMENT) ACT OF 2023	81
ARTICLE 371A	81

INDIA-MIDDLE EAST- EUROPE ECONOMIC CORRIDOR(IMEC)	82	INLAND FISHERIES	95
NARI SHAKTI VANDANADHINIYAM	83	DIGITIZATION OF AGRICULTURE	96
ANNUAL NESDA WAY FORWARD REPORT 2023 ..	84	SPACE-TECH START-UPS IN INDIA	96
HOLISTIC PROGRESS CARD (HPC)	85	SUSTAINABLE FUNDING FOR RESEARCH AND DEVELOPMENT	97
ARTICLE 142	85	SUSTAINABLE & INCLUSIVE DEVELOPMENT OF NATURAL RUBBER SECTOR (SIDNRS)	98
NEIGHBOURHOOD FIRST POLICY (NFP)	86	E-CIGARETTES.....	98
BILATERAL INVESTMENT TREATIES (BITS)	87	STATUS OF SNOW LEOPARDS IN INDIA	99
MENSTRUAL LEAVE	87	CROWD DISASTER MANAGEMENT.....	100
INDIA AND ARGENTINA	88	CRITICAL TECH SECTORS	100
ARTIFICIAL INTELLIGENCE (AI) IN ELECTIONS.....	88	PAPER 4	102
GLOBAL BIOFUEL ALLIANCE (GBA)	89	SELF-DRIVING CARS AND ETHICAL DILEMMAS ..	102
INTER-STATE RIVER WATER DISPUTE	90	CONSUMERISM AND ETHICS.....	102
NAGORNO-KARABAKH	90	LABOUR ETHICS.....	103
PAPER 3	92	103
TEST TUBE RHINOS	92	PRACTICE QUESTIONS.....	103
GEOSPATIAL INTELLIGENCE	92		
NITROGEN POLLUTION	93		
DRONES FOR DEFENCE	94		

PRELIMS



POLITY & GOVERNANCE



ANTI-DEFECTION LAW

Context: Recently, Himachal Pradesh speaker disqualified 6 Congress MLAs under Anti defection law.

Background:

- These MLAs defied a party whip to vote in favour of the government on the Finance Bill, leading to their disqualification under provisions of the anti-defection law.

Purpose and Historical Context:

- It was introduced to prevent Members of Parliament (MPs) and Members of Legislative Assemblies (MLAs) from switching political parties for personal motives.
- Aim: bring stability to governments by discouraging legislators from changing parties after being elected.

Enactment and Provisions:

- The Tenth Schedule was inserted into the Constitution in 1985 through the 52nd Amendment Act. The Anti-Defection Law in India is governed by the Tenth Schedule of the Constitution.
- It lays down the process by which legislators may be disqualified on grounds of defection by the Presiding Officer of a legislature based on a petition by any other member of the House.
- The law applies to both Parliament and state assemblies.

Grounds for Disqualification:

- A member can be disqualified if they:
 - Voluntarily give up the membership of their political party.
 - Vote, or do not vote, in the legislature contrary to the directions of their political party.
- However, if a member has taken prior permission or is condoned by the party within 15 days from such voting or abstention, they will not be disqualified.
- An independent candidate joining a political party after the election can also face disqualification.
- A nominated member joining a party six months after becoming a member of the legislature can also be disqualified.

Exceptions:

- Legislators may **change their party without the risk of disqualification in certain circumstances:**
 - a. The law allows a party to merge with or into another party, provided that at least two-thirds of its legislators are in favour of the merger.
 - b. In such a scenario, neither the members who decide to merge nor the ones who stay with the original party will face disqualification.

Judicial Review:

- While the law initially stated that the Presiding Officer's decision is not subject to judicial review, the Supreme Court struck down this condition in 1992.
- Appeals against the Presiding Officer's decision can now be made in the High Court and Supreme Court.

- In summary, the **Anti-Defection Law plays a crucial role** in maintaining party discipline and stability in the Indian political system. It ensures that legislators adhere to party lines and discourages defection for personal gain.

Source: [Times of India](#)

UNITED NATIONS HUMAN RIGHTS COUNCIL (UNHRC)

Context: The 55th session of the United Nations Human Rights Council has commenced

Background:

- The attendees of the 55th session of the United Nations Human Rights Council includes representatives from various nations, each contributing their perspectives and expertise.

About UNITED NATIONS HUMAN RIGHTS COUNCIL (UNHRC)

- It is an intergovernmental body within the United Nations system established in 2006 by the General Assembly, responsible for strengthening the promotion and protection of human rights around the globe.
- The UNHRC is composed of 47 Member States and meets at the UN Office at Geneva.
- India was re-elected to the UNHRC for the 2022-2024 term with an overwhelming majority in the General Assembly. This re-election marks **India's record sixth term as a member of the UNHRC.**
- Ability: to **discuss all thematic human rights issues.**
- It responds to human rights emergencies and makes recommendations on how to better implement human rights on the ground.
- The UNHRC reviews the human rights records of all United Nations Member States via the Universal Periodic Review.
- It **authorizes commissions of inquiry and fact-finding missions**, which produce evidence on war crimes and crimes against humanity.

Source: [UNHCR](#)

NATIONAL COMMISSION FOR PROTECTION OF CHILD RIGHTS (NCPCR)

Context: Recently, National Commission for Protection of Child Rights (NCPCR) has filed a complaint with the Ministry of Electronics and Information Technology against an App.

Background:

- The commission has requested MeitY to take action against Google and Apple and also urged the ministry to mandate stringent KYC norms for users accessing Ullu and similar apps on the marketplace

About National Commission for Protection of Child Rights (NCPCR)

- It is a **statutory body** established by the Government of India under the **Commission for Protection of Child Rights (CPCR) Act, 2005.**
- NCPCR is established to **safeguard the rights of children aged 0 to 18 years.**
- **Mission:** to ensure that all laws, policies, and programs align with the vision of child rights.
- **Promote:** child-centric approach in all regulations, guidelines, and executive actions in India.
- NCPCR operates under the **Ministry of Women & Child Development of the Central Government.**

- The Commission is further mandated to monitor the proper and effective implementation of **Protection of Children from Sexual Offences (POCSO) Act, 2012, Juvenile Justice (Care and Protection of Children) Act, 2015, and Right to Free and Compulsory Education (RTE) Act, 2009.**

Source: [inc42](#)

ARTICLE 371 (A-J)

Context: In the backdrop of protests across Ladakh, the Centre is mulling granting Article 371-like protection to the Union Territory.

Background:

- Ladakh witnessed massive protests demanding statehood, legislature and inclusion in the Sixth Schedule, apart from concerns about environmental degradation due to possible industrialisation.

About Article 371 (A-J):

- It includes special provisions for **11 states, including six of the Northeast.**
- **Articles 369 through 392** (including some that have been removed) **appear in Part XXI** of the Constitution, titled 'Temporary, Transitional and Special Provisions'.
- **Article 370 dealt with Temporary Provisions** with respect to the State of Jammu and Kashmir. It was repealed in 2019; Articles 371, 371A, 371B, 371C, 371D, 371E, 371F, 371G, 371H, and 371J define special provisions with regard to another state (or states). Articles 370 and 371 were part of the Constitution at the time of its commencement on January 26, 1950; Articles 371A through 371J were incorporated subsequently.
- Article 371 has provisions for Maharashtra and Gujarat.
- Article 371A (13th Amendment Act, 1962), Nagaland: This provision was inserted after a 16-point agreement between the Centre and the Naga People's Convention in 1960, which led to the creation of Nagaland in 1963. Parliament cannot legislate in matters of Naga religion or social practices, Naga customary law and procedure, administration of civil and criminal justice involving decisions according to Naga customary law, and ownership and transfer of land without concurrence of the state Assembly.
- Article 371B (22nd Amendment Act, 1969) has provisions for Assam; Article 371C (27th Amendment Act, 1971) has provisions for Manipur.
- Article 371D & E – has provision for Andhra Pradesh.
- Article 371F (36th Amendment Act, 1975) has provision for Sikkim; Article 371G (53rd Amendment Act, 1986) has provision for Mizoram, Article 371H (55th Amendment Act, 1986) has provision for Arunachal Pradesh.
- Article 371I deals with Goa, but it does not include any provision that can be deemed 'special'.
- Article 371J (98th Amendment Act, 2012) has provision for Karnataka.

Examples/details of provisions for some northeast states:

- Article 371G (53rd Amendment Act, 1986), Mizoram: Parliament cannot make laws on "religious or social practices of the Mizos, Mizo customary law and procedure, administration of civil and criminal justice involving decisions according to Mizo customary law, ownership and transfer of land unless the Assembly so decides".
- Article 371A (13th Amendment Act, 1962), Nagaland : Parliament cannot legislate in matters of Naga religion or social practices, Naga customary law and procedure, administration of civil and

criminal justice involving decisions according to Naga customary law, and ownership and transfer of land without concurrence of the state Assembly.

Source: [Indian Express](#)

THE CONSUMER PROTECTION ACT, 2019

Context: Recently, the Supreme Court of India issued the contempt notice and passed an interim order imposing a ban on advertisements of Patanjali Ayurved's medicines.

Background:

- According to **Section 2(28) of the Consumer Protection Act, 2019**, an advertisement is deemed misleading when it gives a false guarantee or is likely to mislead consumers regarding the nature, substance, quantity, or quality of the product or service.

About The Consumer Protection Act:

- The Act is a comprehensive legislation enacted in India to safeguard the rights and interests of consumers.

Key provisions of the Act:

1. **Definition of Consumer:** The Act defines a consumer as any person who: Buys goods or avails services for personal use, Uses goods with the consent of the buyer, Hires or avails services for consideration, also covers legal heirs and representatives of consumers.

Rights of Consumers

- **Right to Safety:** Protection from hazardous goods and services.
- **Right to Information:** Access accurate and transparent information about products and services.
- **Right to Choose:** Choose from a variety of goods and services.
- **Right to Redressal:** Seek redressal for unfair trade practices and defective products.
- **Right to Consumer Education:** Be informed about their rights and responsibilities.

Unfair Trade Practices: The Act prohibits various unfair practices, such as

- **False representation:** Misleading advertisements or false claims.
- **Unfair contracts:** Imposing unfair terms on consumers.
- **Defective goods:** Selling goods with defects.
- **Restrictive trade practices:** Monopolistic behaviour.

Consumer Disputes Redressal

- The Act **establishes Consumer Disputes Redressal Commissions** at the district, state, and national levels.
- Consumers can file complaints related to unfair trade practices, defective goods, or deficient services.

Source: [Livemint](#)

DELIMITATION

Context: The Delimitation of constituencies for the Lok Sabha and State Legislative Assemblies is to be carried out based on the First Census after 2026.

Background:

- The 2021 Census was originally postponed due to the COVID-19 pandemic and subsequently due to delays on the part of the Central government.

About Delimitation

- It means the **process of fixing the number of seats and boundaries of territorial constituencies in each State for the Lok Sabha and Legislative assemblies.**
- It also **includes determining the seats to be reserved for Scheduled Castes (SC) and Scheduled Tribes (ST) in these houses.**
- It is **performed by the 'Delimitation Commission'** that is set up under an act of Parliament.
- Delimitation Commissions **have been set up four times** — 1952, 1963, 1973, and 2002 under the Acts of 1952, 1962, 1972, and 2002.
- The **first delimitation exercise was carried out by the President** (with the help of the Election Commission) in 1950-51.

Significance of Delimitation

- It **ensures fair representation in the Lok Sabha and State Legislative Assemblies by adjusting the number of seats** based on population changes which is crucial for upholding the democratic principle of one citizen-one vote-one value.
- By **readjusting the boundaries** of territorial constituencies, it aims to ensure equitable distribution of seats among different regions, considering population shifts over time. This helps prevent underrepresentation or overrepresentation of specific areas.
- It determines the **allocation of reserved seats for Scheduled Castes (SC) and Scheduled Tribes (ST) in accordance with constitutional provisions**, ensuring adequate political representation for marginalized communities.
- It **impacts federal principles by influencing the distribution of political power among states.** It is essential to **strike a balance between population-based representation and federal considerations** to maintain harmony among diverse regions.
- Historically, the **freezing of seats based on the 1971 Census** aimed to incentivize population control measures. However, the impending delimitation exercise raises questions about the effectiveness and implications of this policy in the context of changing demographics.

Issues/Concerns related to Delimitation:

- **The disparity in representation between the northern and southern parts of India in the Lok Sabha due to population as a deciding factor.**
- The delimitation based solely on population disregards the progress made by the southern states in population control and may lead to disparities in the federal structure. Despite having only 18% of the country's population, the southern states contribute 35% to the country's GDP. The northern states, which did not prioritize population control, are expected to benefit from the delimitation process due to their higher population growth.
- **After the 15th Finance Commission used the 2011 Census** as a basis for its recommendation, concerns were raised about southern states losing funding and representation in parliament. Previously, the 1971 Census was used as the base for funding and tax devolution recommendations to states.
- The scheduled **delimitation and reallocation of seats may result in not only a loss of seats for southern states but also an increase in power for political parties with their base of support in the north.** This could potentially lead to a shift of power toward the north and away from the south.

- The exercise will also **affect the division of seats** reserved for the Scheduled Castes and Scheduled Tribes in each state (under Articles 330 and 332).

Source: [The Hindu](#)

WOMEN'S RESERVATION ACT, 2023

Context:The **Constitution (106th Amendment) Act, 2023** is on limelight as country celebrates women's day

Background:

- The **73rd and 74th Amendments** passed in 1993, which introduced **panchayats and municipalities in the Constitution, reserve one-third of seats for women in these bodies.** The Constitution also **provides for reservation of seats in Lok Sabha and state legislative assemblies for Scheduled Castes (SCs) and Scheduled Tribes (STs) in proportion to their number in the population.**The Constitution did not provide for reservation of seats for women in the Lok Sabha and state legislative assemblies.This was changed through The Constitution (106th Amendment) Act.

About Women's Reservation Act, 2023

- The Constitution (106th Amendment) Act, 2023, reserves one-third of all seats for women in Lok Sabha, State legislative assemblies, and the Legislative Assembly of the National Capital Territory of Delhi, including those reserved for SCs and STs.
- The reservation will be **effective after the publication of the census** conducted following the Act's commencement and endures for 15 years, with potential extension determined by parliamentary action.
- The **rotation of seats allocated for women** will be governed by parliamentary legislation after each delimitation process.
- Currently, around 15% of the total members of the 17th Lok Sabha (2019-2024) are women while in state legislative assemblies, women on average constitute 9% of the total members.

Arguments in favour of the Act:

- Women's representation in politics is a vital step towards gender equality. However, according to the **Global Gender Gap Report 2022, India ranks 48th out of 146 in Political Empowerment.**
- The **number of women MPs has increased from 5% in the first Lok Sabha to 15%** in the 17th Lok Sabha, but the number continues to be quite low. A 2003 study about the effect of reservation on women in panchayats showed that women elected under the reservation policy invest more in the public goods closely linked to women's concerns.
- If a group is not represented proportionally in the political system, its ability to influence policy-making is limited. The Convention on the Elimination of All Forms of Discrimination Against Women provides that discrimination against women must be eliminated in political and public life.
- A more diverse legislature that includes a significant number of women can bring a broader range of perspectives to the decision-making process. **This diversity can lead to better policy formulation and governance.**
- Women leaders in politics can serve as role models for young girls, encouraging them to aspire to leadership positions in various fields. Representation in politics can break stereotypes and inspire future generations.

Arguments against the Act:

- Women are not a homogeneous community like, say like, a caste group. Therefore, the same arguments made for caste-based reservations cannot be made for women.
- Reserving seats for women is opposed by some who claim that doing so violates the Constitution's guarantee of equality. If there is a reserve, they claim, women won't be competing on merit, which could decrease their status in society.

Way Forward:

- Creating awareness among women about their rights and the importance of their participation in politics is essential. Educational programs and awareness campaigns can help to increase women's political participation.
- Gender-based violence and harassment are major obstacles to women's participation in politics. Addressing these issues through policy and legal measures can create a safer and more supportive environment for women in politics.

Source: [PRS](#)

LOK ADALAT

Context: National Legal Services Authority (NALSA) successfully organised the first National Lok Adalat of 2024 in the taluks, districts and high courts of 34 states and Union territories on Saturday.

Background:-

Over 11.3 million cases settled in first National Lok Adalat of 2024.

About Lok Adalat

- It is one of the **alternative dispute redressal mechanisms**, it is a forum where disputes/cases pending in the court of law or at pre-litigation stage are settled/ compromised amicably.
- They have been given **statutory status under the Legal Services Authorities Act, 1987**
- Under the said Act, the **award (decision) made by the Lok Adalats is deemed to be a decree of a civil court** and is final and binding on all parties and no appeal against such an award lies before any court of law.
- If the **parties are not satisfied with the award of the Lok Adalat though there is no provision for an appeal against such an award**, but they are free to initiate litigation by approaching the court of appropriate jurisdiction by filing a case by following the required procedure, in exercise of their right to litigate.
- The persons deciding the cases in the Lok Adalats are called the Members of the Lok Adalats, they have the role of statutory conciliators only and do not have any judicial role; therefore they can only persuade the parties to come to a conclusion for settling the dispute outside the court in the Lok Adalat and shall not pressurize or coerce any of the parties to compromise or settle cases or matters either directly or indirectly.
- Disputes before Lok Adalat would be decided on the basis of the compromise or settlement between the parties. The members shall assist the parties in an independent and impartial manner in their attempt to reach amicable settlement of their dispute.
- **National Lok Adalat:** are **held for at regular intervals** where on a single day Lok Adalats are held throughout the country, in all the courts right from the Supreme Court till the Taluk Levels wherein cases are disposed off in huge numbers.

Permanent Lok Adalat

- The other type of Lok Adalat is the Permanent Lok Adalat, organized under Section 22-B of The Legal Services Authorities Act, 1987.
- Permanent Lok Adalats have been set up as **permanent bodies for providing compulsory pre-litigative mechanism for conciliation and settlement of cases relating to Public Utility Services** like transport, postal, telegraph etc.

Source: [Nalsa](#)

RAJYA SABHA NOMINATION

Context: Recently, Sudha Murthy was nominated as a Member of Rajya Sabha.

Background:

- Sudha Murthy, who is married to the co-founder of Infosys, N. R. Narayana Murthy, has made significant contributions to diverse fields including social work, philanthropy, and education. Last year, she was honoured with the **Padma Bhushan**, India's third-highest civilian award, in recognition of her outstanding social work.

Composition of the Rajya Sabha:

- It consists of a total of 245 members, including 233 elected members and 12 nominated members.
- The constitutional limit for the Upper House's strength is 250 members.
- The number of elected seats varies based on states' population, which can change due to mergers, bifurcations, or the creation of new states.
- The nominated members are chosen by the President of India and come from fields such as art, literature, science, and social service.

Tenure and Permanent House:

- The Rajya Sabha is a permanent body and not subject to dissolution. However, like the Lok Sabha, it can be prorogued by the President.
- **Every RS MP has a tenure of six years**, and elections to one-third seats are held every two years.
- The Vice-President is the ex-officio chairperson of the RS.
- The Deputy Chairman, who is elected from amongst the house's members, takes care of the day-to-day matters of the house in the absence of the Chairman.

Election Process:

- It's members are elected indirectly by the people through the MLAs.
- MLA's vote in the RS elections in proportional representation with the single transferable vote (STV) system. Each MLA's vote is counted only once.
- To win a RS seat, a candidate should get a required number of votes.
- That number is found out using the formula:

Required vote = Total number of votes / (Number of Rajya Sabha seats + 1) + 1

Nominated Members:

- The **President of India nominates these 12 members** from individuals who have special knowledge or practical experience in art, literature, science, and social service.
- This principle of nomination is adopted to provide distinguished persons a place in the RS without going through the process of election.

Source: [Livemint](#)

INTERNATIONAL RELATIONS

PANCHESHWAR MULTIPURPOSE PROJECT

Context: Nepal-India official dialogue silent on landmark Pancheshwar project.

Background:-

- India and Nepal had signed a Treaty known as Mahakali Treaty in February, 1996. Implementation of Pancheshwar Multipurpose Project is the centerpiece of the Mahakali Treaty.

About Pancheshwar Multipurpose Project (PMP):-

- It's bi-national hydropower project to be developed in Mahakali River bordering Nepal and India.
- The multipurpose project is aimed at **generating around 6480 MW of energy** to be divided equally between the two sides along with water for irrigation of 1,30,000 ha of land in Nepal and 2,40,000 ha of Indian territory respectively.
- The two sides has not been able to come to a consensus on sharing of benefits so far, stalling the project.
- While electricity is divided equally, India gets the lions share of irrigation and flood control benefits. On the other hand Nepal feels water is "**white gold**" and India should pay Nepal for it. India cannot accept this claim as it challenges India's understanding of other water basin treaties, including the **Indus water Treaty with Pakistan**.

Source: [The Hindu](#)

GENERAL AGREEMENT ON TRADE IN SERVICES (GATS)

Context:World Trade Organisation members have agreed to take on additional obligations in the services sector under an agreement of the WTO.

Background:

- These obligations under their schedules in **General Agreement on Trade in Services (GATS)** seek to **mitigate unintended trade restrictive effects or measures** relating to licensing requirements and procedures, qualification requirements and procedures, and technical standards among themselves. It will also benefit Indian professional companies which will now have equal opportunity to access markets in these 70 countries, if they meet the standards.

About The General Agreement on Trade in Services (GATS)

- GATS is a **significant treaty within the World Trade Organization (WTO)**, came into force in 1995.
- It **serves as the first and only set of multilateral rules** governing international trade in services.
- The creation of the GATS was one of the **landmark achievements of the Uruguay Round** of negotiations that aimed to extend the scope of trade agreements beyond traditional goods (covered by the General Agreement on Tariffs and Trade, GATT) **to include services, intellectual property, and investment**.

Objectives

- Creating a **credible and reliable system** of international trade rules.
- Ensuring **fair and equitable treatment of all participants** (principle of non-discrimination).
- Stimulating economic activity through guaranteed policy bindings.
- Promoting trade and development through progressive liberalization.
- Participation: All WTO members are simultaneously members of the GATS and have assumed commitments in individual service sectors.

Coverage: The GATS applies in principle to all service sectors, with two exceptions:

1. **Services supplied in the exercise of governmental authority:** These are services provided neither on a commercial basis nor in competition with other suppliers. Examples include social security schemes and public services like health or education.
2. **Annex on Air Transport Services:** This exempts measures affecting air traffic rights and services directly related to the exercise of such rights.

Modes of Supply: The GATS distinguishes between four modes of supplying services:

- **Cross-border trade:** Services flow from the territory of one member into the territory of another member (e.g., banking or architectural services transmitted via telecommunications or mail).
- **Consumption abroad:** Service consumers (e.g., tourists or patients) move into another member's territory to obtain a service.
- **Commercial presence:** Services are supplied through a commercial presence in another country (mode 3).
- **Presence of natural persons:** Involves the movement of individuals to provide services in another member's territory.

Sources : [The Hindu](#)

AIRSTRIP AND A JETTY - INDIA HAS BUILT ON AGALÉGA, MAURITIUS

Context: On February 29, Prime Minister Narendra Modi and Prime Minister Pravind Jugnauth of Mauritius jointly inaugurated an **airstrip and a jetty that India has built on Agaléga, a two-island Mauritian dependency 1,100 km to the north of Port Louis and 2,500 km southwest of Malé.**

Background:

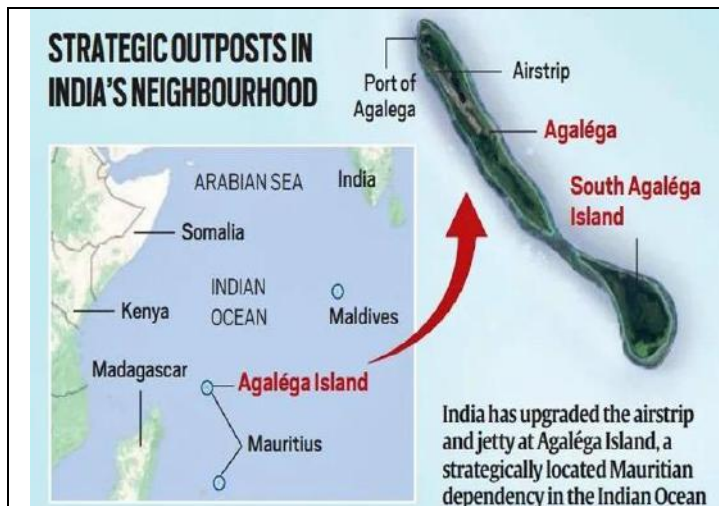
- **As Indian Ocean outposts, Mauritius have great strategic significance for India.** New Delhi's **maritime security and strategic imperatives** in the Indian Ocean are linked to the presence and increased activities of China in the region.

About Mauritius

- Officially the Republic of Mauritius, **is an island country in the Indian Ocean**, about 2,000 kilometres (1,100 nautical miles) off the southeastern coast of East Africa, east of Madagascar.

Significance and the china angle:

- The new facilities are intended to **project India's power in the southwestern Indian Ocean**, in response to the increasing forays of the **Chinese People's Liberation Army (PLA)** in the region.
- The inauguration of the airstrip and the jetty at Agaléga Island in Mauritius took place even as President Mohammed Muizzu's government in the Maldives, another Indian Ocean nation, of late started steering his nation into China's orbit of geopolitical influence, ignoring the security concerns of India.
- The presence of India would lead to more effective monitoring of Mauritius' vast 2.3 million sq km **Exclusive Economic Zone**, and equip it to better counter-piracy, terrorism, narcotics and human trafficking, and illegal and unregulated fishing as per Mauritius PM.
- New Delhi started building the facility after signing a **MoU with Port Louis "for the improvement in sea and air transportation facilities"** in Agaléga Island in March 2015.
- India officially **maintains that the facility is intended to help Mauritius enhance its maritime security capabilities.** However, given the strategic location of Agaléga Island, speculation has been



rife that India may consider deploying some of its Boeing Poseidon 81 maritime patrol and reconnaissance aircraft in the newly constructed facilities, ostensibly to keep watch on the movement of the Chinese PLA Navy's vessels in the Indian Ocean region.

- The project triggered protests from a section of the local people with the opposition parties in Mauritius, accusing the successive governments of undermining the sovereignty of the nation.

Source: [Deccan Herald](#)

INDIA – BHUTAN

Context: Some sources have disclosed the presence of a Chinese backed disinformation campaign circulating false narratives about India Bhutan relationship.

Background:

- The increasing presence of China in India's neighbourhood is a matter of concern.

Significance of Bhutan for India:

- Bhutan shares its borders with India and China, and its strategic location makes it an important **buffer state for India's security interests**.
- India has provided Bhutan with **assistance in areas such as defence, infrastructure, and communication**, which has helped to maintain Bhutan's sovereignty and territorial integrity.
- India has helped Bhutan build and **maintain its border infrastructure, such as roads and bridges, to strengthen its defence capabilities and ensure its territorial integrity**. In 2017, during the Doklam standoff between India and China, Bhutan played a crucial role in allowing Indian troops to enter its territory to resist Chinese incursions.
- Bhutan's hydropower potential is a significant source of revenue for the country, and India has been instrumental in assisting Bhutan in developing its hydropower projects.
- Bhutan and India share strong cultural ties, as both countries are predominantly Buddhist. India has assisted Bhutan in preserving its cultural heritage, and many Bhutanese students come to India for higher education.
- India has assisted Bhutan in areas such as renewable energy, forest conservation, and sustainable tourism.

Challenges in India-Bhutan Relations:

- **China's increasing presence in Bhutan, particularly along the disputed border between Bhutan and China, has raised concerns in India**. India has been Bhutan's closest ally and has played a key role in protecting Bhutan's sovereignty and security. However, **China's growing economic and military influence in the region poses a challenge to India's strategic interests in Bhutan**.
- India and Bhutan share a 699 km long border, which has been largely peaceful. However, there have been some incidents of border incursions by Chinese forces in recent years. **The Doklam standoff in 2017 was a major flashpoint in the India-China-Bhutan tri-junction**. Any escalation of such disputes could strain India-Bhutan relations.
- **Bhutan's hydropower sector is a key pillar of its economy, and India has been a major partner in its development**. However, there have been concerns in Bhutan over the terms of some of the

hydropower projects, which have been seen as too favourable to India. This has led to some public opposition in Bhutan to Indian involvement in the sector.

- India is Bhutan's largest trading partner and Bhutan's major export destination. However, there have been some concerns in Bhutan over the trade imbalance, with Bhutan importing more from India than it exports. Bhutan has been seeking greater access to the Indian market for its products, which could help to reduce the trade deficit.

Source: [The Hindu](#)

CHINA AND NEPAL RELATIONS

Context: China and Nepal have **signed 12 agreements to enhance bilateral cooperation** in sectors including trade, road connectivity, and information technology.

Background:

- **If Russia were to develop and deploy such a weapon, it would be in violation of Outer Space Treaty as well as the Partial Nuclear Test Ban Treaty of 1963** that prohibits nuclear explosions in space. Russia is party to both treaties.

About China and Nepal Relations

- China has historical ties with the **communist movement in Nepal, particularly with the Communist Party of Nepal (Maoist Centre)**, which was involved in a decade-long armed insurgency against the Nepalese state. During this period, the Maoist movement received ideological, logistical, and even military support from China.
- China's influence in Nepal has grown significantly in recent years, the **almost Six-Month Economic Blockade of Nepal by India from September 2015 onward gave China a fast track into the country**. China intervened aggressively in Nepal's politics and played a role in bringing the two communist parties, Maoist Centre and Unified Marxist-Leninist together.
- China and Nepal have engaged in joint military exercises and increased defence cooperation, focusing on capacity building and military training. China has provided military aid to Nepal, further strengthening its defence ties.
- In its new map, China refused to recognize a portion of land in Nepal's north-western region—an area that Nepal had claimed and depicted in its map in 2020.

Implications of China's growing presence in Nepal for India:

- China's enhanced influence in Nepal could potentially lead to strategic encirclement for India, as it strengthens its presence in a country that shares a long border with India. This raises security concerns for India.
- Nepal's participation in China's BRI Initiative can result in a significant increase in Chinese-backed infrastructure projects and connectivity, which will increase Nepal's dependence on China for trade and consequently harm the interests of India.
- Nepal's closer ties with China provide strategic depth to China in South Asia, potentially allowing China to project power and influence beyond its borders which might make it more challenging for India to coordinate regional responses and initiatives effectively.

Way Forward

- India needs to engage proactively with Nepal, enhance development assistance, strengthen economic ties, and foster people-to-people relations.

- India must work on multilateral initiatives and regional cooperation to counterbalance the expanding Chinese influence in Nepal and ensure stability and prosperity in the region.

Source: [The Print](#)

17TH ANNUAL INTERNATIONAL BIOCURATION CONFERENCE (AIBC-2024).

Context: Recently India hosted the 17th Annual International Biocuration Conference (AIBC-2024).

Background:

- It is the **first time the Annual International Biocuration Conference is being held in India.**

About Biocuration

- **Biocuration is a critical process in managing and organizing biological data**, which involves curating, annotating, and structuring information related to genes, proteins, pathways, and other biological entities.
- **The Conference is a unique event** that provides a forum for curators, developers, and users of clinical and life sciences data, knowledge, and models to discuss their work, promote collaboration, and foster the community around this active and growing area of research.
- This event is jointly organized by the **Indian Biological Data Centre (IBDC)**, the **Regional Centre for Biotechnology (RCB) in Faridabad**, and the Department of Plant Molecular Biology at the University of Delhi South Campus.

Indian Biological Data Center (IBDC)

- The IBDC serves as India's first national repository for life science data.
- It stores diverse biological data generated from publicly funded research within the country.
- The IBDC operates with assistance from the Department of Biotechnology (DBT), operates under the Ministry of Science and Technology in India.

Source: [PIB](#)

'FIVE EYES' ALLIANCE

Context: 'Five Eyes' alliance member New Zealand's Deputy PM and Foreign Minister Winston Peters discusses bilateral ties with S. Jaishankar

Background:-

- At the end of a four-day visit to India, Mr. Peters said that India and New Zealand shared common views on Indo-Pacific security challenges.

About 'Five Eyes' alliance:-

- **Est:** Post-World War II with **members states:** Australia, Canada, New Zealand, the United Kingdom, and the United States.
- The term "Five Eyes" refers to the five countries' collective efforts to gather and share **signals intelligence (SIGINT)** to address common security threats and challenges.

Objectives:

- **Intelligence Sharing:** The alliance members collaborate to share signals intelligence, which **includes intercepted communications and electronic data**, to enhance their collective understanding of global security threats.

- **Counterterrorism and National Security:** The Five Eyes network focuses on countering terrorism and addressing other national security concerns by exchanging vital intelligence and cooperating on joint operations.
- **Cybersecurity and Cyber Threats:** Given the growing significance of cyber threats, the alliance works together to monitor and address cyber activities from adversarial nations and non-state actors.
- **Information and Technology Sharing:** The Five Eyes partners share expertise and technological advancements in the field of intelligence gathering, analysis, and cryptography.

Source: [Hindu](#)

SHANGHAI COOPERATION ORGANISATION (SCO)

Context: Recently, the fourth edition of the Shanghai Cooperation Organisation (SCO) Startup Forum was organized in New Delhi.

Background:

- This initiative aimed to broaden startup interactions among the SCO Member States, foster an environment conducive to innovation, promote job creation, and inspire young talent to develop innovative solutions.

About SHANGHAI CORPORATION ORGANISATION (SCO)

- The **SCO is a permanent international intergovernmental organization** that was announced in June 2001 in Shanghai, China.
- **Founders:** Kazakhstan, China, Kyrgyzstan, Russia, Uzbekistan, and Tajikistan.
- **Aim:** promote cooperation and mutual support in various areas, including trade, investment, energy, transportation, and security.

Key facts about the SCO:

- **Headquarters:** The SCO's headquarters is located in Beijing, China.
- **Creation:** It was announced on June 15, 2001, and came into force on September 19, 2003.
- **Official Languages:** The official languages of the SCO are Chinese and Russian.
- **India's Membership:** India joined the SCO on June 8-9, 2017, during the SCO Astana Summit.
- **The Heads of State Council (HSC) serves** as the supreme decision-making body within the SCO.

Permanent Bodies: The SCO has two permanent bodies:

- SCO Secretariat in Beijing
- Executive Committee of the Regional Anti-Terrorist Structure (RATS) in Tashkent.
- Member Countries: China, India, Iran (joined in July 2023), Kazakhstan, Kyrgyzstan, Pakistan, Russia, Tajikistan, Uzbekistan.

Source: [PIB](#)



Economy



REGULATORY SANDBOX (RS) SCHEME

Context: Reserve Bank of India revised the guidelines for the Regulatory Sandbox (RS) scheme.

Background:

- Updated framework requires sandbox entities to ensure compliance with provisions of the Digital Personal Data Protection Act, 2023.

About Regulatory Sandbox (RS) scheme :

- The RS scheme is an **initiative by the Reserve Bank of India (RBI)**.
- **It involves live testing of new financial products or services in a controlled regulatory environment with potential relaxations for testing purposes.**
- It allows regulators, innovators, financial service providers, and customers to test new financial innovations, collecting evidence on benefits and risks.
- **Objective:** foster responsible innovation in financial services, promote efficiency, and bring benefit to consumers.
- Fintech companies, startups, banks, financial institutions, and other entities partnering with or supporting financial services businesses are eligible to participate in the RS.
- The RBI has recently extended the RS timeline from seven months to nine months.
- Participants must ensure compliance with provisions of the Digital Personal Data Protection Act, 2023.

Source: [Economic Times](#)

NATIONAL URBAN COOPERATIVE FINANCE AND DEVELOPMENT CORPORATION LIMITED (NUCFDC)

Context: Recently, Shri Amit Shah inaugurated the **National Urban Cooperative Finance and Development Corporation Limited (NUCFDC)**.

Background:

- The minister suggested the Board of the NUCFDC to set up one urban cooperative bank in each unrepresented town/city in a time-bound program.

About NATIONAL URBAN COOPERATIVE FINANCE AND DEVELOPMENT CORPORATION LIMITED (NUCFDC):

- NUCFDC is an **umbrella organization for Urban Cooperative Banks (UCBs) in India**.
- Its primary role is to **modernize and strengthen** the UCB Banking Sector in India.
- NUCFDC has received **Certificate of Registration (CoR)** from the Reserve Bank of India (RBI) to operate as a **Non-Banking Finance Company (NBFC)**.
- NUCFDC is allowed to function as a Self-Regulatory Organization (SRO) for the sector.

Key Objectives:

- Facilitate financial assistance and support to UCBs.
- Promote cooperative institutions in urban areas.
- Enhance financial inclusion and accessibility for citizens.

Benefits and Services:

- Aim: provide UCBs with facilities such as ATMs, credit/debit cards, clearing systems, SLR limits, and refinancing.
- It contributes to the overall development and well-being of cooperative banks and their customers.

Source: [PIB](#)

GEOGRAPHICAL INDICATION (GI) TAG

Context: Risa, a traditional tribal attire from Tripura, has recently received the Geographical Indication (GI) tag.

Background:

- Risa is a handwoven cloth used primarily as a female upper garment. It also serves as headgear, a stole, or a present to express respect. This exquisite fabric is woven in colourful designs and holds significant social and religious importance.

Significance of GI Tags:

- **Authenticity:** GI tags **ensure that registered authorized users are allowed to use the popular product name.**
- **Preserving Tradition:** They protect traditional methods of production and recognize the product's historical roots.
- **Promoting Local Artisans:** GI tags benefit local artisans and promote cultural heritage.

Governance of GI Tags in India:

- The Geographical Indications of Goods (Registration and Protection) Act, 1999 governs GI tags in India.
- As a member of the **World Trade Organization (WTO)**, India implemented this Act to fulfil its obligations under the Agreement on **Trade-Related Aspects of Intellectual Property Rights (TRIPS)**.
- The Geographical Indication Registry under the Department of Industry Promotion and Internal Trade, Ministry of Commerce and Industry grants these tags.
- Darjeeling tea holds the distinction of being the first product in India to receive the Geographical Indication (GI) tag.

Source: [Business Standard](#)

UTTAR POORVA TRANSFORMATIVE INDUSTRIALIZATION SCHEME, 2024

Context: Union Cabinet has approved Uttar Poorva Transformative Industrialization Scheme, 2024.

Background:

- **The Uttar Poorva Transformative Industrialization Scheme**, is a transformative initiative by the Department for Promotion of Industry and Internal Trade (**DPIIT**) to foster economic growth and industrialization in the North Eastern Region of India.

About Uttar Poorva Transformative Industrialization Scheme:

- Government of India has formulated this Scheme, also **known as UNNATI 2024, as a Central Sector Scheme.**
- It aims for the development of Industries and generation of employment in the **states of North East Region and** will be implemented by the Department for Promotion of Industry and Internal Trade (DPIIT) in cooperation with the states.

- **The Steering Committee, headed by the Secretary of DPIIT**, will decide upon any interpretation of the scheme within its overall financial outlay and issue detailed guidelines for execution.
- Objective: to generate gainful employment, which will lead to the area's overall socio-economic development.
- It will create **productive economic activity** in the manufacturing and service sectors.

Source: [PIB](#)

AVAANA SUSTAINABILITY FUND (ASF)

Context: Recently, SIDBI has secured a substantial investment of \$24.5 million from the Green Climate Fund (GCF) for its Avaana Sustainability Fund (ASF).

Background:

- The **Green Climate Fund (GCF)** is the world's largest climate fund, established within the framework of the UNFCCC. Its mission is to **assist developing countries in both adaptation and mitigation practices to counter the effects of climate change**.

About AVAANA SUSTAINABILITY FUND (ASF):

- **The ASF is a USD 120 million venture capital fund** that aims to invest in early-stage climate technology companies in India.
- This fund is launched by the **Small Industries Development Bank of India (SIDBI)**.
- **ASF focuses on supporting the transition to low-carbon and climate-resilient development pathways by investing in innovative technologies across key sectors** such as sustainable resource management, mobility and supply chains, and sustainable agriculture and food systems.
- ASF's strategies add value for climate and sustainability leaders, establishing a virtuous cycle of sourcing and value addition for the larger ecosystem, and **focusing on social, economic, and environmental impact** with tailored investment strategies across various sectors.
- The ASF project has been approved by the GCF and aims to contribute to India's efforts in addressing climate challenges and promoting sustainable solution.

Source: [Economic Times](#)

MINES AND MINERALS (DEVELOPMENT AND REGULATION) ACT (MMDRA)

Context: The Supreme Court has recently examined a batch of over 80 petitions filed by various private mining companies.

Background:

- **Petitions challenge the right of state governments to levy taxes on mining activities within their respective territories.** The crux of the dispute lies in the distinction between royalty charged on mining and taxes imposed by states.

About MINES AND MINERALS DEVELOPMENT AND REGULATION ACT (MMDRA):

- The Mines and Minerals (Development and Regulation) Act, 1957 forms the basic framework of mining regulation in India.
- **The act is applicable to all minerals except minor minerals and atomic minerals.**
- It mandates that every **mining lease holder needs to pay royalty** for major minerals removed or consumed.
- **This royalty compensates for the privilege of extracting minerals from leased areas.**

- The MMDR Act explicitly places the responsibility for mineral development and regulation within the purview of the Central Government.
- Central Government has the authority to specify the royalty rates for various minerals.
- **The Second Schedule** of the MMDR Act provides royalty rates for various minerals.
- It was amended in 2015 and 2016 to bring several reforms in the mineral sector.

Source: [Money Control](#)

MINIMUM ALTERNATE TAX (MAT)

Context: Recently, the Mumbai bench of the **Income Tax Appellate Tribunal (ITAT)** has made an important observation regarding the **Minimum Alternate Tax (MAT)**.

Background:

- According to their recent ruling, **the assessee is eligible to claim credit for MAT under the Vivad se Vishwas (VSV) Scheme** for the relevant assessment year. This decision could have significant implications for taxpayers seeking resolution of their tax disputes.

About MINIMUM ALTERNATE TAX (MAT):

- MAT is a provision in India's Income Tax Act, which ensures that **companies contribute a minimum amount of tax, regardless of their tax exemptions and deductions.**
- MAT was introduced to **bring "zero tax companies" into the tax net** and the tax is calculated based on the normal income tax liability of the company or entity.
- Applies to: domestic companies, foreign companies operating in India and Special Economic Zone units.
- **MAT ensures tax fairness and prevents companies from completely avoiding taxes.**
- **The Vivad se Vishwas (VSV) Scheme aims to provide** a mechanism for taxpayers to settle pending income tax disputes and avoid prolonged litigation.
- By allowing credit for MAT under this scheme, the ITAT is acknowledging the importance of providing relief to taxpayers and promoting a more efficient resolution process.

Source: [Times of India](#)

FOOD CORPORATION OF INDIA (FCI)

Context: The Food Corporation of India (FCI) has recently reported a decline in wheat stocks, falling below 100 lakh tonnes for the first time since 2018.

Background:

- Currently, the wheat stock stands at 97 lakh tonnes this month. Despite the drop in wheat stocks, the **existing stock is sufficient to meet the National Food Security requirements** and surpasses the buffer norm.

About Food Corporation of India (FCI):

- The FCI, established in 1965, operates under the Ministry of Consumer Affairs, Food, and Public Distribution.
- FCI's primary mandate is to procure, store, and distribute food grains across the country.
- FCI procures wheat, rice, and other food grains directly from farmers during the harvest season.

- **This procurement helps stabilize prices** and ensures that farmers receive fair remuneration.
- FCI maintains a **buffer stock of food grains to meet emergency requirements**, such as natural disasters or supply disruptions. This stock acts as a safety net for the nation.
- FCI **supplies food grains to states for distribution through the Public Distribution System (PDS)**. Under the PDS, eligible households receive subsidized food grains at affordable prices.
- FCI transports food grains from surplus-producing states to deficit states. It ensures that food reaches even the remotest areas.
- By regulating the supply of food grains, FCI helps stabilize prices in the market. It intervenes when prices rise too high or fall too low.
- FCI's efforts contribute to national food security by ensuring a steady supply of essential commodities.
- The economic cost of food grains procured by the Food Corporation of India (FCI) is a total of Minimum Support Price (MSP) and bonus (if any) paid to the farmers plus the procurement incidentals and distribution cost.

Source: [Economic Times](#)

EURASIAN ECONOMIC UNION (EAEU OR EEU)

Context: India and the five-member Eurasian Economic Union (EAEU), led by Russia, are poised to commence negotiations on a free trade agreement (FTA).

Background:

- This proposed agreement aims to boost India's exports to the EAEU countries, particularly in sectors such as engineering goods, electronics, and agriculture.

About Eurasian Economic Union (EAEU or EEU)

- The EAEU or EEU is an **economic union of five post-Soviet states located in Eurasia**, to promote the free movement of goods, persons, services, and capital.
- The member states are Armenia, Belarus, Kazakhstan, Kyrgyzstan, and Russia.

Key facts about the EAEU:

- The EAEU was officially established on January 1, 2015 and has an integrated single market.
- The union operates through supranational and intergovernmental institutions.
- As of 2023, it consists of 183 million people and a gross domestic product of over \$2.4 trillion.
- The EAEU encourages the free movement of goods and services, and provides for common policies in the macroeconomic sphere, transport, industry and agriculture, foreign trade etc
- Provisions for a single currency and greater integration are envisioned for the future.
- The EAEU's formal objectives are to create a common market much like the European Union (EU).
- However, unlike the EU, the EAEU does not share a common currency.

Source: [Business Standard](#)

ETHANOL 100 OR E100

Context: Shri Hardeep Singh Puri, Union Minister for Petroleum & Natural Gas and Housing and Urban Affairs, launched 'ETHANOL 100.

Background:

- ETHANOL 100 fuel has the potential to transform our transportation sector and reduce our dependence on fossil fuels.

About Ethanol 100 OR E100:

- In accordance with specifications, **E100 fuel includes 93-93.5 percent ethanol blended with 5 percent petrol and 1.5 percent co-solvent, which is a binder.**
- In addition, the government's keenness to provide a fillip to biofuels which help in crude oil import substitution is also likely to make it competitive in comparison to the conventional fuels.
- **Ethanol is made from agricultural feedstock**, which also provides income to farmers, making them a stakeholder in decarbonisation of the economy.
- E100 can be used as fuel in any flex fuel engine car. **A flex fuel engine car is designed to run on a variety of fuels.** It comes equipped with an internal combustion engine (ICE) which can run on petrol or ethanol or methanol, giving consumers choice at the point of sale of the fuel.
- ETHANOL 100 stands as a cleaner, greener alternative, boasting lower emissions of greenhouse gases and pollutants, thus aiding in combating climate change and enhancing air quality.
- Contrary to popular belief, E100 fuel is not 100 percent ethanol.
- With its high-octane rating, typically between 100-105, ETHANOL100 proves ideal for high-performance engines, ensuring improved efficiency and power output all while minimizing environmental impact.

Source: [PSU WATCH](#)

T+0 SETTLEMENT

Context: Recently, SEBI approve launch of beta version of T+0 settlement from March 28.

Background:

- At present, the Indian securities markets operate on a T+1 settlement cycle. The move aimed at increasing liquidity in the market.

About T+0 SETTLEMENT

- Refers: to the process of **settling trades on the very day they are executed, eliminating the traditional waiting period associated with T+1, T+2, or T+3 settlements.**
- In this new settlement cycle, **investors selling their stocks will receive money on the same day of the sale, rather than the current T+1 process** where trades are settled on the next trading day.
- **SEBI had shortened the settlement cycle to T+3 from T+5 in 2002 and subsequently to T+2 in 2003.** It introduced T+1 in 2021 and implemented in phases, with the final phase completed in January 2023.
- **The move to introduce T+0 aims to increase liquidity** in the market and provide an alternative alongside the existing T+1 settlement cycle.
- The Board will review progress after three and six months from the implementation date and consider shareholder feedback.

Source: [Money Control](#)

NATIONAL PAYMENTS CORPORATION OF INDIA (NPCI)

Context: The National Payments Corporation of India (NPCI) said it has granted One97 Communications Ltd (OCL) to participate in Unified Payments Interface (UPI) as Third-Party Application Provider (TPAP)

under multi-bank model. **NPCI said four banks – Axis Bank, HDFC Bank, State Bank of India and YES Bank – will act as PSP (Payment System Provider) banks to OCL, which is the parent company of Paytm.**

Background:-

- Last month, **RBI directed NPCI, which owns and operates the UPI platform, to consider a request by OCL to become a TPAP.**
- **A Third-Party Application Provider is an entity** that provides UPI compliant app(s) to the end-user customers to facilitate UPI-based payment transactions. These applications could be mobile wallets, merchant apps, or any other platform that utilises UPI for payments.

About National Payments Corporation of India (NPCI)

- NPCI is an umbrella organisation for operating retail payments and settlement systems in India.
- It was launched in 2008 by the Reserve Bank of India (RBI) and the Indian Banks' Association (IBA) under the provisions of the Payment and Settlement Systems Act, 2007.
- It has been **incorporated as a "Not for Profit" Company** under the provisions of Section 25 of Companies Act 1956 (now Section 8 of Companies Act 2013).
- **The ten core promoter banks are** State Bank of India, Punjab National Bank, Canara Bank, Bank of Baroda, Union Bank of India, Bank of India, ICICI Bank Limited, HDFC Bank Limited, Citibank N. A. and HSBC.
- In 2016 the shareholding was broad-based to 56 member banks to include more banks representing all sectors. **In 2020, new entities regulated by RBI were inducted, consisting of Payment Service Operators, payment banks, Small Finance Banks, etc.**
- **NPCI offers a range of payment solutions and services**, including the Unified Payments Interface (UPI), Immediate Payment Service (IMPS), National Electronic Funds Transfer (NEFT), Real-Time Gross Settlement (RTGS), Bharat Bill Payment System (BBPS), Aadhaar Enabled Payment System (AePS), National Automated Clearing House (NACH), and RuPay, India's own card payment network.
- **Payment systems that the NPCI operate include** National Financial Switch(NFS). **NFS is the largest network of shared Automated Teller Machines (ATMs)** in India facilitating interoperable cash withdrawal, card to card funds transfer and interoperable cash deposit transactions among other value added services in the country.

Source: [Hindu Businessline](#)

RESERVE BANK INTEGRATED OMBUDSMAN SCHEME (RB-IOS)

Context: As per a recent report the number of complaints filed under the Reserve Bank's ombudsman schemes increased by over 68 per cent to 7.03 lakh in the fiscal 2022-23.

Background:

- The complaints pertained to mobile/electronic banking, loans and advances, ATM/debit cards, credit cards, pension payments, remittances, and para banking, among others.

About RESERVE BANK INTEGRATED OMBUDSMAN SCHEME (RB-IOS)

- RB-IOS was launched on November 12, 2021.
- **This scheme integrates the three erstwhile Ombudsman schemes of RBI**, namely:Banking Ombudsman Scheme 2006, Ombudsman Scheme for Non-Banking Financial Companies 2018,Ombudsman Scheme for Digital Transactions 2019.

- Aim: provide **cost-free redress of customer complaints involving 'deficiency in service'** on the part of entities regulated by the RBI.
- If these complaints are not resolved to the satisfaction of the customers or not replied to within a period of 30 days by the regulated entity, the scheme steps in.
- The scheme also includes under its ambit additional Regulated Entities (REs), namely, Non-Scheduled Primary (Urban) Co-operative Banks with a deposit size of ₹50 crore and above and Credit Information Companies.
- The scheme adopts a 'One Nation One Ombudsman' approach by making the RBI's Ombudsman mechanism jurisdiction neutral.

Salient Features:

- **Deficiency in Service:** The grounds for filing a complaint are defined as "deficiency in service", with a specified list of exclusions.
- **Centralized Processing:** A Centralized Receipt and Processing Centre has been set up at RBI, Chandigarh, for handling physical and email complaints in any language.
- **Principal Nodal Officer:** The responsibility of representing the regulated entity and furnishing information lies with the Principal Nodal Officer (ranked as a General Manager in a Public Sector Bank or equivalent).
- **No Right to Appeal:** Regulated entities cannot appeal when an Award is issued by the Ombudsman against them for not providing satisfactory and timely information/documents.
- **Appellate Authority:** The Executive Director-in-charge of Consumer Education and Protection Department at RBI serves as the Appellate Authority under the scheme.
- **Filing Complaints:** Complaints can be filed online on the RBI website.

Source: [PIB](#)

ALTERNATIVE INVESTMENT FUNDS.

Context: Recently, RBI directed banks to refrain from investing in any scheme offered by **Alternative Investment Funds**.

Background:-

- RBI has further directed banks to liquidate their investment from such AIFs within thirty days.

About Alternative Investment Funds:-

- Alternative investment funds (AIF) are effectively **non-traditional privately pooled investment vehicles** that cater to the funding needs of **relatively high-risk ventures** across a broad spectrum of the investing universe.
- The [Securities and Exchange Board of India \(SEBI\)](#), under the **SEBI (Alternative Investment Funds) Regulations, 2012 (the "AIF Regulations")** regulates all pooling structures in India, including AIFs.

Categories of AIFs:-

- **Category I:** Mainly invests in start-ups, SME's or any other sector which Govt. considers economically and socially viable
- **Category II:** private equity funds or debt funds for which no specific incentives or concessions are given by the government or any other Regulator

- **Category III:** hedge funds or funds which trade with a view to making short term returns or such other funds which are open-ended and for which no specific incentives or concessions are given by the government

Benefits of AIF:-

- **Security against volatility** – These schemes do not put their funds in investment options that trade publicly. Hence, they are not related to the broader markets and do not fluctuate with their ups and downs.
- Excellent **portfolio diversification** to a wide array of assets
- **Profitable returns** – as these funds have numerous investment options, They are a better source of passive income. Further, returns are less prone to fluctuations as these schemes are not linked to the stock market.

MUST READ: [UbharteSitaare Alternative Investment Fund](#)

SOURCE: [AIR](#)

CHIT FUND

Context: Recently, over 37, 000 victims of **chit fund** scams got Rs 30 crore back in Chhattisgarh.

Background:-

- With police help, district administrations across Chhattisgarh have recovered and returned Rs 30 crore that 37,000 investors had been defrauded of by chit funds, according to government officials.
- From 2015 to 2017, over 1 lakh such investors were cheated out of hundreds of crores of rupees in the state.

About chit fund:-

- It is called 'Chit Fund' as a **piece of paper is used** for writing a bid amount, known as a chit. It is a **close-ended group lending scheme**.
- It refers to an **agreement arrived at by a group of individuals** to invest a certain amount through periodic installments over a specified period of time.
- It **doesn't fall under the jurisdiction of the RBI** but is a **legal entity**, registered with and regulated by, the state governments under the Chit Funds Act of 1982.

Regulations:-

- At present chit reserves are represented by **Chit Funds Act of 1962, Reserve Bank of India (RBI) Act of 1934, and Securities & Exchange Bond of India (SEBI) Act of 1992 etc.**
- Businesses can **only be registered and regulated** by the respective state governments under the Chit Fund Act of 1962.
- The **Registrar of Chits** is the person **appointed by the state governments in accordance with Section 61 of the Chit Funds Act** as the regulator of chit funds.
- Chit reserves are included in the definition of [Non-Banking Financial Companies \(NBFCs\)](#).
- RBI, in any case, has not spread out any different administrative system for them.

Benefits of Chit Fund:-

- It can be a good way to get money that one might not have access to otherwise is through a chit fund scheme.
- They can **assist with debt repayment** and **provide household financial assistance**, among other things.
- In the event that one wishes to put resources into a chit-store conspiracy, there is **no necessity for security**.
- **Savings and credit plans** are combined in chit funds. Members can save money while still having access to credit when they need it.

MUST READ: [Alternate Investment Fund and Credit Default Swap](#)

SOURCE: [THE INDIAN EXPRESS](#)

FOREX RESERVES

Context: Recently, **Forex reserves** jumped \$2.816 billion to \$606.859 billion.

Background:-

- India's forex reserves jumped \$2.816 billion to \$606.859 billion in the week ended December 8, the Reserve Bank of India (RBI) said on December 15.

About Forex reserves:-

- [Foreign Exchange Reserves](#) are **assets held on reserve by a central bank in foreign currencies**, such as **bonds, treasury bills and other government securities**.
- Reserves are **denominated and expressed in the US dollar**, which is the international numeraire for the purpose.
- **RBI is the custodian** of the Foreign exchange reserves in India.

India's Forex Reserve includes:-

1. **Foreign Currency Assets(FCA)**
 - Assets that are valued based on a currency other than the country's own currency.
 - It is the largest component of the forex reserve.
2. **Gold reserves**
3. **Special Drawing Rights**
 - Assets that are valued based on a currency other than the country's own currency.
 - It is the largest component of the forex reserve.
4. **Reserve position with the International Monetary Fund (IMF)**
 - It is the largest component of the forex reserve.

Significance:-

- They are **used to back liabilities** on their own issued currency, support the exchange rate and set monetary policy.
- It serves as a cushion in the **event of a Balance of Payment (BoP) crisis** on the economic front.
- To ensure that **RBI has backup funds** if their national currency rapidly devalues or becomes altogether insolvent.
- If the **value of the Rupee decreases due to an increase in the demand for foreign currency**, and then RBI sells the dollar in the Indian money market so that depreciation of the Indian currency can be checked.

MUST READ: [Rupee Depreciation](#)

SOURCE: [THE HINDU](#)



KATCHATHEEVU

Context: On February 17, fishermen associations in Ramanathapuram district (Tamil Nadu) announced that they were boycotting the annual two-day festival, scheduled for February 23 and 24, at the St. Anthony's Church in the uninhabited islet. Every year, this event brings together the people from both sides of the Palk Bay separating India and Sri Lanka.

Background:

- The decision is a mark of protest against the Sri Lankan government's continuing arrests of Indian fishermen on charges of poaching.

About Katchatheevu

- **Katchatheevu (meaning 'barren island' in Tamil)**, is a 285-acre uninhabited isle that was caused by a 14th-century volcanic eruption, was ceded by the Indian administration under Prime Minister Indira Gandhi to Sri Lanka in 1974.
- In 1976, through an exchange of letters, both India and Sri Lanka agreed to stop fishing in each other's waters.
- In 1974 and 1976 treaties were signed between the two countries to demarcate the International Maritime Boundary Line (IMBL).
- Katchatheevu, **hitherto used by the fishermen for sorting their catch and drying their nets**, fell on the other side of the IMBL
- Despite the signing of maritime boundary agreements, fishermen communities of both the countries continued their **fishing in the Palk Bay area** peacefully until the Eelam war broke out in 1983.
- Fishermen often risk their lives and cross the IMBL rather than return empty-handed, but the Sri Lankan Navy is on alert, and have either arrested or destroyed fishing nets and vessels of those who have crossed the line.
- St Antony's shrine is the only structure on the island. It is a shrine-church named after Antony of Padua, considered a patron saint of seafarers by Christians. It was built by a prosperous Indian Catholic (Tamilian) fisherman Srinivasa Padaiyachi in the early 20th century. The annual church festival runs for three days. Christian priests from both India and Sri Lanka conduct the worship services (mass) and procession.

Source: [The Hindu](#)

KAVERI RIVER

Context: Acute scarcity of water has been reported in various parts of Karnataka as rivers carry less and less water

Background:

- Most of the areas in the **arid Kalayana Karnataka region** that are dependent on Krishna and Tungabhadra rivers are bracing for a crisis as south west monsoon failed.

About Kaveri River:

- It's designated as the 'Dakshin Bharat ki Ganga' or 'the Ganga of the South'.
- It rises at **Talakaveri on the Brahmagiri range** near Cherangala village, Kodagu (Coorg), Karnataka.
- It flows through the states of Karnataka and Tamil Nadu and descends the Eastern Ghats in a series of great falls.

- Before emptying into the Bay of Bengal south of Cuddalore, Tamil Nadu the river breaks into a large number of distributaries forming a wide delta called the “garden of southern India”

About Tungabhadra River

- The River is a river in India that starts and flows through the state of Karnataka during most of its course, Andhra Pradesh and ultimately joining the Krishna River near Murvakonda in Andhra Pradesh.
- The river Tungabhadra derives its name from two streams viz., the Tunga, about 147 km long and the Bhadra, about 178 km long.
- The Tunga and the Bhadra rise at Gangamoola, in Varaha Parvatha in the Western Ghats at an elevation of 1458 metres
- The river after the confluence of the two streams near Shimoga, runs for about 531 km till it joins the river Krishna at Sangamaleshwaram in Andhra Pradesh. It runs for 382 km in Karnataka, forms the boundary between Karnataka and Andhra Pradesh for 58 km and further runs for the next 91 km in Andhra Pradesh.
- The confluence of Tungabhadra and Krishna River is a holy pilgrimage site - The Sangameswaram Temple.
- Hampi one of the important heritage locations being listed by UNESCO is on the banks of the Tungabhadra River.

Source: [The Hindu](#)

BLACK SEA

Context: Ukraine said on Tuesday that its forces destroyed a Russian military patrol ship in the Black Sea near annexed Crimea, the latest naval attack on Moscow's fleet in the key waterway.

Background:-

- The Black Sea has been a vital battleground in the two-year war between Russia and Ukraine

About Black Sea



- It's a marginal mediterranean sea lying between Europe and Asia, east of the Balkans, south of the East European Plain, west of the Caucasus, and north of Anatolia.
- It is bounded by Bulgaria, Georgia, Romania, Russia, Turkey, and Ukraine.
- The Black Sea is supplied by major rivers, principally the Danube, Dnieper and Dniester.
- The Bosphorus strait connects it to the small Sea of Marmara which in turn is connected to the Aegean Sea via the strait of the Dardanelles. To the north, the Black Sea is connected to the Sea of Azov by the Kerch Strait.
- While the net flow of water through the Bosphorus and Dardanelles (known collectively as the Turkish Straits) is out of the Black Sea, water

generally flows in both directions simultaneously: Denser, more saline water from the Aegean flows into the Black Sea underneath the less dense, fresher water that flows out of the Black Sea.

Source: [NDTV](#)

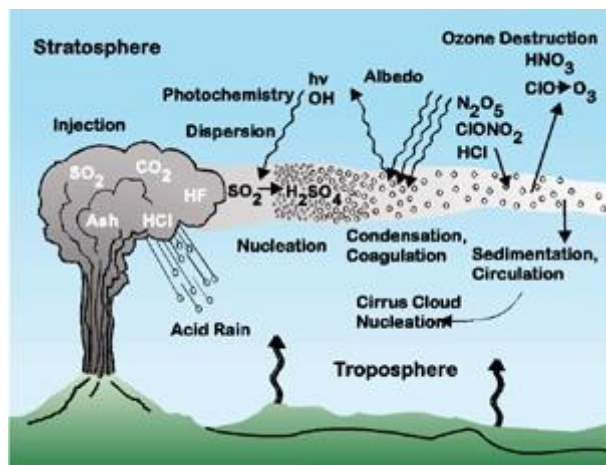
VOLCANIC WINTER

Context: A new study suggested that a catastrophic super volcano eruption could severely impact Earth's climate and lead to a volcanic winter.

Background:

- To qualify as a super eruption, a volcano must release more than 1,000 cubic kilometers of magma. These eruptions are extremely powerful and rare. The most recent super-eruption occurred more than 22,000 years ago in New Zealand.

About VOLCANIC WINTER



- It refers to a cooling effect on Earth's surface caused by large-scale volcanic eruptions.
- It occurs after a particularly explosive volcanic eruption that is rich in sulfur.
- During such an eruption, sulfur dioxide (SO_2) is emitted into the atmosphere. The emitted SO_2 reacts with other atmospheric components, leading to the formation of sulfuric acid (H_2SO_4) aerosols in the stratosphere.
- It spread globally by winds, blot out the sun and prevent solar energy from reaching the earth's surface.

- As a result, typical winter conditions are amplified while the winter season becomes longer.

Impact on Climate:

- Solar Dimming:** The sulfate aerosols interact with solar radiation, causing phenomena like solar dimming and other optical effects in the stratosphere.
- Earth's Albedo:** The sulfuric acid droplets obscure the Sun, increasing Earth's albedo (the reflection of solar radiation). This reduces the amount of sunlight reaching the surface.
- Cooling Effect:** As a result, global temperatures decrease due to reduced solar energy absorption. The cooling impact of volcanic winter can last for several years after the eruption.

Historical Examples:

- Notable volcanic eruptions associated with cooling effects include the Tambora eruption in 1815 and the Pinatubo eruption in 1991.

Source: [India Today](#)

GREAT LAKES

Context: The Great Lakes have experienced historic lows in ice cover recently.

Background:

- The lakes were conspicuously free of ice due to warmer winter weather and above-average surface water temperatures. The decline in ice cover has implications for the Arctic ecosystem, including freshwater availability for local Indigenous communities, industries, and threatened and endangered species that rely on lake habitats for survival.

About Great Lakes



- The Great Lakes are a series of large interconnected freshwater lakes located in the east-central interior of North America.
- These magnificent lakes connect to the Atlantic Ocean via the Saint Lawrence River.
- The five Great Lakes are: Lake Superior, Lake Michigan, Lake Huron, Lake Erie, Lake Ontario
- They are generally situated on or near the Canada–United States border.

Coastal Erosion and Infrastructure:

- **Lower ice levels on the Great Lakes leave coastal areas less protected** from strong winter storms and waves.
- **The absence of ice can lead to increased coastal erosion**, which affects shorelines, beaches, and lakefront properties.
- **Eroded coastlines can result in excessive sedimentation** problems and even severe flooding.

Hazardous Weather and Lake Effects:

- The decline in ice cover affects weather patterns and lake effects.
- Iceless winters can lead to more hazardous weather conditions, including storms, high winds, and lake-effect snow.

Algae Blooms and Water Quality:

- Ice cover plays a role in regulating water temperature and nutrient cycling.
- With less ice, lakes can absorb sunlight faster and warm up sooner in spring.
- Some biologists speculate that this could lead to earlier and larger blue-green algae blooms.

Shipping and Navigation:

- Reduced ice cover affects shipping channels and navigation.
- Ice-free conditions allow for more extended shipping seasons but may also lead to challenges like clogged channels due to ice melt and debris.

Source: [NASA](#)

HAITI

Context: With Haiti's capital spiraling deeper into gang violence, the U.S. said on Sunday that it has airlifted non-essential American staff from its embassy.

Background:

- Armed groups who had been calling for Prime Minister Ariel Henry's resignation have already attacked airports, police stations, sea ports, the Central Bank and the country's national soccer stadium. The situation reached critical mass earlier this month when the country's two main prisons were raided, leading to the escape of about 4,000 prisoners.

About Haiti:

- Haiti is a country on the **island of Hispaniola in the Caribbean Sea. The capital is Port-au-Prince.**

- It occupies the **western three-eighths of the Hispaniola island** which it shares with the Dominican Republic.



- It is the third largest country in the Caribbean (after Cuba and Dominican Republic)
- Haiti has the lowest Human Development Index in the Americas, as well as widespread slavery.
- The country endured a coup in 2004, which prompted U.N. intervention, as well as a catastrophic earthquake in 2010 that killed over 250,000 people and a cholera outbreak.
- **Haiti has experienced a socioeconomic and political crisis** marked by riots and protests, widespread hunger, and increased gang activity

Source: [Wikipedia](https://en.wikipedia.org/wiki/Haiti)

SPRATLY ISLANDS AND SECOND THOMAS SHOAL

Context: Tensions are rising in the South China Sea after Chinese vessels attempted to block a Philippine mission to resupply their troops on the contested reef

Background:-

- A recent incident in the area, where the Philippines claims that China Coast Guard ships caused two collisions with their boats and water cannoned one of them, has renewed global interest in the flashpoint. The Philippine vessels were part of a routine mission to deliver provisions to troops stationed on the grounded navy vessel BRP Sierra Madre at Second Thomas Shoal.

About Spratly Islands:-

- The Spratly Islands are a **disputed archipelago in the South China Sea**, archipelago lies off the coasts of the Philippines, Malaysia and southern Vietnam.
- The islands are **largely uninhabited, but offer rich fishing grounds and may contain significant oil and natural gas reserves.**
- China, the Philippines, Taiwan (ROC) and Vietnam claim the whole Spratly Islands while Brunei and Malaysia claim part of the Islands.
- In 2013, the Philippines had filed a case against China with the Permanent Court of Arbitration in The Hague, challenging the legality of China's claims and activities in the South China Sea.
- The Permanent Court of Arbitration (PCA) in The Hague, Netherlands, ruled that China's claims of historical rights over South China Sea (SCS) has no legal basis.

About Second Thomas shoal

- Second Thomas Shoal is a **submerged reef in the Spratly Islands of the South China Sea.**
- It is a disputed territory and **claimed by several nations.** The reef is occupied by Philippine Navy personnel aboard ship, the BRP Sierra Madre, that was intentionally grounded on the reef in 1999 and has been periodically replenished since then.

Source: [Hindu](https://www.hindu.com)

DESERT SAND DUNES

Context:The age of one of Earth's largest and most complex types of star shaped sand dune has been calculated for the first time.

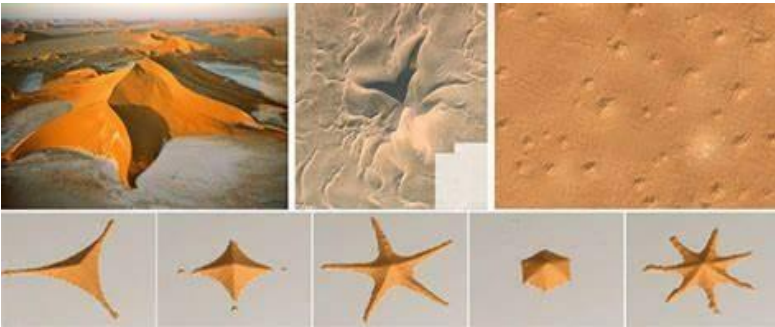
Background:

- Star dunes are among Earth's largest and most complex types of sand dunes. Experts had never before been able to put a date on when they were formed. Now scientists have discovered that a dune called Lala Lallia in Morocco formed 13,000 years ago.

About sand dune:

- They are **accumulation of sand grains** that takes the form of a mound or ridge due to the influence of wind and gravity.

- Star dunes - or pyramid dunes** - are named after their distinctive shapes and reach hundreds of metres in height.



- They resembling stars when viewed from above.

- They are massive sand dunes characterized by arms radiating from a central peak and are widespread in modern deserts across the globe, including sand seas in Africa, Arabia,

China, and North America.

- Dynamic Movement:** Star dunes are not static; they shift and evolve over time. They are formed by opposing winds with changing directions.
- Unlike other dunes, star dunes never collapse due to this continuous reorganization process.

Source: [BBC](#)

3RD LAND PORT AT SABROOM IN SOUTH TRIPURA.

Context:Recently, Prime Minister Narendra Modi virtually inaugurated the 3rd Land Port at Sabroom in South Tripura.

Background:

- In addition to the modern Land Port in Sabroom, the Prime Minister inaugurated 11 projects in Tripura.

About SABROOM LAND PORT:



- It's strategically located in the **South Tripura district of the state of Tripura, India**, along the international border with Bangladesh.

- It plays a vital role in linking India and Bangladesh, facilitating cross-border trade.

- Sabroom is directly connected to the Chittagong port of Bangladesh via the Maitree bridge over the River Feni.

- The land port provides facilities such as a passenger terminal building, cargo administrative building, and warehouse.

- It aims to enhance connectivity and boost trade between India and Southeast Asia.

Source: [Times of India](https://www.timesofindia.com)

DEMOCRATIC REPUBLIC OF THE CONGO

Context: Over the past few weeks, many have died and hundreds of thousands displaced after the fighting between the Congolese army and Rwandan-backed M23 rebel group escalated.

Background:-

- The growing tensions between Congo and Rwanda, which has been accused of supporting the rebels, have not only increased the risk of an all-out conflict but also pose a threat to food security for millions.

About Democratic Republic of the Congo (DRC):

- The DRC is the **second-largest country in Africa**. The country has a 25-mile (40-km) coastline on the Atlantic Ocean but is otherwise landlocked.
- It is **named after the Congo River**, which flows through the country.
- The country is often referred to by its acronym, the DRC, or called Congo (Kinshasa), with the capital added parenthetically, to distinguish it from the other Congo republic, which is officially called the Republic of the Congo and is often referred to as Congo (Brazzaville).
- The country is bordered by the Republic of the Congo, Central African Republic, South Sudan, Uganda, Rwanda, Burundi, Tanzania (across Lake Tanganyika), Zambia, Angola and the South Atlantic Ocean.



- The **DRC is extremely rich in natural resources** (It boasts vast deposits of industrial diamonds, cobalt, and copper) but has suffered from political instability, lack of infrastructure, corruption, and centuries of both commercial and colonial extraction and exploitation.

Congo River

- The Congo River, **formerly also known as the Zaire River, is the second-longest river in Africa**, shorter only than the Nile, as well as the third-largest river in the world by discharge volume, following the Amazon and Ganges rivers.
- **It is the world's deepest recorded river, with measured depths of around 220 m. It is the only major river to cross the Equator twice.**

Source: [The Hindu](https://www.thehindu.com)

DARIEN GAP

Context: The Darien Gap, a dense jungle spanning northern Colombia and southern Panama, has become a perilous route for migrants seeking asylum in the US.

Background

- The challenging topography of humid, swampy rainforest as well as criminal gangs who control the area, make the route an extremely challenging and deadly one.

About Darien Gap



- Also known as the “**Tapón del Darién**” in Spanish, is a **geographic region in the Isthmus of Darién** connecting the American continents within Central America.
- **It consists of a** large watershed, dense forest, and mountains in Panama’s Darién Province and the northern part of Colombia’s Chocó Department.
- Migrants, primarily **Haitians and Venezuelans**, hike through the dense jungle to reach the US border.

Key features of the Darién Gap include:

- **Population:** The Darién Gap is home to the Embera-Wounaan and Guna people and was also home to the Cueva people who became extinct by 1535, following the Spanish invasion of Panama.
- **Geography:** The geography of the Darién Gap on the Colombian side is dominated primarily by the river delta of the Atrato River, which creates a flat marshland at least 80 km (50 mi) wide. The Panamanian side, in stark contrast, is a mountainous rainforest.
- **Roads:** There is no road, not even a primitive one, across the Darién. The “Gap” interrupts the Pan-American Highway.

Source: [Down To Earth](#)

GULF OF TONKIN

Context: Vietnam asks China to respect Gulf of Tonkin delimitation agreement.

Background:

- Gulf of Tonkin delimitation agreement was signed in 2000 that outlines the borders of territorial seas, exclusive economic zones, and continental shelves in the Gulf of Tonkin.

About GULF OF TONKIN:



- It’s historically marked by **cooperative relations between Vietnam and China**, now faces a fresh sea dispute due to China’s unilateral expansion of territorial boundaries.
- **The gulf located at the northwestern portion** of the South China Sea, off the coasts of Tonkin (northern Vietnam) and South China.
- It serves as a **vital waterway connecting the South China Sea to the Beibu Gulf (known as the Gulf of Tonkin in Vietnam)**.

Source: [Times Of India](#)



Environment and Ecology



LEOPARD

Context: According to a recent report, India's leopard population rose by 8% from 12,582 in 2018 to 13874 in 2022.

Background:

- Indian Leopard is **listed in Schedule I of the Indian Wildlife (Protection) Act, 1972** and included in **Appendix I of CITES**. It is listed as **Near Threatened on the IUCN Red List**

Findings:

- India's leopard population is estimated at 13,874 individuals (with a range of 12,616 to 15,132) representing a stable population compared to the similar area sampled in 2018, which had 12,852 individuals.
- The estimate covers 70% of leopard habitat, excluding regions like the Himalayas and semi-arid parts that are not tiger habitat.

Regional Trends:

- Central India:** Shows a stable or slightly growing leopard population (2018: 8,071, 2022: 8,820).
- Shivalik Hills and Gangetic Plains:** Experienced a decline (2018: 1,253, 2022: 1,109).
- Overall Growth Rate:** Across India, the sampled area showed a 1.08% per annum growth.
- Highest Growth Rate:** Central India and Eastern Ghats exhibited the highest growth rate at 1.5%.

State-wise Distribution:

- Madhya Pradesh:** Houses the largest leopard population in the country with 3,907 individuals (2018: 3,421). Second Stands Maharashtra, Karnataka Stands third.
- Tiger Reserves:** Nagarajunasagar Srisailam (Andhra Pradesh), Panna (Madhya Pradesh), and Satpura (Madhya Pradesh) have the highest leopard populations.

State-wise Trends:

- Madhya Pradesh: **Witnessed the most significant uptick**, with an increase of 486 leopards.
- Arunachal Pradesh: **Led in terms of percentages**, with a whopping 282% increase.
- Goa, Bihar, Telangana, Kerala, Chhattisgarh, Uttarakhand, and Odisha reported declines.

Source: [The Hindu](#)

BUREAU OF ENERGY EFFICIENCY

Context: Recently, 22nd Foundation Day of the Bureau of Energy Efficiency was celebrated in New Delhi.

Background:-

- It was created in March 2002 under the provisions of the Energy Conservation Act 2001.

About Bureau of Energy Efficiency (BEE):-

- The BEE is a **statutory body under the Ministry of Power, Government of India**.
- Function: to **encourage the efficient use of energy in India by developing programs and strategies that promote energy conservation**.
- Focus: self-regulation and market principles to enhance energy efficiency across various sectors.

Key Initiatives of BEE

- **Standards & Labelling Scheme:** BEE provides consumers with information on energy-efficient appliances and equipment, allowing them to make informed choices.
- **Energy Conservation Building Code:** BEE promotes energy-efficient practices in building construction and design.
- **Perform, Achieve, and Trade (PAT):** This program targets energy-intensive industries and encourages them to achieve specific energy-saving targets.
- **Energy Efficiency in States:** BEE supports state-level initiatives to promote energy conservation. The State Energy Efficiency Index 2023 was released by the BEE in India. This index evaluates and ranks states based on their energy efficiency efforts, policies, and programs.
- **Demand Side Management (DSM):** BEE focuses on managing energy demand through various strategies.
- **National Energy Conservation Awards:** Recognizing outstanding efforts in energy conservation.
- **Awareness Campaigns:** BEE runs campaigns to raise awareness about energy efficiency, such as the recent **#RaiseItBy1Degree campaign** encouraging optimal space cooling settings.

Source: [PIB](#)

HANGUL

Context: Mating calls of endangered hangul indicate record uptick in population

Background:

- Kashmir's highly shy and sensitive animal, hangul, has reported one of the healthiest rutting or mating season in the previous autumn. It is the state animal of Jammu & Kashmir.

About Hangul:

- Also called Kashmir Stag is the state animal of Jammu & Kashmir, is a subspecies of Central Asian red deer endemic to Kashmir and surrounding areas.
- They are now scattered within 141 sq km of the **Dachigam National Park** located on foothills of Zabarwan range on the outskirts of Srinagar.
- The Hangul was once **widely distributed in the mountains of Kashmir and parts of Chamba district in neighbouring Himachal Pradesh.**
- The endangered subspecies has now begun to use an old migratory route which spread through Sind Valley up to Tulail in Gurez Valley. The corridor was last known to be active in the early 1900s.
- As of 2023, of the 289 Hanguls, 275 are in Dachigam National Park and 14 are in Tral Wildlife Sanctuary, which is considered as the second home of Hangul
- Conservation Status:-IUCN's Red List: **Critically Endangered.**

SIMILIPAL TIGER RESERVE

Context: The Odisha government has sought the National Tiger Conservation Authority's (NTCA) nod to introduce some female tigers to the Similipal Tiger Reserve.

Background:

- Odisha wants to bring in female big cats from the Central Indian landscape, which includes areas like Madhya Pradesh, Rajasthan and Maharashtra to improve the tigers' gene pool and improve the sex ratio.

About Similipal Tiger Reserve:

- It's a national park and tiger reserve located in the **Mayurbhanj district of Odisha**, and is part of the Mayurbhanj Elephant Reserve.

- The reserve derives its name from the abundance of red silk cotton trees, known as 'Simul' in the local language.
- It is home to a **diverse range of flora and fauna**, including the Bengal tiger, Asian elephant, gaur, and chausingha.
- Notably, it is **Asia's second-largest biosphere** and the country's only wild habitat for melanistic royal Bengal tigers.
- The reserve features **two impressive waterfalls**: the Barehipani Falls and the Joranda Falls.
- Similipal was declared a wildlife sanctuary in 1979 and a biosphere reserve in 1994.
- It has been part of the UNESCO World Network of Biosphere Reserves since 2009.
- The region around STR is home to a **variety of tribes including** Kolha, Santhala, Bhumija, Bhatudi, Gondas, Khadia, Mankadia and Sahara.

Tiger Relocation Process

- The National Tiger Conservation Authority (NTCA) 's **approval is mandatory for any tiger relocation project within India.**
- Before relocating tigers, the **state government must seek permission from the NTCA.**
- In the case of Similipal Tiger Reserve, the NTCA technical committee is expected to visit the reserve soon to study its landscape, climate, whether it has the required prey base and other aspects before giving its go-ahead. Source: [Indian Express](#)

BANNERGHATTA NATIONAL PARK (BNP)

Context: Days after the clearance from the National Board of Wildlife (NBWL), the National Highway Authority of India (NHAI) has sought to clear the path for building a six-lane elevated highway inside the Bannerghatta National Park (BNP).

Background:

- Faced with very high man-animal conflict and encroachments, BNP is already reeling under severe threats of fragmentation

About Bannerghatta National Park:

- It's located near Bangalore, Karnataka was declared as a national park in 1974.
- In 2002, a small portion of the park became a zoological garden, the Bannerghatta Biological Park
- Between 1995 and 2021, the dry deciduous forests in the National Park shrunk approximately by 44% due to uncontrolled diversion of forest land for agricultural purpose, urbanisation, etc.
- Other national parks of Karnataka are Bandipur National Park, Anshi National Park, Kudremukh National Park, Nagarhole National Park.

Source: [The Hindu](#)

CARBON CAPTURE AND STORAGE (CCS)

Context: In a significant shift from its previous stance, Germany, a major contributor to greenhouse gas emissions, has decided to permit industries to capture their carbon emissions and store them underground at offshore sites.

Background:

- Germany aims to become carbon neutral by 2045, but it faces challenges in curbing emissions from sectors like cement production. Carbon capture and storage is now seen as a temporary solution until more sustainable innovations emerge.

About Carbon Capture and Storage (CCS):

- Carbon Capture and Storage (CCS) is a crucial approach in the fight against climate change.
- Carbon capture and storage (CCS) involves capturing carbon dioxide (CO₂) emissions from industrial processes and power plants.
- Unlike carbon dioxide removal (CDR), which removes CO₂ from the atmosphere, CCS prevents CO₂ from escaping into the air in the first place.
- The goal of CCS is to prevent a significant amount of CO₂ from entering the atmosphere and contributing to global warming and climate change.

Benefits

- **Reducing Greenhouse Gas Emissions:**
 - CCS captures carbon dioxide (CO₂) emissions from industrial processes and power plants, preventing them from entering the atmosphere.
 - By storing CO₂ underground, CCS helps reduce the overall concentration of greenhouse gases.
- **Preserving Fossil Fuel Use:**
 - CCS allows us to continue using fossil fuels while minimizing their environmental impact.
 - It provides a bridge toward cleaner energy sources by reducing emissions from existing fossil fuel infrastructure.
- **Creating Carbon Sinks:**
 - Underground storage sites act as carbon sinks, permanently storing CO₂ away from the atmosphere.
 - Properly managed storage sites can sequester emissions for centuries.
- **Transitioning to Clean Energy:**
 - CCS provides a transition strategy as we shift toward renewable energy sources.
 - It buys time for renewable technologies to mature and become economically competitive.

Source: [Economic Times](#)

JIM CORBETT NATIONAL PARK

Context: Recently, The Supreme Court has banned tiger safaris within the core areas of Jim Corbett National Park.

Background:

- Tiger safaris will now be restricted to the peripheral and buffer zones surrounding the national park. These areas provide opportunities for wildlife observation while minimizing disturbances to the core habitats.

About Jim Corbett National Park:

- It is located in the Nainital district of Uttarakhand and is part of the largest Corbett Tiger Reserve.
- It holds the distinction of being India's first national park and the place where Project Tiger was launched in 1973.

- It is famous for Royal Bengal tigers, Asiatic elephants, and over 586 species of birds, making it one of India's richest bird regions.
- Birdlife International has declared it an 'Important Bird Area'.

Core Zone:

- The core zone is a crucial area where the conservation of wildlife and natural resources is strictly protected by the forest department.
- It serves as a sanctuary for wildlife, where human activity is restricted to minimize disturbances.
- In the core zone, **activities such as** research, monitoring, and habitat restoration take place.

Buffer Zone:

- It surrounds or adjoins the core areas and acts as a transition zone between the wild and human-inhabited regions.
- In the buffer zone, regulated activities like sustainable use of natural resources, environmental education, and controlled tourism occur.
- This zone strikes a **balance between conservation and compatible human uses of the land.**

Source: [Indian Express](#)

NITROGEN POLLUTION

Context: In 2050, one-third of global river sub-basins are projected to face severe scarcity of clean water due to nitrogen pollution, new research has found.

Background:

- Analysing more than 10,000 global river sub-basins, an international team of researchers found that nitrogen pollution dramatically increased the number of river basin systems considered scarce with regards to its water quality. The supply of clean water for all is one of the United Nations Sustainable Development Goals (SDGs) for 2030.

About Nitrogen Pollution:

- It refers to the **excessive presence of nitrogen compounds in the environment**, primarily in water bodies like rivers and lakes.
- According to **the United Nations Environment Programme (UNEP)**, each year, 200 million tonnes of reactive nitrogen, 80% of the total, is lost to the environment.

Sources of Nitrogen Pollution:

- **Agricultural** activity is one of the main drivers of nitrogen pollution has been the rising consumption of nitrogen-based fertilizer, which can leach into groundwater or runoff into surface water bodies.
- **Industrial processes** like manufacturing processes, particularly those involved in the production of nitrogen-based chemicals and fertilisers, release nitrogen compounds into the environment.
- **Combustion of fossil fuels** in industries also emits nitrogen oxides (NOx) into the atmosphere.
- **Livestock waste**, primarily from manure and urine, contains nitrogen compounds such as ammonia. Improper storage and management of livestock waste can lead to nitrogen runoff, contaminating water bodies and contributing to eutrophication.

- **Wildfires and burning of cow dung cake** as a fuel release nitrogen oxide (NO_x) and nitrous oxide (N₂O) into the atmosphere. These emissions contribute to air pollution and can have regional and global impacts on atmospheric chemistry and climate.

Consequences/Impacts of Nitrogen Pollution:

- Excess nitrogen acts as a nutrient fertiliser for aquatic plants, leading to excessive growth of algae and other aquatic vegetation. This phenomenon is known as eutrophication and leads to algal blooming.
- High levels of **nitrogen dioxide (NO₂)** in the air can exacerbate respiratory conditions such as asthma and increase the risk of respiratory infections.
- **Nitrate contamination of drinking water** can also pose health risks, particularly to infants, by causing methemoglobinemia or blue baby syndrome.
- Nitrous oxide (N₂O) released into the atmosphere can lead to the depletion of the stratospheric ozone layer, which protects the Earth from **harmful ultraviolet (UV) radiation**. It can increase the **risk of skin cancer, cataracts, and other health problems in humans**, as well as harm marine ecosystems and agricultural crops.

Government measures to reduce Nitrogen Pollution:

- **Bharat Stage (BS VI) Emission Standards** have made stricter emission standards for vehicles and industries aimed to curb the release of nitrogen oxides and particulate matter, which are precursors to air and water pollution.
- **Soil Health Cards** issued to farmers, these cards provide soil nutrient status and customised fertiliser recommendations, promoting balanced nutrient application.
- Nano Urea is a fertiliser patented and sold by the Indian Farmers Fertiliser Cooperative Limited (IFFCO), which reduces the unbalanced and indiscriminate use of conventional urea and increases crop productivity.

Source: [Economic Times](#)

POBITORA WILDLIFE SANCTUARY

Context: Assam Cabinet on March 10 decided to de-notify a prime one-horned rhino habitat – the Pobitora Wildlife Sanctuary about 48km east of Guwahati.

Background:

- Environment activists says the decision, taken 26 years after the Assam Forest Department notified Pobitora as a wildlife sanctuary on March 17, 1998, is the first of its kind for any protected area in the country.

About Pobitora Wildlife Sanctuary

- It's a wildlife sanctuary on the **southern bank of the Brahmaputra in Morigaon district in Assam, India** and has the highest concentration of the one-horned rhinos on earth.
- The Grasslands of Pobitora offer sightings of the **Greater One Horned Rhinoceros, Wild Water Buffalo, Monitor Lizard, Wild Boar, etc.**
- Pobitora also holds the distinction of being the source population of the Indian Rhinoceros Vision, 2020 (IRV), Eight Rhinos were translocated from Pobitora Wild life Sanctuary and introduced into Manas National Park

Source: [Hindu](#)

TRAFFIC (TRADE RECORDS ANALYSIS OF FLORA AND FAUNA IN COMMERCE)

Context: An analysis by TRAFFIC and WWF-India between January 2010 and December 2022 has revealed that Tamilnadu accounted for almost 65% of illegal trade in shark body parts.

Background:-

- Illegal trade in wildlife species is a serious conservation threat.

About TRAFFIC (Trade Records Analysis of Flora and Fauna in Commerce):-

- TRAFFIC is the **Wildlife Trade Monitoring Network**, is a **global non-governmental organization monitoring the trade in wild plants and animals**.
- It came to India in 1991, operating as a division of WWF-India.
- It focuses on **preserving biodiversity and sustainable legal wildlife trade** while working against unsustainable illegal wildlife trade
- Mission: built on the **long-term vision of the Kunming-Montreal Global Biodiversity Framework**: a world living in harmony with nature where by 2050, biodiversity is valued, conserved, restored, and wisely used, maintaining ecosystem services, sustaining a healthy planet and delivering benefits essential for all people.
- It was **originally created in 1976** as a specialist group of the **Species Survival Commission of the International Union for Conservation of Nature (IUCN)**, and evolved into a strategic alliance of the **World Wide Fund for Nature (WWF) and the IUCN**
- TRAFFIC is part of the Cambridge Conservation Initiative - based in the David Attenborough Building - a hub which brings together Cambridge University and several international NGOs striving for sustainability and to conserve nature.

Source: [Hindu](#)

GLOBAL METHANE TRACKER

Context: Recently, **International Energy Agency (IEA)** has released Global Methane Tracker 2024.

Background:

- The Global Methane Pledge, **led by the US and EU**, aims to slash methane emissions by 30% by 2030

About Global Methane Tracker

- It is an annual report released by the International Energy Agency (IEA).
- It provides the most **recent data on methane emissions from the energy sector**, incorporating new scientific studies, measurement campaigns, and satellite-collected information.

Key Highlights of the 2024 Report:

- Methane emissions from fuel use in 2023 were nearly the highest ever, at 120 million tonnes (Mt). This is a slight increase compared to 2022.
- Of the 120 Mt of methane released into the atmosphere, around 80 million tons came from just 10 countries.
- The United States led in methane emissions from oil and gas operations, closely followed by Russia.
- China led in emissions from coal operations.
- To achieve the Paris Agreement goal of limiting warming to 1.5°C, the world needs to reduce methane emissions from fossil fuels by 75% by 2030.
- The IEA estimated that this goal would require about \$170 billion in spending, less than 5% of the income generated by the fossil fuel industry in 2023.

About the International Energy Agency (IEA):

- The IEA is an autonomous inter-governmental organization within the Organisation for Economic Co-operation and Development (OECD) framework.
- It was **created in response to the 1973-1974 oil crisis** when an oil embargo by major producers pushed prices to historic levels and exposed the vulnerability of industrialized countries to dependency on oil imports.

Source: [IEA](#)

FLUORIDE CONTAMINATION

Context: Recently, Fluoride contamination was detected in three districts of Kerala.

Background:

- According to the **State Environment department**, the source of contamination is **likely geogenic**, meaning these constituents are **naturally present in the rock or soil matrix and enter groundwater through various chemical processes**.

About FLUORIDE CONTAMINATION

- Fluoride is essential for **dental health at low concentrations**, excessive exposure can lead to health problems.
- **Essential Element:** Fluoride is naturally present in water and certain foods. It plays a crucial role in preventing tooth decay.
- **Threshold:** However, **when fluoride levels exceed 1.5 mg/L, it becomes toxic to humans**. According to the Bureau of Indian Standards, the maximum permissible limit of arsenic in groundwater meant for drinking is 0.01 mg/l, while the corresponding limit of fluoride is 1.0 mg/l, which can be extended to 1.5 mg/l in case no alternative source of water is available.

Health Impacts:

- **Dental Fluorosis:** Excessive fluoride causes dental fluorosis, characterized by staining, pitting, and weakening of tooth enamel.
- **Skeletal Fluorosis:** Chronic exposure leads to skeletal fluorosis, affecting bones and joints.
- **Neurological Effects:** High fluoride levels may impact the nervous system.

Sources of Contamination:

- **Geochemical Reactions:** Fluoride leaches from rocks and soil into groundwater.
- **Geological Factors:** High fluoride content in specific geological formations.
- **Anthropogenic Factors:** Industrial processes, fertilizers, and mining contribute to contamination.

Preventive Measures:

- **Water Treatment:** Implementing effective water treatment methods to reduce fluoride levels.
- **Monitoring:** Regular monitoring of fluoride content in drinking water.
- **Alternative Sources:** Providing alternative water sources in affected areas.
- **Endemic Areas:** Certain regions are endemic for fluorosis due to natural geological factors.
- **Balancing Act:** Balancing the benefits of fluoride for dental health with the risks of toxicity is crucial.

Other Pollutants that Affect Water Quality:

- Arsenic reaches groundwater through industrial and mining discharges, as well as fly ash ponds from thermal power plants.
- Certain regions in India have localized occurrences of elevated uranium concentrations in groundwater.
- Other elements that act as water pollutants include mercury (causing Minamata disease), cadmium (associated with Itai-Itai disease and nephritis), chromium (linked to lung cancer and reduced photosynthetic activities in plants), copper (causing various health issues), zinc, and lead (associated with anaemia, mental retardation, and other health problems).

Source: [The Hindu](#)

RISING SEA SURFACE TEMPERATURE

Context: The average global sea surface temperature (SST) — the temperature of the water at the ocean surface — for February 2024 stood at 21.06 degree Celsius, the highest ever in a dataset that goes back to 1979.

Background:-

- The previous record of 20.98 degree Celsius was set in August 2023.

Why are the oceans getting warmer?

- Since the Industrial Revolution kicked off in the 19th Century, human activities such as burning fossil fuels have released high levels of greenhouse gases (GHGs) in the atmosphere. Carbon dioxide, methane, ozone, and nitrous oxide are some of the notable GHGs, which essentially trap heat in the atmosphere and contribute to global warming. As a result, the average global temperature has risen at least 1.2 degree Celsius above pre-industrial times.
- Notably, almost 90 per cent of the extra heat trapped by GHGs has been absorbed by the oceans, making them steadily warmer over the decades.
- El Niño — a weather pattern that refers to an abnormal warming of surface waters in the equatorial Pacific Ocean — has contributed to both ocean warming and rising global surface temperatures.
- There is also **less dust blowing off the Sahara Desert** recently due to weaker-than-average winds. Typically, the dust forms a “giant umbrella that shades” the Atlantic water and reduces ocean temperatures.

Why are rising sea surface temperatures a cause of worry?

- Higher ocean temperatures can have irreversible consequences for marine ecosystems. For instance, warmer oceans lead to an increase in **ocean stratification** — the natural separation of an ocean’s water into horizontal layers by density, with warmer, lighter, less salty, and nutrient-poor water layering on top of heavier, colder, saltier, nutrient-rich water. Usually, ocean ecosystems, currents, wind, and tides mix these layers.
- The rise in temperatures, however, has made it harder for water layers to mix with each other. Due to this, oceans are able to absorb less carbon dioxide from the atmosphere and the oxygen absorbed isn’t able to mix properly with cooler ocean waters below, threatening the survival of marine life.
- Nutrients are also not able to travel up to the surface of the oceans from below. This could threaten the population of phytoplankton — single-celled plants that thrive on the ocean surface and are the base of several marine food webs. Phytoplankton are eaten by zooplankton, which are consumed by other marine animals such as crabs, fish, and sea stars.

- Warmer oceans cause marine heat waves (MHWs), which occur when the surface temperature of a particular region of the sea rises to 3 or 4 degree and contribute to coral bleaching, which reduces the reproductivity of corals and makes them more vulnerable to life-threatening diseases. They also impact the migration pattern of aquatic animals.
- Higher ocean temperatures may also result in more frequent and intense storms like hurricanes and cyclones.

Source: [Indian Express](#)

AMENDMENT IN PLASTIC MANAGEMENT RULES 2024

Context: Ministry of Environment Forest and climate change, Government of India has amended the PWM Rules 2016. Now these Rules will be called as Plastic Waste Management (Amendment) Rules 2024.

Background:

- **The Plastic Waste Management Rules** were introduced as a crucial step to address the escalating plastic pollution crisis resulting from the widespread use of plastic packaging in the Indian consumer market.

About Plastic pollution:

- It refers to the **accumulation of plastic objects and particles in the Earth's environment**, adversely affecting both humans and wildlife.
- The initial attempt to tackle plastic pollution was marked by the **introduction of the Plastic Waste (Management and Handling) Rules, 2011 (PWMH Rules, 2011)**.
- The Ministry of Environment, Forest and Climate Change notified the Plastic Waste Management (Amendment) Rules, 2024 to amend the Plastic Waste Management Rules, 2016.

Definitions Revised: The definitions of "importer", "manufacturer", and "producer" have been revised.

- The term **"importer" now includes** imports of any plastic packaging/commodity with plastic packaging/carry bags/plastic sheets/plastic raw material.
- The term **"manufacturer" now includes** a person engaged in the production of plastic raw material/compostable plastics/biodegradable plastics.
- The term **"producer" now also includes** persons engaged in manufacturing of intermediate material used for manufacturing plastic packaging.

New Definition:

- A new definition of "seller" has been inserted, which means any person who sells plastic raw material for producing plastic packaging is a seller.

Conditions Revised:

- The provision relating to selling of raw material has been revised.
- Now, only the producers registered under these rules can get raw materials from the manufacturer.

Certification Requirement:

- The manufacturers of compostable plastic/biodegradable plastic carry bags or commodities permitted under the rules, will have to obtain a certificate from the Central Pollution Control Board ('CPCB') before marketing or selling.

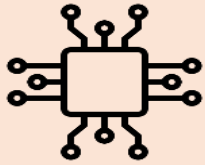
Reporting Requirement:

- The manufacturer of compostable plastic/biodegradable plastic will have to inform the CPCB, the quantity of such commodities introduced in the market and the pre-consumer waste generated by it.

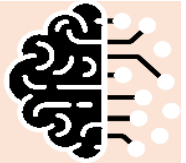
Local Body Assessment:

- Provisions have been inserted which enables the local body to assess the plastic waste generated, plastic waste management infrastructure available for collection/segregation/processing and send a report to the State Pollution Control Board or Pollution Control Committee by 30th June of each year.

Source: [SSC Online](#)



SCIENCE & TECHNOLOGY



NORTHERN WHITE RHINO

Context: The international consortium, BioRescue, announced the first-ever rhino pregnancy through a lab-made embryo transferred to a southern white rhino.

Background:

- In 2009, four **Northern White Rhinos (NWR) were brought from a zoo in the Czech Republic to a conservancy in Kenya** in the hope that they might breed in their natural environment. The two males — Suni and Sudan — have died since, and the two females — Najin and her daughter Fatu — turned out to be incapable of reproduction for pathological reasons. This meant surrogacy was the only option to produce a northern white calf through IVF.

Northern White Rhino:

- It is a subspecies of the white rhino (*Ceratotherium simum*), which is native to central and eastern Africa.
- Northern White Rhino is listed as **critically endangered on the IUCN Red List**.
- The NWR population has declined dramatically due to **poaching, habitat loss, civil war, and disease**.

How are scientists creating Test Tube Rhinos?

- **BioRescue**, an international consortium of scientists, achieved a historic milestone with the first-ever rhino pregnancy through IVF. The process involved transferring a lab-made rhino embryo into a surrogate southern white rhino.
- The death of the last male northern white rhino (NWR) in 2018 made surrogacy the only viable option for species regeneration. The remaining two females, Najin and Fatu, were found incapable of reproduction for pathological reasons.
- The only hope for the NWR is to use frozen sperm from deceased males and eggs from the females to create embryos in the laboratory, and then implant them into surrogate mothers from the southern white rhino (SWR) subspecies, which is more abundant and genetically similar.

Concerns regarding the Test Tube Rhinos:

- Embryos used in the process are derived from eggs of two females and sperm from deceased males, limiting the gene pool for a viable northern white population.
- Crossbreeding with southern white rhinos is not a solution, as it would result in the loss of unique attributes of the northern white rhino, adapted for swampy habitats. Genetic diversity remains a concern even with successful IVF and surrogacy attempts.
- Babies born through IVF are not genetically hardwired to exhibit typical northern white rhino behaviours. Early interaction and learning from northern white adults are crucial for maintaining species-specific traits.
- The urgency lies in the age of the remaining northern white females, Najin (35) and Fatu (24). To ensure behavioural and social skills are passed on, the first IVF calves must be born in time to learn from the surviving females.

Source: [The Indian Express](#)

NANO UREA

Context: India will replace the consumption of 2.5 million tonnes of conventional urea with nano urea in FY24, the union chemicals and fertilizers minister said at a press conference recently.

Background:

- This is in line with India's goal of achieving self-sufficiency in urea production by 2025.

About UREA:

- Urea is a **significant component in Indian agriculture** due to its high nitrogen content and affordability.
- Urea is the most important nitrogenous fertilizer in the country and Nano urea has been developed to address several challenges associated with conventional urea fertilizers.
- Over use of urea leads to nitrate leaching, water contamination, and greenhouse gas emissions, soil acidification and loss of biodiversity.

Nano Urea

- It's a **nanotechnology-based fertiliser** that is used to provide a sufficient amount of nitrogen to plants.

Development and Approval of Nano Urea:

- It's developed and patented by the Indian Farmers Fertiliser Cooperative Limited (IFFCO).
- It is the **only nano fertilizer approved by the Government of India** and included in the Fertilizer Control Order (FCO).

Benefits:

- **Energy-Efficient Production:** Nano Urea is **produced using an energy-efficient and environmentally friendly process with reduced carbon footprints.**
- **Increased Nutrient Availability:** It enhances nutrient availability to crops by more than 80%, resulting in higher nutrient use efficiency.
- **Improved Crop Productivity:** Nano Urea is expected to improve crop yields, soil health, and the nutritional quality of produce.
- Nano Urea reduces nitrate leaching, water contamination, and greenhouse gas emissions compared to traditional urea.

Source: [iffco](https://www.iffco.org/)

PROTOTYPE FAST BREEDER REACTOR (PFBR)

Context: In a historic milestone marking entry into the vital second stage of India's three stage nuclear program, Prime Minister, Shri Narendra Modi witnessed, commencement of "Core Loading" at India's first indigenous Fast Breeder Reactor (500 MWe) at Kalpakkam, Tamil Nadu.

Background:-

- The government had approved in 2003, the creation of Bharatiya Nabhikiya Vidyut Nigam Ltd (BHAVINI) to construct and operate India's most advanced nuclear reactor-Prototype Fast Breeder Reactor (PFBR).

About PFBR and Indias Three stage nuclear program

- The PFBR is a machine that **produces more nuclear fuel than it consumes.** Its core-loading event is being hailed as a "milestone" because the operationalisation of the PFBR will mark the start of stage II of India's three-stage nuclear power programme.

- In the first stage, India used pressurised heavy water reactors (PHWRs) and natural uranium-238 (U-238), which contains minuscule amounts of U-235, as the fissile material.
- In nuclear fission, the nucleus of an atom absorbs a neutron, destabilises, and breaks into two while releasing some energy. If the destabilised nucleus releases more neutrons, the reactor's facilities will attempt to use them to instigate more fission reactions.
- The heavy water in PHWR – water molecules containing the deuterium isotope of hydrogen – slows neutrons released by one fission reaction enough to be captured by other U-238 and U-235 nuclei and cause new fission. The heavy water is pressurised to keep it from boiling. The reactions produce plutonium-239 (Pu-239) and energy.
- Only U-235, not U-238, can sustain a chain reaction but it is consumed fully in stage I. In stage II, India will use Pu-239 together with U-238 in the PFBR to produce energy, U-233, and more Pu-239.
- In stage III, Pu-239 will be combined with thorium-232 (Th-232) in reactors to produce energy and U-233. Homi J. Bhabha designed the three-stage programme because India hosts roughly a quarter of the world's thorium. The three stages are expected to allow the country complete self-sufficiency in nuclear energy.

How does the PFBR work?

- **PHWRs use natural or low-enriched U-238 as the fissile material and produce Pu-239 as a byproduct.** This Pu-239 is combined with more U-238 into a mixed oxide and loaded into the core of a new reactor together with a blanket. This is a material the fission products in the core react with to produce more Pu-239.
- **A breeder reactor is a nuclear reactor** that produces more fissile material than it consumes. In a 'fast' breeder reactor, the neutrons aren't slowed, allowing them to trigger specific fission reactions.
- The PFBR is designed to **produce more Pu-239 than it consumes. It uses liquid sodium, a highly reactive substance, as coolant in two circuits.** Coolant in the first circuit enters the reactor and leaves with (heat) energy and radioactivity. Via heat-exchangers, it transfers only the heat to the coolant in a secondary circuit. The latter transfers the heat to generators to produce electricity.

Source: [The Hindu](#)

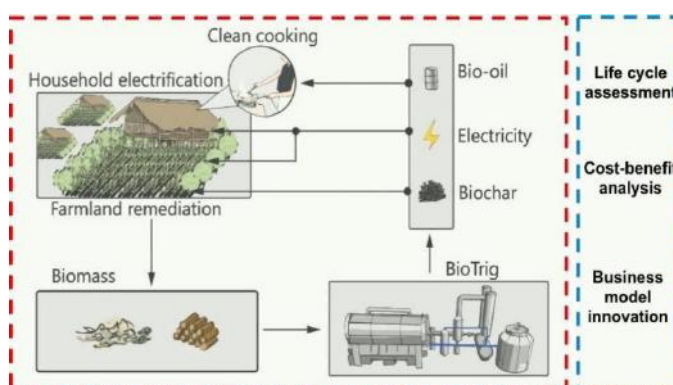
BIOTRIG

Context: A recent study introduces a waste management technology called 'BioTRIG,' utilizing pyrolysis at the community level in rural India.

Background:

- The BioTRIG represents a sustainable solution that can improve the quality of life for rural communities, especially those living below the poverty line.

About BioTrig:



- **It's a community-level pyrolysis system designed to run on the waste generated by villagers.**

- Pyrolysis is a **chemical recycling process** that transforms leftover organic materials into their component molecules.

- The system **works by sealing the waste inside an oxygen-free chamber and heating it to temperatures above 400 degrees Celsius.**

- During pyrolysis, useful chemicals are produced, including **bio-oil, syngas, and biochar fertiliser.**

Benefits for Rural Communities:

- **Indoor Air Pollution Reduction:** By utilizing BioTRIG, rural Indians can significantly reduce indoor air pollution. Cooking with fossil fuels in unventilated households disproportionately affects women's and children's health.
- **Improved Soil Health:** Biochar, one of the products of pyrolysis, can enhance soil fertility. It acts as a carbon sink while improving agricultural land quality.
- **Clean Power Generation:** The syngas and bio-oil produced by BioTRIG can power the pyrolysis system in future cycles. Surplus electricity can also benefit local homes and businesses.
- **Productive Farmland:** By using the biochar and other pyrolysis products, farmers can have more productive farmland.

Sources : [Down To Earth](#)

BIOSIMILARS

Context: Clinical trials are being conducted by an Indian pharmaceutical company to test a biosimilar of Pertuzumab (drug for treatment of breast cancer) that was invented by swiss company Roche.

Background:-

- Since Comparator clinical trials have to be conducted in comparison to a "reference product", which in this case is Roche's product, the Indian company had to procure Roche's products for their clinical studies. Roche, which presumably keeps close track of the sales of its drugs (which are expensive and subject to stringent storage protocols) has now raised questions on how and where the Indian company accessed the "reference products" for the purpose of its clinical trials.

About Biosimilars:-

- These are similar copies of a class of drugs called biologicals. **Biological medicines have created new opportunities to treat diseases**, including cancers, autoimmune conditions and diabetes, to name a few.
- As their name suggests, **biologics are made with biological materials**, including materials from humans, plants, animals, bacteria, and other microorganisms; they go through a rigorous, tightly controlled manufacturing process and tend to be patented.
- Biologics are **highly complex molecules that are grown rather than synthesized and have an inherent level of micro-variability**. Because of this variability in the structure of reference biologics, biosimilars cannot be exact copies. Instead, biosimilars mimic the active ingredient in the reference biologic.
- A biosimilar behaves in much the same way, so that there are "no meaningful differences" between it and its brand name biologic. This means that the biosimilar is also considered as safe and effective as the biologic.

Biosimilars vs. Generic Medications

- Biosimilars are often compared to generic medications, but there are key differences.
- The active ingredients within generic versions (of drugs that aren't biologics) are exact copies of name brand medications, made with an easily repeatable manufacturing process.
- In contrast, due to the variability of biologics, biosimilars cannot be exact copies but they do have the same mechanism of action and the same expected benefits and risks as the original biologics.

Source: [Scroll](#)

DIGITAL INTELLIGENCE PLATFORM (DIP)

Context: Recently, Union Minister for Communications launched the Digital Intelligence Platform (DIP).

Background:

- The Department of Telecommunications (DoT) introduced two initiatives, Chakshu and the Digital Intelligence Platform (DIP), to combat spam and fraud calls through the Sanchar Saathi portal.

About Digital Intelligence Platform (DIP)

- The DIP is an **integrated and secure platform developed by the Department of Telecommunications (DoT) in India.**
- Its purpose is to **enhance information exchange, real-time intelligence sharing, and coordination** among various stakeholders.
- The DIP aims to **curb the misuse of telecom resources** in cyber-crime and financial frauds.
- It empowers citizens to proactively report suspected fraudulent communication through the Chakshu (चक्षु) facility on the Sanchar Saathi portal.

Key Features of DIP:

- **Case Recording and Information Sharing:**
 - The DIP records details of instances related to telecom misuse and fraud.
 - It shares this information with relevant stakeholders, allowing them to take action within their respective domains.
- **Backend Repository for Citizen-Initiated Requests:**
 - The DIP serves as a backend repository for requests initiated by citizens on the Sanchar Sathi portal.
 - These requests pertain to cyber fraud or misuse of telecom resources.
 - Stakeholders can use this repository to address cases effectively.

Chakshu Platform:

- As part of the Sanchar Sathi portal, the government introduced the Chakshu platform.
- Citizens can use Chakshu to report suspected cyber or telecommunication fraud.
- It enhances the capability to tackle various cybersecurity threats in India.

Source: [PIB](#)

METHANESAT

Context: SpaceX launched a Falcon 9 rocket carrying the Environmental Defence Fund's MethaneSAT satellite.

Background:

- Falcon 9 is a reliable and reusable rocket used for various missions. SpaceX, founded in 2002, is an American aerospace company headquartered in Hawthorne, California. It was established with the ambitious goal of revolutionizing space technology and enabling human habitation on other planets

About MethaneSAT:

- It's an **Earth observation satellite** that monitors and studies global methane emissions to combat climate change.
- It was developed by MethaneSAT, LLC, a wholly owned subsidiary of the Environmental Defence Fund (EDF) a US-based nonprofit environmental advocacy group, partnered with Harvard

University, the Smithsonian Astrophysical Observatory, and the New Zealand Space Agency to create this crucial climate initiative.

- Goal: provide **global high-resolution data** regarding methane emissions from oil and gas facilities.
- By detecting and monitoring methane emissions with **unparalleled accuracy and precision, MethaneSAT aims to combat climate change.**
- It is **designed to locate and measure methane from human sources worldwide**, giving both companies and governments new ability to track, quantify, and reduce those emissions.

Methane

- Methane, a potent greenhouse gas warms the planet more than 80 times as quickly as an equivalent volume of atmospheric carbon dioxide (CO₂) over a comparable time period. **While it receives less attention than CO₂, its effects are immediate and impactful.**
- Methane pollution, often accompanied by toxic chemicals like benzene, has been linked to adverse health effects such as heart disease, birth defects, and asthma.

Sources of Methane:

- **Biological Sources:** Methane is produced by methanogens, microbes found in environments with little or no oxygen. These include wetlands, poorly vented landfills, and submerged paddy fields.
- **Agriculture:** Livestock emissions (from manure and gastroenteric releases) contribute to approximately 32% of human-caused methane emissions. Additionally, methane is released during rice cultivation in flooded fields, accounting for another 8% of human-linked emissions.

Global Methane Pledge:

- **Over 105 countries have signed the Global Methane Pledge**, committing to reduce methane emissions by up to 30% from 2020 levels by 2030.
- **This initiative sheds light on methane's role** in global warming and aims to address its long-standing neglect by the global community.

Source: [Indian Express](#)

INDIA ARTIFICIAL INTELLIGENCE (AI) MISSION

Context: Recently, the Union Cabinet has approved Rs 10,371.92 crore investment for the India Artificial Intelligence (AI) mission.

Background:

- The India Artificial Intelligence (AI) Mission is a significant initiative by the Indian government to harness the transformative potential of AI for the benefit of the nation.

About India Artificial Intelligence (AI) Mission

- The **India AI Mission** is a significant **initiative by the Ministry of Electronics and Information Technology (MeitY).**
- India's approach to AI is holistic, **focusing on enhancing economic growth, social development, and leveraging AI for the public good.**
- The mission aims to position India as a global leader in AI research and innovation.
- The Mission aligns with the vision of **"Making AI in India"** and **"Making AI Work for India"**.
- It aims to establish a comprehensive ecosystem that catalyzes **AI innovation through strategic programs and partnerships across both the public and private sectors.**

- AI is expected to play a pivotal role in sectors such as healthcare, agriculture, education, smart cities, infrastructure, and smart mobility. By integrating AI into these domains, India aims to drive innovation and address societal challenges.
- IndiaAI Innovation Centre will focus on developing and deploying indigenous Large Multimodal Models (LMMs) and domain-specific foundational models in critical sectors.
- The IndiaAI Mission will be implemented by the 'IndiaAI' Independent Business Division (IBD) under the Digital India Corporation (DIC).
- The approved budget for the mission is Rs. 10,371.92 crore.

Source: [Times Of India](#)

AGNI-V

Context: Recently, India successfully conducted the first flight test of indigenously developed Agni-5 missile with Multiple Independently Targetable Re-entry Vehicle (MIRV) technology from Dr A P J Abdul Kalam Island off the coast of Odisha.

Background:

- The flight test was conducted as part of India's 'Mission Divyastra'.

About Agni-V:

- The Agni-V is an **advanced surface-to-surface ballistic missile** developed under the Integrated Guided Missile Development Programme (IGMDP) in India.
- The Agni-V is an **intercontinental ballistic missile (ICBM)** developed indigenously by the DRDO.
- **It's a fire-and-forget missile**, which means once fired, it doesn't require further guidance and can't be stopped without an interceptor missile.
- The missile has a range of over 5000 km, making it capable of hitting targets beyond this range.
- It can carry a warhead of about 1500 kg.

Multiple Independently Targetable Re-entry Vehicle (MIRV) Technology

- The latest variant of the Agni missile is equipped with MIRV technology.
- MIRV technology allows a **single missile to deploy multiple warheads at different locations or at the same location with a time gap**.
- This technology significantly enhances the **missile's effectiveness by enabling it to hit multiple targets simultaneously**.
- These missiles can be launched from land or from sea from a submarine.

Global Context:

- Currently, only a **handful of countries possess MIRV-equipped missiles**.
- These countries include the United States, Russia, China, France, and the United Kingdom.
- While Pakistan is developing such a missile system, there are suspicions that Israel may also possess or be developing one.

OCEANSAT

Context: ISRO's Oceansat-3 reveals phytoplankton bloom that maintains marine ecosystem.

Background:

- The satellite revealed the seasonal greening and browning of continents, alongside the dynamic movements of chlorophyll blooms in the oceans, from April to December 2023. Phytoplankton are microscopic, photosynthetic organisms that form the foundation of the marine food web. They play a crucial role in the Earth's ecosystems as primary producers, converting sunlight into chemical energy through photosynthesis.

About OCEANSAT-3

- **It's also known as Earth Observing Satellite 6 (EOS-6)**, is a remarkable oceanographical Earth observation mission launched by the ISRO.
- Oceansat-3 was launched on 26th November 2022 and is designed to operate until 2027.
- It is part of India's ocean observation program and is the third satellite in the Oceansat series.
- **Oceansat-3's data is crucial for:** Oceanography, Climatology, Meteorology, Fisheries.

Oceansat-3 is equipped with multiple sensors to observe various parameters:

- **Ocean Colour Monitor (OCM-3):** Measures Ocean colour data, providing insights into phytoplankton distribution and other biological processes.
- **Ku-band Scatterometer (SCAT-3):** Provides high-resolution global ocean surface wind speed and direction information.
- **Sea Surface Temperature Monitor (SSTM):** Measures Sea surface temperature (SST) variations.

Continuity and Enhancement:

- **Oceansat-3, in conjunction with Oceansat-2,** improves the frequency of measurements: Ocean colour measurements are now available every 24 hours, Wind vector measurements are available every 12 hours.

Source: [India Today](#)

JUNO SPACECRAFT

Context: Recently, NASA posted an image of Great Red Spot on Jupiter captured by Juno spacecraft.

Background:

- The Great Red Spot is a giant anticyclonic storm that is larger than Earth itself. It has been observed since the 17th century and continues to be a fascinating subject of study for scientists. Juno's mission to Jupiter has provided us with unprecedented views of this iconic feature, allowing us to delve deeper into its mysteries.

About JUNO SPACECRAFT:

- NASA's Juno spacecraft is a space probe orbiting Jupiter.
- It was built by Lockheed Martin and is operated by NASA's Jet Propulsion Laboratory.
- The spacecraft was launched from Cape Canaveral Air Force Station on August 5, 2011, as part of the New Frontiers program.
- Juno entered a polar orbit of Jupiter on July 5, 2016, after a five-year, 1,740-million-mile journey.
- The spacecraft's mission is to measure Jupiter's composition, gravitational field, magnetic field, and polar magnetosphere.
- It also aims to search for clues about how the planet formed, including whether it has a rocky core, the amount of water present within the deep atmosphere, mass distribution, and its deep winds.

- Juno is the first explorer to peer below Jupiter's dense clouds to answer questions about the gas giant itself and the origins of our solar system.
- Now in an extended mission phase, the agency's most distant planetary orbiter continues its investigation.
- This extension tasks Juno with becoming an explorer of the full Jovian system – Jupiter and its rings and moons – with additional rendezvous planned for two of Jupiter's most intriguing moons: Europa and Io.

Source: [Business Today](#)

NETWORK FOR FISHERY AND ANIMAL ANTIMICROBIAL RESISTANCE (INFAAR)

Context: Recently, The FAO published an analytical report on the Indian Network for Fishery and Animal Antimicrobial Resistance (INFAAR) for 2019-22 report has released recently.

Background:

- The report showed low levels of resistance in both the fisheries and animal sectors to certain less commonly used antibiotics (such as chloramphenicol).

About INDIAN NETWORK FOR FISHERY AND ANIMAL ANTIMICROBIAL RESISTANCE (INFAAR):

- The INFAAR is a **network of laboratories established under the Indian Council of Agricultural Research (ICAR)**, with technical support from the Food and Agriculture Organization (FAO) and the United States Agency for International Development (USAID).
- It is **dedicated to Antimicrobial Resistance (AMR)** surveillance in the fisheries and livestock sectors.
- Aim: to **document AMR in different production systems, describe the spread of resistant bacterial strains and resistance genes**, identify trends in resistance, and generate hypotheses about sources and reservoirs of resistant bacteria through a structured national surveillance program.
- INFAAR **also collates surveillance data** to evaluate baseline data and get indications about the AMR trends in livestock, poultry, and fisheries.
- The rise of AMR is exacerbated by the irrational use of antimicrobial agents in human and animal health and their presence in the environment.
- Over half of the antimicrobials used in animals/fish are excreted as waste, contributing to the emergence and spread of AMR.

Source: [Down To Earth](#)

VANADIUM

Context: Researchers at the Geological Survey of India (GSI) discovered vanadium, a critical mineral from the Gulf of Khambhat in Gujarat.

Background:

- Rarely found in its pure form naturally, **vanadium is present in over 55 different minerals**, which makes its production costly. At **Gulf of Khambhat**, it has been found in a mineral called titanomagnetite, which is formed when molten lava cools rapidly.

About Vanadium:

- It is a chemical element with the symbol "V" and the atomic number 23 and is classified as a transition metal.

- It is an abundant element in the earth's crust, ranking 22nd in position in the upper continental crust.
- It is listed as one of the **30 critical minerals identified** by the Government of India.
- It rarely exists as a free element in nature but can be found in about 65 different minerals, including magnetite, vanadinite, carnotite, and patronite.
- It can be detected spectroscopically in the Sun's rays and occasionally in the light of other stars.

Applications of Vanadium:

- It is used in vanadium redox flow batteries, a type of rechargeable battery used for large-scale energy storage in renewable energy systems.
- It is used as an alloying element in steel production, where it imparts increased strength, toughness, and heat resistance to the steel. The addition of 0.15% vanadium strengthens cast iron by 10-25%.
- Its alloys are also used to make nuclear reactors because of their low-neutron-absorbing properties.
- It is used for the treatment of prediabetes and diabetes.
- It is used in the manufacture of aerospace and aviation components due to its high strength, lightweight, and heat resistance properties.

Source: [Times Of India](#)

ANTHROPOCENE

Context: An expert commission rejected a proposal to mark the start of the Anthropocene at a particular date.

Background:

- The SQS-AWG is a commission responsible for recognising time units within our most recent period of geologic time. Its members have been looking into the question of formalising the Anthropocene Epoch as the youngest epoch, superposing the Holocene. On March 4, 2024, the commission, which consists of topical experts, rejected the proposal with a majority voting against it.

About Anthropocene:

- Earth's history is divided into a hierarchical series of smaller chunks of time, referred to as the geologic time scale. These divisions, in descending length of time, are called eons, eras, periods, epochs, and ages.
- These units are classified based on Earth's rock layers, or strata, and the fossils found within them. From examining these fossils, scientists know that certain organisms are characteristic of certain parts of the geologic record. The study of this correlation is called **stratigraphy**.
- Officially, the current epoch is called the Holocene, which began 11,700 years ago after the last major ice age.
- However, the Anthropocene Epoch is an unofficial unit of geologic time, used to describe the most recent period in Earth's history.
- The word Anthropocene is derived from the Greek words anthropo, for "man," and cene for "new," coined and made popular by biologist Eugene Storer and chemist Paul Crutzen
- Scientists still debate whether the Anthropocene is different from the Holocene, and the term has not been formally adopted.

- The primary question that scientists need to answer before declaring the Anthropocene an epoch is if humans have changed the Earth system to the point that it is reflected in the rock strata.

Source: [National Geographic](#)

"GHOST PARTICLES"

Context: Recently, astronomers detected 7 potentials 'ghost particles' that passed through planet.

Background:

- Scientists using data from the Ice Cube Neutrino Observatory in Antarctica believe they have potentially found the first evidence for astrophysical tau neutrinos, called "ghost particles".

About Ghost Particles:

- "Ghost Particles" is a nickname for neutrinos, which are tiny subatomic particles.
- They are often called 'ghost particles' because they barely interact with anything else.

Key points about Neutrinos:

- Source: Neutrinos **come from various sources and are often the product of heavy particles turning into lighter ones, a process called "decay"**.
- Family: They belong to the **family of particles known as leptons**.
- There are **three main leptons**, namely electrons, muons, and tau particles.
- The last has proven to be especially difficult to observe and detect, earning the moniker of "ghost particle."
- Characteristics: A neutrino is very similar to an electron, but has no electrical charge and a very small mass. They are the most common particle in the universe. Approximately 100 trillion neutrinos pass completely harmlessly through our body every second.
- Detection: They are extraordinarily difficult to detect, as they rarely collide with atoms. Of the four fundamental forces in the universe, neutrinos only interact with two — gravity and the weak force.
- In recent developments, China is constructing the world's largest "ghost particle" detector, a massive underwater telescope in the South China Sea, designed to detect neutrinos.
- The telescope, named **Tropical Deep-sea Neutrino Telescope (TRIDENT)**, is expected to span 7.5 cubic kilometers and be 10,000 times more sensitive than existing underwater telescopes.

Source: [Frontline](#)

DARK SKY RESERVE

Context: By the end of 2022, India will establish the country's first Dark Sky Reserve in the cold desert regions of Ladakh, Dr Jitendra Singh, Minister of State (Independent charge) for Science and Technology, announced.

Background:-

- India is still in the process of filing its nomination to IDSA. The Ladakh Union Territory administration is leading the efforts in establishing the country's first Dark Sky Reserve.

About Dark Sky Reserve

- **It is public or private land with a distinguished nocturnal environment** and starry nights that has been developed responsibly to prevent light pollution.

- According to the **International Dark Sky Association (IDSA)**, these reserves “consist of a core area meeting minimum criteria for sky quality and natural darkness, and a peripheral area that supports dark sky preservation in the core.”

How does a site become a ‘Dark Sky Reserve’?

- Individuals or groups can nominate a site for certification to the International Dark Sky Association (IDSA). There are five designated categories, namely International Dark Sky parks, communities, reserves, sanctuaries and Urban Night Sky Places.
- Between 2001 and January 2022, there have been 195 sites recognised as International Dark Sky Places globally, the IDSA said.
- The IDSA considers a **piece of land suitable for dark sky place only if it is either publicly or privately owned; is accessible to the public partially or entirely during the year; the land is legally protected for scientific, natural, educational, cultural, heritage and/or public enjoyment purposes; the core area of the land provides an exceptional dark sky resource relative to the communities and cities that surround it and the land offers prescribed night sky brightness either for a reserve, park or sanctuary.**

Why was Ladakh chosen for the project?

- To be situated at a height of 4,500 metres above sea level, the Hanle Dark Sky Reserve (HDSR) will come up within the Changthang Wildlife Sanctuary.
- Ladakh is a unique cold desert located about 3,000 metres above sea level with high mountainous terrains. Long and harsh winters with minimum temperatures dropping to minus 40 degrees Celcius make large parts of the UT highly inhabitable.
- This aridity, limited vegetation, high elevation and large areas with sparse populations – all make it the perfect setting for long-term astronomical observatories and dark sky places.
- But the primary objective of the proposed Dark Sky Reserve is to promote astronomy tourism in a sustainable and environment-friendly manner.

Source: [Indian Express](#)



HISTORY AND ART & CULTURE



SANGEET NATAK AKADEMI

Context: President Droupadi Murmu on Wednesday conferred the Sangeet Natak Akademi Awards for the years 2022 and 2023 to eminent artists in the field of performing arts, including music, dance, drama, folk and tribal arts.

Background:

- Twelve people from the field of music, and equal number from dance, 9 from the field of theatre and 11 from folk and tribal arts have received the Akademi awards for 2023.

About Sangeet Natak Akademi:

- It's the apex **body in the field of performing arts in the country, was set up in 1953** for the preservation and promotion of the vast intangible heritage of India's diverse culture expressed in forms of music, dance and drama.
- The registered office of the Akademi is at Rabindra Bhavan, New Delhi.
- It is an autonomous body of the Ministry of Culture, Government of India.
- The **Chairman of the Akademi is appointed by the President of India** for a term of five years.
- Functions: are set down in the **Akademi's Memorandum of Association**, adopted at its registration as a society on 11 September 1961.
- It's Awards are the **highest national recognition conferred on practising artists**.
- The Akademi also confers Fellowships on eminent artists and scholars of music, dance and drama; and has in 2006 instituted annual awards to young artists – the Ustad Bismillah Khan Yuva Puraskar.

Source: [The Hindu](#)

WOMEN IN CONSTITUTION ASSEMBLY OF INDIA

Context: Remembering the stories of women leaders on Women's Day

Background:

- Even after seven decades of Independence, the **gendered writing of our history and popular narratives present only men as the architects of our Constitution**. However, the 299-member Constituent Assembly had a bright set of **15 women who came from diverse backgrounds** and endured patriarchy, caste oppression, child marriage and widowhood.

Women in constituent assembly of India:

- The women members of the Constituent Assembly were Ammu Swaminathan, Dakshayani Velayudhan, Begum Aizaz Rasul, Durgabai Deshmukh, Hansa Mehta, Kamla Chaudhary, Leela Roy, Malati Choudhury, Purnima Banerjee, Rajkumari Amrit Kaur, Renuka Ray, Sarojini Naidu, Sucheta Kriplani, Vijaya Lakshmi Pandit and Annie Mascarene.
- **Annie Mascarene:** She fought to integrate the princely state of Travancore into the newly independent India and became the first woman to hold a ministerial and legislative assembly position in Travancore (erstwhile princely state; part of Kerala after its formation).
- **Hansa Jivraj Mehta:** She remained committed to women's issues throughout her life and, in the Constituent Assembly, made strong arguments against reservations for women as a tool for equality and justice.

- **Dakshayani Velayudhan:** Born into the Pulaya community of Kerala, Dakshayani Velayudhan faced acute discrimination from the upper caste communities in Cochin and Travancore.
- **Amrit Kaur:** She played an important role both during the freedom struggle and in shaping independent India. Kaur joined Gandhi in the Civil Disobedience movement in 1930. Kaur also served as the first women Health Minister
- **Vijaya Laxmi Pandit:** She was the first woman cabinet minister in the British era and also one of the first leaders to call for an Indian constituent assembly to frame a Constitution. She was also the first woman President of the UN General Assembly in 1953.

Source: [Indian Express](#)

GULBADAN BEGUM

Context: Historian Ruby Lal has written a book on Gulbadan Begum titled 'Vagabond Princess: The Great Adventures of Gulbadan'.

Background:

- She is one of the most prominent women of Mughal era.

About Gulbadan Begum:

- Gulbadan Begum (1523 – 1603) was a **Mughal princess and the daughter of Emperor Babur**, the founder of the Mughal Empire.
- She is best known as the **author of Humayun-Nama**, the account of the life of her half-brother, Emperor Humayun, which she wrote on the request of her nephew, Emperor Akbar.
- Akbar asked his aunt to write the book as she had known and interacted with three Mughal emperors. It provides details of everyday life in the royal palace and is also an account of the empire as it was taking shape.
- Gulbadan wrote in simple Persian, without the erudite language used by better-known writers.
- Gulbadan is the first and only woman historian of the Mughal era.

Source: [Hindu](#)

DEFENCE & SECURITY.

EXERCISE SAMUDRA LAKSAMANA

Context: Exercise Samudra Laksamana is underway from 28 Feb - 02 Mar 24 at/ off Visakhapatnam.

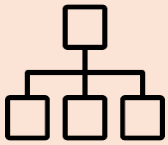
Background:-

- Exercise Samudra Laksamana holds strategic significance as it reinforces the enduring partnership between the Indian and Royal Malaysian Navies.

About EXERCISE SAMUDRA LAKSAMANA:-

- It is a **joint naval exercise between the navies of India and Malaysia.**
- This is the third edition of the exercise; first of which was conducted in 2019.
- Indian Naval Ship Kiltan and Royal Malaysian Ship KD Lekir are participating in the 3rd edition.
- At harbour, crew of both ships will have various professional interactions, Subject Matter Expert Exchange on topics of mutual interest, sports fixtures, and other interactions. These interactions are aimed to enhance knowledge base, share best practices and further cooperation on maritime aspects.
- During sea phase, units would be jointly honing skills while conducting various operations at sea.

Source: [PIB](#)



GOVT. INITIATIVES, SCHEMES AND POLICIES, ORGANISATION



PRADHAN MANTRI ANUSUCHIT JAATI ABHYUDAY YOJANA(PM-AJAY)

Context: The Ministry of Social Justice and Empowerment inaugurated and laid the foundation stone for 34 residential hostels across various states and central institutes (under PM-AJAY).

Background:

- These hostels are specifically designed to address the accommodation requirements of Scheduled Castes (SC) and Other Backward Classes (OBC) students. This initiative aims to provide a conducive living environment, promote education, and empower these marginalized communities.

About PRADHAN MANTRI ANUSUCHIT JAATI ABHYUDAY YOJANA(PM-AJAY):

- Pradhan Mantri Anusuchit Jaati Abhyuday Yojana (PM-AJAY) strives to reduce poverty, enhance education, and empower marginalized communities in India.

PM-AJAY is a comprehensive scheme that amalgamates three centrally sponsored schemes:

1. Pradhan Mantri Adarsh Gram Yojana (PMAGY):

- Focuses on developing “Adarsh Grams” where basic services are accessible to all sections of society, reducing disparities.
- Aims to create an environment where everyone can utilize their potential to the fullest.
- Provides infrastructure facilities and services necessary for dignified living.

2. Special Central Assistance to Scheduled Castes Sub Plan (SCA to SCSP):

- Aims to increase income through comprehensive livelihood projects.
- Improves socio-economic developmental indicators by ensuring adequate infrastructure in SC-dominated villages.
- Encourages SC enrolment in schools by providing residential schools where needed.

3. Babu Jagjivan Ram Chhatrawas Yojana (BJRCY):

- Focuses on constructing hostels for Scheduled Caste students, especially those from rural and remote areas.
- Provides accommodation and support for SC students pursuing education.

Source: [PIB](#)

INDIA'S FIRST UNDERWATER METRO

Context: PM Modi inaugurates India's first underwater Metro in Kolkata

Background:-

- According to officials, from its inception in 1984 till 2014, only 27.99 km of the Metro network was functional in Kolkata. After 2014, the Metro network was expanded by 25.34 km.

About underwater Metro:-

- PM Narendra Modi inaugurated the Howrah Maidan-Esplanade section of Kolkata Metro's East-West corridor, signalling India's first venture into underwater Metro services.
- According to an official release, the 4.8-km stretch of the East-West Metro has been built at a cost of ₹4,965 crore and will have the deepest Metro station in India at Howrah - 30 metres below the ground level.

- The Howrah Maidan-Esplanade section underwater Metro line has the first transportation tunnel under a river in India.
- It passes under the Hooghly River.

About Hooghly river

- The Hooghly River is a distributary of the Ganges River in West Bengal, India.
- The Hooghly River is approximately 260 kilometers (162 miles) long.
- It starts at Nurpur in the Murshidabad district, where it branches off from the Ganges.
- The river flows southwards through the state of West Bengal and eventually merges with the Bay of Bengal.
- The Kolkata Port, one of India's major ports, is located on the Hooghly River and serves as a gateway for trade.
- The city of Kolkata is situated along the banks of the Hooghly River. The iconic Howrah Bridge spans the river, connecting the city with the Howrah district.
- The annual Ganga Sagar Mela, a pilgrimage and festival, takes place at Sagar Island at the confluence of the Hooghly River and the Bay of Bengal.

Source: [The Hindu](#)

e-KISAN UPAJ NIDHI

Context: Recently, the Minister of Consumer Affairs, Food & Public Distribution launched the 'e-Kisan Upaj Nidhi' (Digital Gateway) in India.

Background:

- This initiative, led by the Warehousing Development and Regulatory Authority (WDRA), aims to transform the agricultural landscape by leveraging technology.

About e-KISAN UPAJ NIDHI:

- The e-Kisan Upaj Nidhi is a Digital Gateway initiative launched by the Warehousing Development and Regulatory Authority (WDRA).
- Its primary objective is to assist farmers in obtaining post-harvest loans against their stock stored in WDRA-registered warehouses. These loans are provided against electronic negotiable warehouse receipts, known as e-NWRs

Key Points:

- Purpose: The platform intends to ease farmers' warehousing logistics and ensure fair prices for their produce.
- Storage Opportunity: Farmers can store their produce at any registered WDRA warehouse for up to six months at an interest rate of 7% per annum.
- No Collateral: The e-Kisan Upaj Nidhi initiative allows farmers to store their produce without collateral, encouraging them to utilize WDRA-registered warehouses.
- Integration with e-NAM: By integrating with the e-National Agriculture Market (e-NAM), farmers can access interconnected markets beyond the government's Minimum Support Price (MSP).

Warehousing Development and Regulatory Authority (WDRA)

- The Warehousing Development and Regulatory Authority (WDRA) is a Statutory Authority under the Department of Food and Public Distribution, Government of India.
- It was established on October 26, 2010, with the objective of implementing the provisions of the Warehousing (Development & Regulation) Act, 2007.
- The WDRA regulates warehouses, promotes negotiability of warehouse receipts, and facilitates the orderly growth of the warehousing business in India.

- WDRA ensures the orderly growth of the warehousing business by setting standards, guidelines, and regulations.
- It promotes the use of negotiable warehouse receipts (NWRs). These electronic receipts represent commodities stored in registered warehouses.
- WDRA's initiatives, such as the e-Kisan Upaj Nidhi, aim to benefit farmers by providing better storage options, reducing distress sales, and facilitating post-harvest loans against stored produce.

Source: [PIB](#)

SELA TUNNEL

Context: Prime Minister Narendra Modi on Saturday inaugurated the strategically significant Sela Tunnel in Arunachal Pradesh.

Background:

- According to a Bloomberg report, India has freed up thousands of soldiers to strengthen its disputed border with China. As a response, China has said that deploying more troops at the border would not ease tensions.

About Sela Tunnel

- The foundation of the project was laid by Modi in February 2019, with a cost estimation of Rs 825 crore, but work got delayed due to various reasons, including the Covid-19 pandemic.
- The Sela Tunnel, situated at an elevation of 13,000 feet, will provide all-weather connectivity to Tawang in Arunachal Pradesh.
- Strategically crucial, the Sela Tunnel project includes two tunnels and 8.780 km of approach road. The total length of the project, including the tunnels, the approach and the link roads, will be around 12 km.
- Of the two tunnels, the first is a single-tube tunnel of 980 metres in length, and the second is 1.5 km long with an escape tube for emergencies.
- An official said that the tunnel, stretching through the Sela-Charbela ridge and constructed with the New Austrian Tunneling Method (NATM), will be the world's longest bi-lane tunnel at an altitude of 13,000 feet.
- The tunnel has been made on the road connecting Assam's Tezpur to Arunachal Pradesh's Tawang. It will enable all-weather connectivity to the Tawang region and is said to be strategically significant due to its proximity to the Line of Actual Control (LAC).
- It has been excavated below the 4,200-metre (13,800 ft) Sela Pass, which connects the Tawang district with the rest of Arunachal Pradesh and is often closed due to snowfall and landslides.

Source: [Economic Times](#)

NARI SHAKTI VANDAN ABHIYANAM

Context: Parliament passed the Constitution (106th Amendment) Act, 2023, to provide for one-third reservation to women in the Lok Sabha, State Assemblies, and the Assembly of NCT of Delhi.

Background:

- The Constitution amendment Bill was passed by the Lok Sabha with near-unanimity, with only two members opposing it and was unanimously passed by the Rajya Sabha.

Key features of the Act:

- It provided for inserting Article 330A into the constitution, which borrows from the provisions of Article 330, which provides for the reservation of seats to SCs/STs in the Lok Sabha. It provided that reserved seats for women may be allotted by rotation to different constituencies in states or Union Territories.
- In the seats reserved for SCs/STs, it sought to provide one-third of the seats to be reserved for women on a rotational basis.
- It introduces Article 332A, which mandates the reservation of seats for women in every state legislative assembly. Additionally, one-third of the seats reserved for SCs and STs must be allocated for women, and one-third of the total seats filled through direct elections to the Legislative Assemblies shall also be reserved for women.
- It added a new clause in 239AA to the constitution that grants special status to the Union Territory of Delhi as the national capital concerning its administrative and legislative functioning. Article 239AA(2)(b) was amended to add that the laws framed by parliament shall apply to the National Capital Territory of Delhi.
- It added new Article 334A which states that the reservation will be effective after the census conducted after the commencement of this Act has been published. Based on the census, delimitation will be undertaken to reserve seats for women. The reservation will be provided for 15 years. However, it shall continue till such date as determined by a law made by Parliament.
- Seats reserved for women will be rotated after each delimitation, as determined by a law made by Parliament.

Issues/Concerns with the Act:

- The idea of reservation runs counter to the principle of equality enshrined in the Constitution, as women may not be competing on merit.
- Reservation of seats for women in legislature restricts voter's choices and runs counter to the idea of self-determination.
- Women are not a homogeneous community, such as a caste group. Therefore, the arguments made for caste-based reservations cannot be made for women.
- There are larger issues of electoral reforms such as the criminalization of politics, internal democracy in political parties, etc., that might act as an impediment to the political empowerment of women.
- The act provides for the reservation of 1/3rd seats across all Lok Sabha seats as against the provision of reserving 1/3rd seats in each State/UT as mentioned in the 2008 bill.
- The act provides for the rotation of seats after every delimitation exercise as against after every general election to the Parliament/ State legislative assemblies.
- The Act does not contain any provision for reservation for women in Rajya Sabha and Legislative Councils of the States. Geeta Mukherjee Committee (1996) recommended providing reservations for women in Rajya Sabha and Legislative Councils as well.

Source: [Indian Express](#)

RHODAMINE

Context: On February 17, Tamil Nadu banned the sale of cotton candy or candy floss after analysis confirmed the presence of Rhodamine-B. Since then, the Karnataka Government has banned the use of harmful colouring agents in cotton candy and Gobi Manchurian.

Background:-

- When taken even in small quantities for many years, Rhodamine B can cause a lot of health problems including cancers.

About Rhodamine B:-

- Rhodamine-B is a fluorescent dye used in cosmetics, textile and leather industries. It gives you brilliant pinks, greens and blues.
- Unfortunately, it is used as a food colouring agent not only in cotton candy but also in the preparation of sweets, various manchurian items and pakodas and in the preparation of sauces for Chinese food.
- Rhodamine-B has been routinely used in many coloured foods such as cotton candy to make it look appealing and attractive to young persons and children.
- Studies have shown that Rhodamine-B can cause cell death. In long-term use, it can damage the cerebellum tissue and brainstem. There is recent evidence that it damages the kidney, liver and increases the risk of stomach tumour. It is toxic to the human body and is a carcinogen.
- FSSAI has approved certain food colours and flavors as safe for consumption. These include: Caramel, Riboflavin (Lactoflavin), Saffron, Annatto, Curcumin (Turmeric), Carotene and carotenoids, including Beta-carotene, red colour from Ponceau 4R, Carmoisine, and Erythrosine, yellow colour (Tartrazine and Sunset Yellow FCF), blue colour (Indigo Carmine and Brilliant Blue FCF) and green colour (Fast Green FCF).

Source: [The Hindu](#)

AGNIPATH SCHEME

Context: The Passing Out Parade (POP) of the third batch of Agniveers was held at INS Chilka, Odisha.

Background:

- Agniveers are a special group within the Indian Armed Forces, created under the Agnipath recruitment scheme.

About AGNIPATH SCHEME

- The Agnipath Scheme is a short-service manpower model introduced by the Indian government for recruiting soldiers across the Army, Navy, and Air Force.
- It is a transformative initiative under the Ministry of Defence.

Objective and Eligibility:

- The scheme aims to provide an opportunity for patriotic and motivated youth to serve in the Armed Forces.
- It applies to personnel below officer ranks, excluding commissioned officers.

Recruitment and Duration:

- Around 45,000 to 50,000 soldiers (referred to as "Agniveers") are recruited annually under this scheme.
- These recruits serve on a short-term contract of four years.
- After the initial four years, only 25% of the batch will continue for an additional 15 years under permanent commission.

Benefits for Agniveers:

- Upon completing the four-year service, Agniveers receive a one-time "Seva Nidhi" package of Rs 11.71 lakhs, including accrued interest.

- They also enjoy a life insurance cover of Rs 48 lakhs during the service period.
- In case of death, the payout exceeds Rs 1 crore, including pay for the unserved tenure.
- The government assists in rehabilitating soldiers who leave the services after four years by providing skill certificates and bridge courses.

Challenges and Concerns:

- Job Prospects: Agniveers may find it challenging to secure other jobs after their four-year service.
- No Pension Benefit: Unlike regular servicemen, Agniveers do not receive pension benefits.

Source: [PIB](#)

VECHUR COW AND OTHER INDIGENOUS CATTLE

Context: Member of Parliament Shashi Tharoor has written an article regarding vechur cow and Sosamma Iype who pioneered the initiative to conserve the breed.

Background:-

- In its pursuit to boost milk production through the crossbreeding of indigenous cattle with high-yielding foreign breeds, the White Revolution's corollary was the erasure of breeds such as the Vechur cow. Cross-breeding served to dilute the genetic purity of native breeds and diminish their population.

Vechur Cow

- The Vechur Cow is a rare breed named after the village Vechoor in Vaikom Taluk, Kottayam district of the state of Kerala in India.
- With an average length of 124 cm (about 4 feet and 1 inch) and height of 87 cm (about 2 feet and 10 inches), it is the smallest cattle breed in the world.
- The Vechur animals were saved from extinction due to conservation efforts by Sosamma Iype, a Professor of Animal breeding and Genetics along with a team of her students.

Siri Cow

- Siri is a small sized draught purpose breed of hilly region of West Bengal and Sikkim.
- The animals can graze in the steep slope of hilly forest.
- The males are mainly reared for draught purpose in the hilly area and sometimes they are the only source of draught power. The breed produces very less amount of milk.

Tharparkar

- Tharparkar is an important dual-purpose breed originating from the THAR desert of Rajasthan.
- The home tract of this breed is in the Tharparkar district of southeast Sindh in present day Pakistan. In India, these animals are now found along the Indo-Pak border covering western Rajasthan and up to the Rann of Kutch in Gujarat.
- The animals can thrive well on small bushy vegetation (Sewan grass) during drought and fodder scarcity condition and produce reasonable amount of milk.
- Due to better heat tolerance and disease resistance, this breed was used for producing "Karan Fries" breed - a synthetic crossbred cattle breed at National Dairy Research Institute (NDRI)

The local breeds have following merits over exotic breeds

- Better disease resistance than exotic breeds.

- More suitable for low input management system.
- Survive better in local environment.
- Suitable for draught work

Source: [Mongabay India](https://www.mongabay.com)

MISCELLANEOUS

GEO HERITAGE SITE PANDAVULA GUTTA

Context: Pandavula Gutta designated exclusive Geo-heritage site in Telangana.

Background:

- A geo-heritage site is a place of significant geological importance, often recognized for its unique geological features, historical context, or cultural value. These sites provide insights into the Earth's history, evolution, and natural processes.

About GEO HERITAGE SITE PANDAVULLA GUTTA

- It's also known as **Pandavula Guttalu**, is a remarkable hill located in the Warangal district, Telangana, India.
- Its historical and religious significance lies in the belief **that it served as a refuge for the Pandavas during their exile, as narrated in the Hindu epic.**
- Discovered in 1990, it **predates the Himalayas and has a rich history spanning from the Mesolithic to Medieval times.**
- Pandavula Gutta is **adorned with Paleolithic cave paintings, a rare glimpse into prehistoric human creativity.** These paintings, found on walls, ceilings, and isolated boulders, depict wildlife such as Bison, Antelope, Tiger, and Leopard.

Source: [The Hindu](#)

STATE OF THE GLOBAL CLIMATE 2023

Context: Recently, The World Meteorological Organization (WMO) has released the State of the Global Climate report, 2023.

Background:

- **The WMO is an intergovernmental organization** with a membership of 192 Member States and Territories. India is a member of WMO.

About State of the Global Climate Report 2023:

- The report is an annual report issued by the United Nations weather agency WMO.
- **It provides crucial insights into climate trends**, extreme events, and the impact of human activities on our planet.
- This report serves as a **vital resource for policymakers, scientists, and concerned citizens to understand and address climate change effectively.**

Key Points about the State of the Global Climate, 2023

- The report confirmed that 2023 was the warmest year on record.
- **The global average near-surface temperature surged to at least 1.45°C** above pre-industrial levels.
- **Records were broken for greenhouse gas levels**, surface temperatures, ocean heat and acidification, sea level rise, Antarctic Sea ice cover, and glacier retreat.
- Extreme weather events such as heatwaves, floods, droughts, wildfires, and rapidly intensifying tropical cyclones caused significant damage, disrupting everyday life for millions and inflicting substantial economic losses.

Source: [Indian Express](#)

NATIONAL INTERNET EXCHANGE OF INDIA (NIXI)

Context:The National Internet Exchange of India (NIXI), in collaboration with the Ministry of Electronics and Information Technology (MeitY), has successfully launched the BhashaNet portal during the Universal Acceptance (UA) Day event.

Background:

- The BhashaNet portal endeavours to establish a multilingual internet, where website names and email addresses in local languages function seamlessly worldwide.

About NATIONAL INTERNET EXCHANGE OF INDIA (NIXI)

- The NIXI, established in 2003 as a not-for-profit organization and a statutory body established under the Companies Act 2013.

Purpose and Function:

- NIXI was **created to enhance the use of Internet Service Protocols (ISPs)** within India.
- Instead of routing domestic internet traffic abroad, NIXI facilitates routing it within the country. This results in **better service quality (reduced latency) and lower bandwidth charges for ISPs by saving on international bandwidth.**
- Aim: increase internet penetration and adoption in India by managing and enabling the internet ecosystem for the masses.

National Internet Registry (NIR):

- NIXI also operates the Indian Registry for Internet Names and Numbers (IRINN), which serves as the National Internet Registry.
- IRINN plays a crucial role in allocating and managing IP addresses and domain names within India.

Internet Exchange Points (IXPs):

- NIXI actively promotes the establishment of Internet Exchange Points (IXPs) across India.
- IXPs facilitate efficient exchange of internet traffic within the country, contributing to a robust and interconnected internet infrastructure.

Source: [PIB](#)

UN WORLD HAPPINESS REPORT 2024

Context:UN World Happiness Report 2024 has released recently.

Background:

- **The World Happiness Report** is an influential publication that ranks national happiness across countries. It is based on survey data collected from respondents who evaluate their own lives.

About UN WORLD HAPPINESS REPORT 2024:

- The report was initiated **by the United Nations General Assembly**, which adopted a resolution in 2011 inviting member countries to **measure the happiness of their people and use the data for public policy guidance.**
- The first World Happiness Report was released in 2012 as a foundational text for the UN High-Level Meeting on Well-being and Happiness.

Finland's Consistent Happiness:

- **Finland has consistently secured the top spot and Nordic nations continue to dominate the top rankings**, with Denmark, Iceland, and Sweden following closely behind Finland.
- Out of the 143 countries surveyed, Afghanistan remained at the bottom of the list, facing ongoing humanitarian crises since the Taliban regained power in 2020.
- **India maintains its position at 126th** in the global happiness index, which is the same as last year.

Recent Changes:

- As of March 2024, the report is now published by the Wellbeing Research Centre at the University of Oxford.
- Previously, it was a publication of the Sustainable Development Solutions Network, a global initiative of the United Nations.

Source: [The Wire](#)

SSLNG – SMALL SCALE LNG

Context: Union Minister for Petroleum and Natural Gas Hardeep Singh Puri this month dedicated to the nation India's first **Small-Scale Liquefied Natural Gas (SSLNG)** unit at GAIL (India) Ltd's Vijaipur complex in Madhya Pradesh.

Background:-

- The government has been pushing for the adoption and use of natural gas across sectors, and aims to increase the share of natural gas in its primary energy mix to 15% by 2030 from a little more than 6% at present. Natural gas is far less polluting than conventional hydrocarbons like coal and oil; it is also cheaper than oil, more than 85% of India's requirement for which is met through costly imports.

About Small Scale LNG (SSLNG)

- SSLNG refers to the **liquefaction of natural gas and its transportation using unconventional means in a significantly smaller-scale operation than the usual large-scale liquefaction, regasification, and transportation infrastructure and processes.**
- Simply put, **LNG — gas in its liquid or super-chilled form — is supplied in specialised trucks and small vessels** to industrial and commercial consumers in regions that are not connected by pipelines.
- In relatively traditional use cases such as supplying compressed natural gas (CNG) for vehicles and piped gas for households and manufacturing units, the buyer would regasify the LNG using small vapourisers, and then supply it to end-users. Where the fuel is to be used directly in its liquid form, it would be supplied to end-users without regasification.
- The SSLNG chain can start from a large-scale LNG import terminal from where the LNG, instead of being regasified and supplied through pipelines, can be transported to consumers by cryogenic road tankers or small vessels.
- The chain can also start at locations with ample natural gas supply or production, where small liquefaction plants can be set up. The SSLNG unit at Vijaipur, which is GAIL's largest gas processing facility, is an example of the latter kind of location

Why SSLNG?

- A major challenge in scaling up gas consumption lies in the transportation of gas to places that are not connected by the country's natural gas pipeline grid — a problem that also hinders the use of LNG directly as fuel for long-haul trucks and inter-city buses.
- Large-scale pipeline projects that are in the works will take years to be completed; even so, last-mile delivery challenges may persist in many parts of the country.

Source: [Indian Express](#)

WORLD AIR QUALITY REPORT 2023

Context: World Air Quality Report, 2023 was released recently.

Background:

- **The World Air Quality Report 2023** sheds light on the **critical issue of air pollution across the globe**. Air quality data is crucial for decisive action and improving air quality. Where data is reported, action is taken, and air quality improves.

About WORLD AIR QUALITY REPORT, 2023:

- The annual World Air Quality Report by IQAir reviews the status of air quality around the world.
- The report presents **PM2.5 air quality data from thousands of cities across numerous countries, regions, and territories**.
- The data used in this report is aggregated from over 30,000 regulatory air quality monitoring stations and low-cost air quality sensors.

Key findings from the 2023 World Air Quality Report include:

- Seven countries met the WHO annual PM2.5 guideline (annual average of 5 $\mu\text{g}/\text{m}^3$ or less): Australia, Estonia, Finland, Grenada, Iceland, Mauritius, and New Zealand.
- The top five most polluted countries in 2023 were: Bangladesh , Pakistan , India , Tajikistan , and Burkina Faso .
- India had the four most polluted cities in the world, with Begusarai being the most polluted metropolitan area of 2023.
- The report emphasizes that air pollution continues to be the world's largest environmental health threat, accounting for over six million deaths each year.
- Exposure to air pollution causes and aggravates several health conditions, including asthma, cancer, lung illnesses, heart disease, and premature mortality.

Source: [Hindustan Times](#)

Morning Batch

IAS BABA



Extended
Portal access
upto 2026
Prelims

baba's gurukul

The Guru-shishya Parampara Continues...

**Comprehensive Classes
of GS + CSAT + CA + ESSAY**

**Comprehensive Material
(VAN) + Prelims Handouts**

Daily Answer Writing

**Personalised Mentorship
& Feedback**



(For Freshers)

**Super 100 (Mentored
by Mohan Sir & Toppers)**

**Prelims + Mains Test
series**

GURUKUL FOUNDATION 2025

(Prelims + Mains + Interview)

STARTS 6TH JUNE

ADMISSIONS OPEN



BENGALURU

ONLINE



www.iasbaba.com



support@iasbaba.com



91691 91888

MAINS

PAPER 1

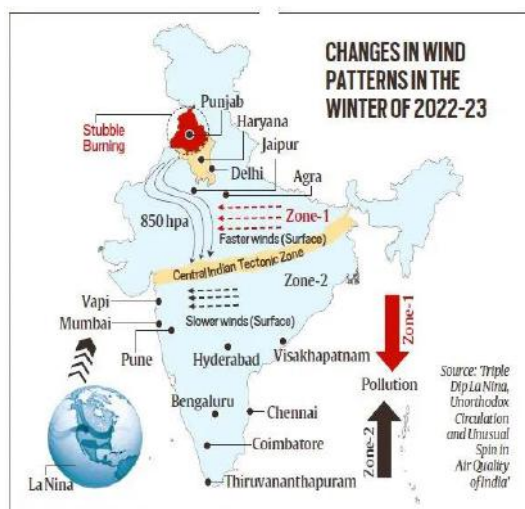
LA NINA LINKS WITH AIR QUALITY

GS I – IMPORTANT GEOPHYSICAL PHENOMENA

Context: A new study has been published by researchers at the Pune-based Indian Institute of Tropical Meteorology and the Bengaluru-based National Institute of Advanced Studies, suggesting that even air quality in India could be influenced by El Nino and La Nina events.

Key findings of the study:

- From October to January, northern Indian cities, like Delhi, typically have high levels of PM_{2.5} due to various meteorological factors and pollution transport from regions like Punjab and Haryana. The western and southern parts of the country have always had relatively lower levels of pollution, because of their proximity to oceans.



- The winter of 2022, however, showed a significant deviation from this normal. Northern Indian cities, including Delhi, were cleaner than usual, while cities in the west and the south, like Mumbai, Bengaluru, and Chennai, experienced worse-than-usual air quality.

- PM_{2.5} concentrations in Ghaziabad and Noida reduced significantly, while Delhi saw a slight reduction. In contrast, Mumbai and Bengaluru experienced rises in PM_{2.5} levels. Northern Indian cities had cleaner air than western and southern cities.

Image Source: The Indian Express

- The most crucial factor in explaining the anomaly of winter 2022 was a change in the normal wind direction. During winter, the wind usually blows in the north-westerly direction. For example, from Punjab towards Delhi and further into the Gangetic plains. It is a reason for transporting agricultural waste pollutants from Punjab and Haryana into Delhi.
- In the winter of 2022, however, the wind circulation was in the north-south direction. The pollutants being carried from Punjab and Haryana bypassed Delhi and surrounding areas and flew over Rajasthan and Gujarat to southern regions.
 - Extended La Nina persisted for an unusually long three years by the winter of 2022, impacting wind patterns. The three consecutive years of La Niña conditions (2020-23) — a rare “Triple-Dip” phenomenon — had widespread impacts on the ocean and climate across the globe. The 2022 event is particularly strong. And the impact on air circulation became evident only in the third year of La Nina. So, there may be an accumulative effect. The study suggests an unclear impact of El Nino on air quality in India.

KONARK SUN TEMPLE

GS I – INDIAN ARCHITECTURE

Context: The mural of the iconic Konark Sun Temple wheel was showcased to the World Leaders at the G20 Summit.

Konark Sun Temple:

- It is a UNESCO World Heritage Site and is also known as Black Pagoda, Arka Kshetra, and Padma Kshetra.
- The Sun Temple and Konark Wheel were built during the 13th century under the reign of Eastern Ganga King Narasimhadeva-I.
- It represents the most evolved period in Kalinga Architecture.
- Sun temples are temples dedicated to the worship of the Sun God and these are designed to highlight the celestial movement of the Sun.
- Materials used for building the temple include Chlorite, Laterite, and Khondalite rocks.
- Konark Sun Temple was once described by Nobel Laureate Rabindranath Tagore as the place where the language of stone surpasses the language of man.

Structure of the Konark Sun Temple:

- The main entrance of the Sun Temple, the Gajasimha - gaja meaning elephant and Simha referring to lions. According to mythology, lions resemble pride, elephants resemble wealth and both of them kill the human.
- Gajasimha leads to the Sun Temple's finely carved Natya Mandapa, the hall for dance and theatre. The sculptures here depict different types of dance styles.
- It is the assembly hall of the temple and the steps that rise to Jagamohan are flanked by stone horses.
- The Jagamohan is followed by the deul which is the sanctum where the idol is placed.
- Bhoga-mandira (kitchen) to make bhoga for the deity and devotees.

Architectural features of the Konark Sun Temple:

- It was designed in such a way that the rising sun's first rays would illuminate the sanctum and the presiding deity.
- It has been designed like the chariot of Surya, the Sun God. The temple stands on a base of a total of 24 intricately carved wheels, 12 on each side. The chariot seems to be drawn eastwards towards the dawn by a team of seven spirited horses.
- The thicker wheels are all carved with circular medallions at their centers on the widest part of the face. The rims are carved with designs of foliage with various birds and animals, whereas the medallions in the spokes are carved with the figures of women in various luxurious poses, mostly of a sensual nature.
- These seven horses have been named in Bhagawat Gita, as 'Gyatri', 'Usnika', 'Anustuv', 'Vrihati', 'Pangti', 'Tristup', and 'Jagati' which possibly stand for the rhythmic representation of the sacred verses of the Vedas. The seven horses are also named after the seven colours of the rainbow - Sahasrara (Violet), Indranila (Indigo), Nila (Blue), Haritaha (Green), Pita (Yellow), Kausumbhaha (Orange), and Rakta (Red).
- There are two carved war horses in front of the southern side of the Konark Temple. The sculpture depicts each of them with its massive strength and energy crushing down the warrior. This figure of the war horse of Konark has been accepted as the symbol of the state Government of Odisha.
- It has three impressive carvings of the Sun God at three strategic locations, to catch the sun at dawn, at noon, and sunset. The carvings at the base of the temple and on its walls chronicle everyday activities.

Eastern Ganga or Chodaganga Dynasty:

- It ruled over Kalinga or Odisha from the 5th century to the early 15th century.
- According to early Chodaganga copper-plate grants, the Eastern Gangas of Kalinga were a branch of Mysore's ruling Western Ganga family. Kamarnava is believed to be the founder of the Eastern Ganga dynasty, however, Indravarman I, whose Jirjingi copper plate grant was issued in 537 CE, is the first historical ruler of the Eastern Ganga dynasty known from reliable records. The most powerful ruler of this dynasty was Anantavarman Chodaganga.

PAPER 2

INDIA - BHUTAN

GS II –INDIA AND ITS NEIGHBORHOOD- RELATIONS.

Context: During the Bhutan King's visit to India, **India and Bhutan** agreed to discuss **new routes of Regional Connectivity**, and upgrade border and immigration posts, to enhance trade.

Significance of Bhutan for India

- Shares borders with India and China, making it a crucial buffer state for India's security interests.
- Provides assistance in defence, infrastructure, and communication to maintain Bhutan's sovereignty and territorial integrity.
- Helps build and maintain border infrastructure to strengthen Bhutan's defense capabilities.
- India is Bhutan's largest trading partner and major export destination.
- Assists Bhutan in developing its hydropower potential, a significant revenue source.
- Preserves Bhutan's Buddhist cultural heritage, attracting Bhutanese students for higher education.
- Assists Bhutan in achieving carbon-neutrality, focusing on renewable energy, forest conservation, and sustainable tourism.

Challenges in India-Bhutan Relations

- China's growing presence in Bhutan, especially along the disputed border, raises concerns for India.
- India, Bhutan's closest ally, has played a key role in protecting Bhutan's sovereignty and security.
- The 699 km long border between India and Bhutan has been largely peaceful, but recent incidents of Chinese forces' border incursions could strain relations.
- Bhutan's hydropower sector, a key economic pillar, has been criticized for being too favourable to India.
- India, Bhutan's largest trading partner, is facing trade imbalance concerns, with Bhutan importing more from India than exporting.

Bhutan King's Visit to India Highlights:

- Discussed new regional connectivity routes, including a 58 km cross-border rail link between Gelephu and Kokrajhar.
- Facilitated trade by allowing Bhutanese trade items to be carried from Haldibari to Chilahati.
- Defined Darranga-SamdrupJongkhar border crossing as an immigration check post, promoting tourism and connectivity.
- Upgraded land customs station at Dadgiri to a modernised "Integrated Check Post" and development of facilities on Bhutanese side at Gelephu.
- Committed to continue supporting Bhutan's socio-economic development, with a focus on the 13th Five-Year Plan.
- Appreciated India's successful organization of the G20 Summit and its commitment to integrating Global South countries' interests.
- Noted progress on construction of the 1020 MW Punatsangchhu-II hydropower project.

DELIMITATION

GS II – FUNCTIONING OF THE EXECUTIVE

Context: The **Delimitation** of constituencies for the **Lok Sabha** and State Legislative Assemblies is to be carried out based on the **First Census after 2026**.

What is Delimitation?

- Delimitation means the **process of fixing the number of seats and boundaries** of territorial constituencies in each State for the Lok Sabha and Legislative assemblies.
- It also includes determining the seats to be reserved for **Scheduled Castes (SC) and Scheduled Tribes (ST)** in these houses.
- It is performed **by the 'Delimitation Commission'** that is set up under an act of Parliament.
- Delimitation Commissions have been set up four times — **1952, 1963, 1973, and 2002** under the Acts of 1952, 1962, 1972, and 2002.
- The first delimitation exercise was carried out by the President (with the help of the Election Commission) in 1950-51.

Delimitation in India: Significance and Concerns

Significance of Delimitation:

- Ensures fair representation in Lok Sabha and State Legislative Assemblies.
- Reasons for equitable distribution of seats among different regions.
- Determines allocation of reserved seats for Scheduled Castes and Scheduled Tribes.
- Impacts federal principles by influencing political power distribution.
- Balancing population-based representation and federal considerations is essential.

Issues/Concerns related to Delimitation:

- Disparity in representation between northern and southern parts of India.
- Disregards progress made by southern states in population control.
- Concerns raised about southern states losing funding and representation in parliament.
- Possible increase in power for political parties with support in the north.
- Will affect the division of seats reserved for Scheduled Castes and Scheduled Tribes in each state.

Constitutional provisions related to Delimitation:

- Under **Article 82**, the Parliament enacts a **Delimitation Act after every Census**.
- Under **Article 170**, States also get divided into territorial constituencies as per the Delimitation Act after every Census.

Delimitation Commission:

- It is appointed by the **President of India and works in collaboration with the Election Commission of India**.

GLOBAL BURDEN OF CANCER IN 2022

GS II – ISSUES RELATING TO HEALTH

Context: The World Health Organization (WHO)'s cancer agency, the International Agency for Research on Cancer (IARC), released the latest estimates of the Global Burden of Cancer in 2022.

WHO's Global Burden of Cancer in 2022

- Estimated 20 million new cancer cases and 9.7 million deaths in 2022.
- 10 types of cancer comprised around two-thirds of new cases and deaths.
- Lung cancer was the most common cancer, accounting for 12.4% of total new cases.
- Breast cancer was the leading cause of cancer death, accounting for 18.7% of total cancer deaths.
- Human Development Index (HDI) inequities in cancer burden, particularly in breast cancer, with high HDI countries having higher rates of breast cancer diagnosis and death.
- Predicted over 35 million new cancer cases in 2050, a 77% increase from 2022.
- Increase in cancer incidence due to population ageing, population growth, and socioeconomic development.

- High HDI countries expected to experience the greatest absolute increase in incidence, with an additional 4.8 million new cases predicted in 2050.
- Urgent need for major investments to address global inequities and ensure access to affordable, quality cancer care.

India's Cancer Report 2022

- India reported 1,413,316 new cases in 2022, with a higher proportion of female patients.
- Breast cancer had the highest proportion, accounting for 13.6% of all patients and over 26% of women.
- Other cancers included lip and oral cavity, cervix, uterine, lung, and oesophageal cancers.
- India accounted for 32.9% of global deaths and 28.1% of new cases of lip and oral cavity cancer in 2019.
- India accounted for 23% of deaths due to cervical cancer globally, with a five-year survival rate of 51.7%.

World Cancer Day:

- It is an international awareness day led by the **Union for International Cancer Control (UICC)** celebrated on 4th February every year.
- It was first celebrated on 4th February 2000 at the **World Summit Against Cancer** for the New Millennium in Paris.
- The **Paris Charter's mission** is to promote research, prevent cancer, improve patient services, raise awareness, and mobilise the global community to make progress against cancer and including the adoption of World Cancer Day.
- **The theme of World Cancer Day 2024 is "Close the Care Gap"**. The theme aims to mobilise the necessary attention and resources to ensure that the rising burden of cancer can be addressed in an equal manner across the globe and that all people in the world have access to **systematic testing, and early diagnosis and treatment**.

Cancer:

- It is a complex and broad term used to describe **a group of diseases characterised by the uncontrolled growth and spread of abnormal cells** in the body.
- These **abnormal cells, known as cancer cells**, can invade and **destroy healthy tissues and organs**.

CHINA AND NEPAL

GS II – BILATERAL RELATIONS AFFECTING INDIA'S INTERESTS.

Context: China and Nepal have signed 12 agreements to enhance bilateral cooperation in sectors including trade, road connectivity, and information technology.

China-Nepal Relations:

- China has historical ties with the **communist movement in Nepal**, particularly with the **Communist Party of Nepal (Maoist Centre)**, which was involved in a **decade-long armed insurgency against the Nepalese state**. During this period, the Maoist movement received ideological, logistical, and even military support from China.
- China's influence in Nepal has **grown significantly in recent years**, the almost **Six-Month Economic Blockade of Nepal** by India from September 2015 onward gave China a fast track into the country. China intervened aggressively in Nepal's politics and played **a role in bringing the two communist parties, Maoist Centre and Unified Marxist-Leninist together**.
- Economic cooperation between China and Nepal has intensified, focusing on trade, investment, and infrastructure development. Key projects like cross-Himalayan railways, ports, and hydroelectric power plants are enhancing connectivity and contributing to Nepal's economic growth.

- China and Nepal have engaged in joint military exercises and increased defence cooperation, focusing on capacity building and military training. China has provided military aid to Nepal, further strengthening its defence ties.

Issues between China and Nepal:

- In its new map, **China refused to recognize a portion of land in Nepal's north-western region**—an area that Nepal had claimed and depicted in its map in 2020.

Implications of China's growing presence in Nepal for India:

- China's enhanced influence in **Nepal could potentially lead to strategic encirclement** for India, as it strengthens its presence in a country that shares a long border with India. This raises **security concerns** for India.
- China's infrastructure projects and economic engagement in Nepal may compete with **Indian investments and economic interests**, affecting India's access to resources and markets in the region.
- Nepal's participation in China's BRI Initiative can result in a **significant increase in Chinese-backed infrastructure projects** and connectivity, which will increase Nepal's dependence on China for trade and consequently harm the interests of India.
- Nepal's closer ties with China provide strategic depth to China in South Asia, potentially allowing China to project power and influence beyond its borders which might make it more challenging for India to coordinate regional responses and initiatives effectively.

Way Forward:

- India needs **to engage proactively with Nepal**, enhance development assistance, strengthen economic ties, and foster people-to-people relations.
- India must work on multilateral initiatives and regional cooperation to counterbalance the expanding Chinese influence in Nepal and ensure stability and prosperity in the region.

Diplomacy, dialogue, and collaboration will be crucial in managing these challenges effectively.

NATIONAL HIGHER EDUCATION QUALIFICATIONS FRAMEWORK

GS II – GOVERNMENT POLICIES AND INTERVENTIONS

Context: The University Grants Commission (UGC) has finalized the National Higher Education Qualifications Framework (NHEQF) to standardize qualifications and promote academic mobility.

National Higher Education Qualifications Framework (NHEQF):

- It is based on the National Education Policy (NEP) 2020, which envisages a new and forward-looking vision for India's higher education system.
- It aims to facilitate transparency and comparability of higher education qualifications at all levels.

NHEQF Features and Issues

Key Features:

- Categorizes education into eight levels, with four part of the National School Education Qualification Framework (NSEQF) and four for higher education qualifications (level 4.5 to level 8).
- Provides guidelines for the development and implementation of programmes of study.
- Includes broad and discipline-independent qualifications including certificates, diplomas, bachelor's degrees, master's degrees, PhDs, technical and vocational education, and professional and technical education programs.
- Establishes the quality assurance mechanism, including roles and responsibilities of regulators, higher education institutions, and external agencies.

Concerns/Issues with NHEQF:

- Multiple regulations impinge on higher education qualifications.
- Lack of clear eligibility conditions and pathways for students entering a program at a particular level.
- Potential fragmentation of the higher education system due to the jurisdiction of separate regulators.
- Hierarchy in the framework, potentially leading to elitism.

- Equating postgraduate diplomas with four-year undergrad programs, confusing.
- Draws heavily from the European Bologna process and Dublin descriptors, which could benefit from broader consultations with Indian states.

Note:

- The Bologna Process is a series of agreements between European countries to ensure the quality and comparability of higher education qualifications.
- The Dublin descriptors are a system of qualifications frameworks for evaluating students for bachelor's, master's, and doctoral degrees.

WOMEN'S RESERVATION ACT, 2023

GS II – GOVERNMENT POLICIES AND INTERVENTIONS

Context: The **Constitution (106th Amendment) Act, 2023**, reserves **one-third of all seats** for women in **Lok Sabha, State legislative assemblies**, and the **Legislative Assembly of the National Capital Territory of Delhi**, including those reserved for **SCs and STs**.

What is the Women's Reservation Act, 2023?

- The **Constitution (106th Amendment) Act, 2023**, reserves **one-third of all seats** for women in **Lok Sabha, State legislative assemblies**, and the **Legislative Assembly of the National Capital Territory of Delhi**, including those reserved for **SCs and STs**.
- The reservation will be **effective after the publication of the census conducted following the Act's commencement** and endures for 15 years, with potential extension determined by parliamentary action.
- The rotation of seats allocated for women will be governed by parliamentary legislation after each **delimitation process**.
- Currently, around **15%** of the total members of the 17th Lok Sabha (**2019-2024**) are women while in state legislative assemblies, women on average constitute **9%** of the total members.

Act's Arguments for Women's Representation in Politics

- Women's representation in politics is crucial for gender equality.
- India ranks 48th in Political Empowerment according to the Global Gender Gap Report 2022.
- Women MPs have increased from 5% in the first Lok Sabha to 15% in the 17th Lok Sabha.
- Women elected under reservation policy invest more in public goods related to women's concerns.
- Non-proportional representation limits women's influence on policy-making.
- A diverse legislature with women can improve policy formulation and governance.
- Women's reservation in politics empowers women at all levels and inspires leadership roles.
- Women in politics advocate for issues directly affecting women, leading to policy discussions.
- Women leaders in politics serve as role models for young girls, breaking stereotypes and inspiring future generations.

Arguments against the Act:

- Women are **not a homogeneous community like, say like, a caste group**. Therefore, the same arguments made for caste-based reservations cannot be made for women.
- Reserving seats for women is opposed by some who claim that **doing so violates the Constitution's guarantee of equality**. If there is a reserve, they claim, women won't be competing on merit, which could decrease their status in society.

Way Forward:

- Establishing an independent monitoring system or committees that explicitly prohibit family members from influencing the decision-making process of women representatives can be implemented by **reducing the influence of a patriarchal mindset**.
- Creating awareness among women about their rights and the importance of their participation in politics is essential. Educational programs and awareness campaigns can help to increase women's political participation.

- **Gender-based violence** and harassment are major obstacles to women's participation in politics. Addressing these issues through policy and legal measures can create a safer and more supportive environment for women in politics.
- Reforms such as introducing **proportional representation** and preferential voting systems can help to increase women's representation in politics by ensuring that more women get elected.

Current status of women's representation in India:

- There are 82 women Members of Parliaments in LS (15.2%) and 31 women in RS(13%). While the number has increased significantly since the 1st Lok Sabha (5%) but is still far lower than in many countries.

Note:

According to recent UN Women data, **Rwanda (61%), Cuba (53%), and Nicaragua (52%)** are the top three countries in women representation. Bangladesh (21%) and Pakistan (20%) as well are ahead of India in the case of female representation.

THE BIRTH AND DEATH (AMENDMENT) ACT OF 2023

GS II – GOVERNMENT POLICIES AND INTERVENTIONS

Context: Recently, the Birth and Death (Amendment) Act of 2023 was passed.

Key features of the Birth and Death (Amendment) Act of 2023:

- It adds that the Registrar General of India will maintain a national database of registered births and deaths.
- Chief Registrars and Registrars will be obligated to share data on registered births and deaths with the national database. The Chief Registrar shall maintain a similar database at the state level.
- It provides digital registration and electronic delivery of certificates of births and deaths.
- It collects the Aadhaar numbers of parents and informants in case of birth registration.
- It states that the national database may be made available to other authorities preparing or maintaining other databases like population registers, electoral rolls, ration cards, etc.
- The information will be used for purposes including admission to an educational institution, preparation of voter lists, appointment to a government post, etc.
- Any person aggrieved by any action or order of the Registrar or District Registrar may appeal to the District Registrar or Chief Registrar, respectively, within 30 days.

Concerns/Issues with the Birth and Death (Amendment) Act of 2023:

- Denying admission to school without a birth certificate may violate the fundamental right to education under Article 21A.
- Linkage across databases does not require consent from the person whose data is being linked, which is against the right to privacy.
- It does not provide alternative proof if a person does not have a birth certificate.
- It centralizes the database which may lead to mass surveillance.

ARTICLE 371A

GS II – ISSUES AND CHALLENGES PERTAINING TO THE FEDERAL STRUCTURE

Context: In Nagaland, Article 371A of the Indian Constitution poses a major obstacle to regulating coal mining.

Article 371A:

- It was introduced into the Constitution (Part XXI) as part of the **13th Amendment in 1962**, granting **special provisions to Nagaland**.
- It states that **no act of Parliament shall apply to Nagaland in respect of the religious or social practices of the Nagas, the Naga customary law, and procedure, the administration of civil and criminal**

justice involving decisions according to the Naga customary law, and the **ownership and transfer of land** and its resources, unless the Nagaland Legislative Assembly decides otherwise by a resolution.

Rat-hole mining regulations in Nagaland:

- Nagaland possesses significant coal reserves totalling 492.68 million tonnes but **dispersed erratically and inconsistently** in small pockets spread over a large area.
- The **Nagaland Coal mining policy, established in 2006**, permits **rat-hole mining due to the scattered nature** of coal deposits, making large-scale operations unfeasible.
- Rat-hole mining licences, known as **small pocket deposit licences**, are exclusively granted to **individual landowners for limited durations and specific conditions**.
- According to Section 6.4(ii) of the **Nagaland Coal Policy (First Amendment) of 2014**, these licences are restricted to mining areas not exceeding **2 hectares**, with an annual coal production cap of **1,000 tonnes** and a prohibition on heavy machinery usage.
- Rat-hole mining operations necessitate consent from relevant departments, including **Forest and Environment**, to ensure compliance with environmental regulations.
- Despite proper clearances and defined mining plans issued by the State government, **instances of illegal rat-hole mining persist in Nagaland**.
- The dependence of local communities on **coal mining for sustenance further complicates regulatory efforts**, as stringent regulations may impact livelihoods, necessitating a delicate balance between economic interests and environmental concerns.

Article 371A and controlling rat-hole mining in Nagaland:

- Article 371A grants Nagaland special rights over its land and resources, **making it difficult for the government** to impose regulations that might be perceived as infringing on these rights.
- The Nagaland government struggles to effectively regulate small-scale mining operations, particularly those practised by **individual landowners due to the limitations posed by Article 371A**.
- The recent deaths in a **rat-hole mine highlight the safety risks associated with unregulated mining practices**. These incidents raise concerns about the lack of proper safety measures and highlight the urgency for effective regulations.

Rat-hole mining:

It is a method of **extracting coal from narrow horizontal tunnels or rat holes**, which are often dug by hand and are prone to accidents and environmental hazards.

INDIA-MIDDLE EAST- EUROPE ECONOMIC CORRIDOR(IMEC)

GS II – REGIONAL AND GLOBAL GROUPINGS AND AGREEMENTS INVOLVING INDIA AND/OR AFFECTING INDIA'S INTERESTS

Context: The Memorandum of Understanding (MoU) to establish the 'India-Middle East- Europe Economic Corridor' (IMEC) was signed between India, the US, Saudi Arabia, the European Union, UAE, France, Germany, and Italy.

What is IMEC?

- It will consist of the railroad, ship-to-rail networks (road and sea), and road transport routes (and networks), extending across two corridors-
 - The East Corridor: Connects India to the Arabian Gulf.
 - The Northern Corridor: Connects the Arabian Gulf to Europe.
- It aims to provide a reliable and cost-effective cross-border ship-to-rail transit network enabling goods and services to transit to, from, and between India, the UAE, Saudi Arabia, Jordan, Israel, and Europe.
- It forms part of the Partnership for Global Infrastructure and Investment (PGII).

Significance of IMEC:

- It signifies the commitment of the US, Europe, and emerging powers such as India, Saudi Arabia, and the UAE to promoting a more balanced and interconnected Eurasian order.
- It would create a consolidated trade route that would reduce trade costs, promote market access, and encourage investment opportunities between the participating countries.
- Improved transportation infrastructure, cross-border cooperation, energy supply, and logistical efficiencies will enhance regional connectivity.
- It is expected to act as an effective medium of economic integration between India, West Asia, and Europe.
- Close economic ties resulting from the corridor will incentivize cooperation on security, counterterrorism, and regional stability.
- It will make the global supply chain more resilient.
- It also aims to promote clean energy development and export, expand energy grids and telecommunications, advance clean energy technologies, and improve internet access for all.

Issues/Challenges faced by IMEC:

- The corridor extends across diverse nations with varying political dynamics, interests, and previous tensions. For, uncertainties surrounding Saudi Arabia and Israel relations may hamper cooperation.
 - As a strategic competitor, China may seek to divert trade and investments towards its corridors, potentially undermining the effectiveness of IMEC. Further, the IMEC corridor, being an alternative land route, may pose a potential threat to Egypt's dominance in the region, diverting trade away from the Suez Canal.
 - Establishing a multi-modal network across multiple countries with diverse geographical terrains, regulatory procedures, transportation protocols, financial mechanisms, and infrastructural capabilities will be challenging.
 - The region is susceptible to various security threats, including terrorism, conflicts, and political instability.
 - The IMEC consists of land and sea sections, which may escalate costs in comparison to exclusively land or maritime routes.
- There is a lack of commitment regarding the financial cost.

NARI SHAKTI VANDANADHINIYAM**GS II – ISSUES RELATED TO WOMEN**

Context: Parliament passed the Constitution (106th Amendment) Act, 2023, to provide for one-third reservation to women in the Lok Sabha, State Assemblies, and the Assembly of NCT of Delhi.

Key Features of the Act:

- Introduced Article 330A, allowing reservation of seats to SCs/STs in Lok Sabha.
- Allots one-third of seats for women on a rotational basis in seats reserved for SCs/STs.
- Introduces Article 332A, mandating reservation of seats for women in every state legislative assembly.
- Adds a new clause in 239AA to the constitution, granting special status to the Union Territory of Delhi.
- Adds Article 334A, stating reservation will be effective after the census conducted after the Act commencement.
- Seats reserved for women will be rotated after each delimitation.

Issues with the Act:

- Reservation of seats for women in legislature contradicts the principle of equality.
- Restricts voter choices and self-determination.
- Women are not a homogeneous community, hence caste-based reservations cannot be made.
- Larger electoral reform issues like criminalization of politics and internal democracy may hinder women's political empowerment.
- The Act provides for reservation of 1/3rd seats across all Lok Sabha seats.
- The Act does not include provisions for reservation for women in Rajya Sabha and Legislative Councils.

ANNUAL NESDA WAY FORWARD REPORT 2023

GS II – E-GOVERNANCE

Context: The Department of Administrative Reforms and Public Grievances (DARPG) has released the 'Annual NeSDA Way Forward Report 2023', showing that Jammu & Kashmir dominated with 1,117 e-services mapped on the NeSDA Way Forward Dashboard.

Highlights of the Annual NeSDA Way Forward Report 2023:

- By the end of December 2023, a total of **16,487 e-services were mapped** on the NeSDA Way Forward Dashboard, showcasing the extent of digital service delivery across various sectors. **In e-service delivery, Jammu & Kashmir is followed by Tamil Nadu** (1,101 e-services), Madhya Pradesh (1010), and Kerala (911). Apart from **Manipur, the bottom four states** are Lakshadweep (42), Ladakh (46), Sikkim (51) and Nagaland (64).
- Jammu & Kashmir's commendable progress in e-governance, as evidenced by the provision of 1120 e-services and achieving 100 % service delivery through their **unified e-UNNAT (Unified, Integrated, Accessible, and Transparent) platform**, has served as a source for replication and dissemination of e-services in Manipur.
- Across States/UTs 16,487 Total e-services are provided across States/UTs Jammu and Kashmir provide the maximum (1117) number of e-services, across States/UTs. Maximum e-services are provided in the **Local Governance & Utility Services**.
- **The tourism sector has achieved the highest saturation** for the provision of **all mandatory e-services in 23 out of 36 States/UTs**. This is followed by **Environment and Labour & Employment sector** in 20 out of 36 States/UTs
- Rise in saturation of **Mandatory e-Services** from 48% in NeSDA 2019 to 69% in NeSDA 2021 to **76% in NeSDA Way Forward (2023)**.
- There are disparities among states, with **Manipur facing challenges in providing e-services compared to other regions**, indicating a need for concerted efforts to improve digital governance in lagging states.

National e-Governance Service Delivery Assessment (NeSDA):

- It is formulated by the Department of Administrative Reforms and Public Grievances (DARPG) to **assess States/UTs and Central Ministries concerning their delivery of e-services as a benchmarking exercise**, covering seven sectors. The **seven sectors are** Local Governance & Utility Services; Social Welfare including Health, Agriculture, Home & Security; Finance; Labour & Employment; Education; Environment; and Tourism.
- It is released by the Ministry of **Personnel, Public Grievances and Pensions**.
- In this assessment, the service portals were evaluated alongside their parent Ministry/portal Departments in this project.
- All Government portals that were evaluated were **divided into two main categories-**
 - States/Union Territories/Central Ministry Portal
 - State/Union Territory/ Central Ministry Services Portals
- **There were four main parameters of assessment:**
 - Accessibility
 - Content Availability
 - Ease of Use and Information Security
 - Privacy for Central Ministry Portals
- An additional three parameters were also used for the Central Ministry Services Portals:
 - End Service Delivery
 - Integrated Service Delivery
 - Status and Request Tracking

HOLISTIC PROGRESS CARD (HPC)**GS II – EDUCATION**

Context: The **National Council for Educational and Research Training (NCERT)** has introduced a new '**Holistic Progress Card**' (HPC), which will measure, apart from academic performance, a child's progress in interpersonal relationships, self-reflection, creativity, and emotional application in classrooms.

Holistic Progress Card (HPC):

- It is a new approach to **evaluating students' academic performance** that moves away from **traditional reliance on marks or grades**.
- It adopts a **comprehensive 360-degree evaluation system** that takes into account various aspects of a student's development and learning experience.

Features of the HPC Model:

- Under this model, students are actively **engaged in class activities where they are encouraged to apply a range of skills** and competencies, demonstrating their understanding of concepts. The difficulty level they encounter while performing tasks is also considered in the assessment process.
- Teachers play a crucial role in **assessing students' strengths and weaknesses** across different dimensions, such as collaboration, creativity, empathy, attention, and preparedness. This allows teachers to identify **areas where students may need additional support** or guidance.
- One distinctive feature of the HPC is that **it involves students in the evaluation process**. Students are encouraged to assess their **performance as well as that of their peers**, providing insights into their learning experiences and the learning environment.
- Moreover, the HPC integrates **parents into the assessment process by soliciting their input on various aspects** of their child's learning, including homework completion, classroom participation, and **balancing screen time with extracurricular activities at home**.

Need for the HPC Model:

- Departing from the traditional emphasis on memorisation, the **HPC prioritises the evaluation of higher-order skills**, including analysis, critical thinking, and conceptual clarity among students.
- Aligned with the NEP's directives, the **National Curriculum Framework for School Education (NCF-SE)** was introduced in 2023, advocating for a shift towards assessing **student progress through the systematic collection of evidence**. Additionally, the NCF SE promotes **peer and self-assessment methods to empower students** in monitoring their learning journey.
- To gain a comprehensive understanding of students' core competencies, the NCF SE suggests **incorporating diverse classroom assessment methods**, such as projects, debates, presentations, experiments, investigations, and role plays. The design of HPC is in harmony with these recommendations.

ARTICLE 142**GS II – SIGNIFICANT PROVISIONS OF THE INDIAN CONSTITUTION**

Context: The Supreme Court recently nullified the outcome of the Chandigarh Mayor election, exercising its power under Article 142 of the Constitution to ensure "complete justice".

Article 142:

- The Supreme Court in the exercise of its jurisdiction may pass such decree or make such order as is necessary for doing complete justice in any cause or matter pending before it.
- It enables the Supreme Court to exercise executive and legislative functions in specific scenarios, including issuing guidelines, directives, or orders to governmental bodies or other authorities.
- It permits the Supreme Court to intervene in matters concerning public interest, human rights, constitutional values, or fundamental rights, safeguarding them against any form of violation or infringement.
- It elevates the Supreme Court's role as the protector of the Constitution and ultimate interpreter of the law, catalyzing judicial activism and innovation.

Article 142: Significance and Impacts

- Addresses legislative vacuum through proactive approach, providing remedies and resolutions in cases where legislation can hinder justice.
- Strengthens democracy by protecting minorities' rights and ensuring all voices are heard.
- Provides checks and balances, preventing overreach and protecting citizens.
- Protects civil rights and social justice by addressing issues overlooked by legislative and executive branches.
- Promotes equality by challenging discriminatory laws and practices.

Concerns/Issues of Article 142:

- Wide discretion allows for arbitrary exercise or misuse due to lack of standard definition for "complete justice."
- Judicial activism may blur boundaries between judiciary and legislature, leading to jurisdictional conflicts.
- Grants judiciary immunity from easy scrutiny or challenge for its decisions.
- Inconsistent legal rulings under Article 142 complicate litigation planning and operations.

NEIGHBOURHOOD FIRST POLICY (NFP)

GS II – INDIA AND ITS NEIGHBORHOOD- RELATIONS.

Context: The Parliamentary Standing Committee on External Affairs submitted an Action Taken report on observations/recommendations contained in its 22nd report (submitted in July 2023) on India's NFP.

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.

India's Neighbourhood First Policy (NFP) Significance and Challenges**Significance of NFP:**

- Enhances regional integration in South Asia, countering external influences like China.
- Promotes India's vision of a free and open Indo-Pacific.
- Strengthens multilateralism through regional/sub-regional organizations.
- Promotes India's diverse cultural values and soft power influence in the region.
- Builds capacity to address traditional and non-traditional security threats.
- Facilitates increased regional trade, investment, and cross-border infrastructure.
- Ensures India's energy security, particularly in the context of northern neighbours.

Issues/Challenges in NFP:

- Unresolved border disputes with countries like Pakistan.
- Domestic politics and federal dynamics determining India's neighbourhood.
- Political instability, weak governance, and internal conflicts hindering sustained cooperation and implementation of long-term projects.
- Delay in implementation of development projects leading to frustration and mistrust.
- Dysfunctional regional multilateral institutions like SAARC affected by India-Pakistan tensions.

Key Recommendations by the Parliamentary Committee:

- Establish a Cell to identify specific initiatives, projects, and programmes.
- Strengthen Joint Project Monitoring Committees and Oversight Mechanisms.
- Increase investment, pooling of resources, and convergence of interest and focus by various central agencies.
- Explore the feasibility of setting up a regional development fund for connectivity infrastructure.

- Scale-up academic cooperation, special scholarship schemes, and exchanges in performing/fine arts.
- Promote investment in tourism, including medical tourism under the NFP.
- Maintain a synergy between NFP and Act East Policy.

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). **What is 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 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.

MENSTRUAL LEAVE

GS II – WELFARE SCHEMES FOR VULNERABLE SECTIONS OF THE POPULATION

Context: There have been several debates regarding providing a paid Menstrual Leave policy in India.

Menstrual Leave:

- It is a type of leave where women and trans women may have the option of taking paid leave from their workplace during the period of menstruation.

Menstrual Leave Policy in India: Significance and Challenges

Significance:

- In line with Articles 21 and 14 of the Constitution.
- Provides an opportunity for societal and employer reevaluation of absenteeism and work ethic.
- Creates a positive work environment and culture, enhancing productivity.
- Fosters support for women's reproductive health and rights.

Challenges:

- May lead to biases or stereotypes against women, impacting hiring decisions and career advancement.
- May perpetuate gender stereotypes and biological determinism.
- May disrupt workflow and increase workload.
- May result in increased operational costs.
- Informal workers, Freelancers, and gig workers often lack traditional employee benefits.
- Female employees may feel hesitant to seek benefits due to societal stigma.

INDIA AND ARGENTINA

GS II – BILATERAL RELATIONS

Context: India and Argentina signed a 'Social Security Agreement(SSA)' aimed at safeguarding the legal rights of professionals in each other's domains. This agreement is expected to facilitate risk-free international mobility for professionals from both countries.

Social Security Agreement:

- It ensures that the rights of professionals and workers in both countries are protected against the **loss of social security benefits or contributions.**

India-Argentina Relations Overview

- Elevated to Strategic Partnership in February 2019.
- India opened a Trade Commission in Buenos Aires in 1943, later converted into an embassy in 1949.
- Argentina established a Consulate in Calcutta in the 1920s, transferred to Delhi as an Embassy in 1950.
- India is the 4th largest trading partner of Argentina, with bilateral trade reaching a historic peak of USD 6.4 billion in 2022.
- Major items of India's exports to Argentina include petroleum oils, agrochemicals, yarn-fabric-made ups, organic chemicals, bulk drugs, and two-wheelers.
- Major items of India's imports from Argentina include vegetable oils, finished leather, cereals, residual chemicals, allied products, and pulses.
- Both countries issued a joint declaration to fight terrorism, condemning recent terrorist attacks.

Social Security Agreement (SSA) between India and Argentina:

- Applies to legislation concerning various aspects of social security, including old age, survivor's pension, and permanent, total disability pension for employed persons.
- Provides rights and benefits to detached workers and their family members.
- Establishes the legal framework for regulating the insurance period, including the period of services credited with contributions, contributory benefits, and their export for detached workers.

ARTIFICIAL INTELLIGENCE (AI) IN ELECTIONS

GS II – Governance

Context: Five Swiss political parties have signed a code of conduct agreeing to limit the use of artificial intelligence (AI) in their campaigns for the federal elections.

AI in Elections: Significance and Concerns**Role of AI in Elections:**

- Predicts voter support for specific candidates based on demographics, voting patterns, and key issues.
- Analyzes trends and sentiment to develop social media outreach programs.
- Tailors communications to voters' interests, preferences, and traits.

- Allows campaigns to adapt messaging and outreach methods based on real-time data on social media trends and influencers.
- Tracks and measures campaign activity performance for data-driven decisions.
- Promotes participative democracy through enhanced voter education and mobilization.

Issues with AI in Elections:

- Potential for deepfake videos, misinformation, and social media manipulation, influencing voters and distorting truth.
- Potential to undermine public trust in democratic institutions and elections.
- Lack of comprehensive regulation addressing AI use in elections.
- Challenges in the effectiveness and precision of AI systems.
- Privacy and data protection concerns due to lack of cybersecurity infrastructure and data storage devices.

Artificial Intelligence:

- AI is defined as the **ability of machines** and systems to **acquire and apply knowledge and to carry out intelligent behaviour**.
- The term "Artificial Intelligence" was coined by **John McCarthy**, an American computer scientist and cognitive scientist. He was one of the founders of the discipline of AI.
- It includes technologies like **Machine Learning, Deep Learning, Big Data, Neural Networks**, Computer vision, **Large Language Models**, etc.

GLOBAL BIOFUEL ALLIANCE (GBA)**GS II – ENVIRONMENTAL CONSERVATION**

Context: GBA was launched by India along with the leaders of Singapore, Bangladesh, Italy, USA, Brazil, Argentina, Mauritius and UAE.

Global Biofuel Alliance (GBA):

- It aims to serve as a catalytic platform, fostering global collaboration for the advancement and widespread adoption of biofuels.
- It will act as a central repository of knowledge and an expert hub.
- Its members are Argentina, Brazil, Canada, India, Italy, South Africa, USA, Bangladesh, Singapore, Mauritius, UAE, Iceland, Kenya, Guyana, Paraguay, Seychelles, Sri Lanka, Uganda, and Finland. It also includes international organizations including the World Bank, Asian Development Bank, World Economic Forum, International Energy Agency, etc.

Significance of GBA:

- GBA will ensure a stable supply of eco-fuels and create a virtual marketplace connecting industries, countries, and tech providers, enhancing demand-supply mapping.
- It will facilitate the development, adoption, and implementation of internationally recognized standards, and regulations to incentivize biofuels adoption and trade.
- International Energy Agency (IEA) estimates that global sustainable biofuel production would need to triple by 2030 to put the world's energy system on track towards net zero emissions by 2050.
- The transport sector is responsible for approximately one-quarter of greenhouse gas emissions.
- It will help raise awareness about biofuels' role in reducing greenhouse gas emissions.

Issues/Challenges for GBA:

- There is a lack of consensus on what sustainable fuels are and countries don't think biofuels are sustainable.
- Developing countries may encounter resistance from developed nations due to concerns about technological secrecy.
- Oil-producing nations might not favour the alliance.
- The deployment of biofuels is not accelerating fast enough, especially compared to other renewable resources like solar and wind.

- Limited availability of quality feedstock, effect on food production and prices, changes in cropping pattern, lack of cost-effective technologies, etc. may hamper sustainable production of biofuels.

INTER-STATE RIVER WATER DISPUTE

GS II – ISSUES AND CHALLENGES PERTAINING TO THE FEDERAL STRUCTURE

Context: The Union Cabinet approved the terms of reference to Krishna Water Disputes Tribunal-II (KWDT-II) under the Inter-State River Water Disputes (ISRWD) Act, 1956.

Inter-State Water Dispute in India: Factors and Mechanisms

Factors:

- Upstream state advantage creates asymmetry between states.
- Rising water demand in India, projected to increase by 22% and 32% in 2025 and 2050, stressing limited water reserves.
- Power to use water for storage, electricity, irrigation, etc., under Schedule VII of the Indian Constitution, interconnected, creates ambiguity on water usage rights.
- Water governance architecture in India is fragmented, relying on numerical measures, neglecting social, ecological, and cultural processes associated with water.

Mechanisms:

- Seventh Schedule of the Constitution allows for regulation and development of inter-State rivers and river valleys.
- Parliament can adjudicate disputes concerning the use, distribution, or control over the waters of, or in, any inter-state river or river valley.
- Parliament has enacted the Inter-State Water Disputes (ISWD) Act of 1956 and the River Boards Act of 1956.
- National Water Policy 2012 addresses issues such as scarcity of water, inequities in its distribution, and lack of a unified perspective in planning, management, and use of water resources.

Issues/Challenges:

- Delay in resolution due to prolonged proceedings and disposal of river water disputes.
- The politicization of disputes as some political parties use interstate water disputes for pursuing political goals.
- Lack of multidisciplinary approach due to tribunals primarily consisting of judiciary members, limiting the quality of orders.

Krishna Water Dispute:

- Krishna Water Disputes Tribunal-I (KWDT) divided 2060 TMC of Krishna water at 75% dependability.
- KWDT-II, instituted in 2004, made allocations of Krishna water at 65% dependability and for surplus flows.

In 2014 after the creation of Telangana as a separate state, Andhra Pradesh asked to include Telangana as a separate party at KWDT and that the allocation of Krishna waters be reworked among four states, instead of three. However, Maharashtra and Karnataka are now arguing that Telangana was created following the bifurcation of Andhra Pradesh. Therefore, the allocation of water should be from Andhra Pradesh's share which was approved by the tribunal.

NAGORNO-KARABAKH

GS II – EFFECT OF POLITICS OF OTHER COUNTRIES ON INDIA'S INTERESTS

Context: Azerbaijan launched an "anti-terrorist" offensive in Nagorno-Karabakh and claimed to have regained full control over the region.

Nagorno-Karabakh:

- It is a mountainous region that is claimed by both Armenia and Azerbaijan. However, its 1.2 lakh population is predominantly ethnic Armenian, having close cultural, social, and historical ties with Armenia.

Historical Background of the Conflict:

- The region has seen conflicts of influence between regional powers since the medieval period — imperial Russia, the Ottoman Empire (modern-day Turkey), and the Persian Empire (Iran).

- When Czarist Russia gave way to the Soviet Union in 1921, Nagorno-Karabakh was part of the Azerbaijan SSR (Soviet Socialist Republic). In 1923, the USSR established the Nagorno-Karabakh Autonomous Oblast (province) within the Azerbaijan Soviet Socialist Republic. When the Soviet Union was dissolved in 1991 and Armenia and Azerbaijan achieved statehood, Nagorno-Karabakh officially declared independence.

War between Armenia and Azerbaijan:

- The first war started in 1988, with its regional legislature passing a resolution declaring its intention to join Armenia. In 1994, Russia brokered a ceasefire known as the Bishkek Protocol. This made Nagorno-Karabakh de facto independent with a self-proclaimed government in Stepanakert.
- The second war started in 2020, this time Azerbaijan managed to wrest control of the territory around Nagorno-Karabakh. Russia again brokered a deal but Azerbaijan wanted more concessions and with no peace deal was inked.

Initiatives to Maintain Peace in the region:

- The Minsk Group, co-chaired by Russia, the U.S., and France, was created by the Organisation for Security and Cooperation in Europe (OSCE) in the early 1990s to arrive at a peaceful resolution for Nagorno-Karabakh.

Madrid Principles by the Minsk group suggested giving control of seven Karabakh districts to Azerbaijan, Self-governance to the region, etc. However, they were not accepted, even after another modification in 2011.

India's stand:

- In 2020, after the conflict broke out, India stated that any lasting resolution of the conflict can only be achieved peacefully through diplomatic negotiations.

India's interest in the region:

- Armenia is a crucial player in the planned International North-South Transportation Corridor.
- In 2017, Turkey, Azerbaijan, and Pakistan established security cooperation.

India's trade relation with Armenia is 134.1 USD million (2022-2023) and with Azerbaijan 1.882 USD billion in 2022.

PAPER 3

TEST TUBE RHINOS

GS III –BIOTECHNOLOGY

Context: The international consortium, BioRescue, announced the first-ever rhino pregnancy through a lab-made embryo transferred to a southern white rhino.

How are scientists creating Test Tube Rhinos?

- BioRescue, an international consortium of scientists, achieved a historic milestone with the **first-ever rhino pregnancy through IVF**. The process involved **transferring a lab-made rhino embryo into a surrogate southern white rhino**.
- The **death of the last male northern white rhino (NWR) in 2018** made surrogacy the only viable option for species regeneration. The remaining two females, Najin and Fatu, were found incapable of reproduction for pathological reasons.
- The only hope for the NWR is to use frozen sperm from deceased males and eggs from the females to create embryos in the laboratory, and then implant them into **surrogate mothers from the southern white rhino (SWR)** subspecies, which is more abundant and genetically similar.

Concerns regarding the Test Tube Rhinos:

- Embryos used in the process are **derived from eggs of two females and sperm from deceased males**, limiting the **gene pool** for a viable northern white population.
- Crossbreeding with southern white rhinos is not a solution, as it would result in the loss of unique attributes of the northern white rhino, adapted for swampy habitats. Genetic diversity remains a concern even with successful IVF and surrogacy attempts.
- Babies born through IVF are not genetically hardwired to exhibit **typical northern white rhino behaviours**. Early interaction and learning from northern white adults are crucial for maintaining species-specific traits.
- The urgency lies in the **age of the remaining northern white females**, Najin (35) and Fatu (24). To ensure behavioural and social skills are passed on, the first **IVF calves must be born in time to learn** from the surviving females.

Northern White Rhino:

- It is a **subspecies of the white rhino (*Ceratotherium simum*)**, which is native to central and eastern Africa.
- Northern White Rhino is listed as **critically endangered on the IUCN Red List**.
- The NWR population has declined dramatically due to **poaching, habitat loss, civil war, and disease**. Critics argue that the focus should not only be on species regeneration but also on addressing the root causes of extinction, such as habitat threats and poaching.

GEOSPATIAL INTELLIGENCE

GS III – AWARENESS IN THE FIELD OF SPACE

Context: With record-breaking temperatures across the South, smoke from Canadian wildfires across the North, historic flooding in the Northeast, and a powerful hurricane in the Southeast, the summer of 2023 has presented a range of threats to the safety of the majority of Americans. The good news, through all of this: Geospatial intelligence has offered valuable insights to help governments and organizations protect communities.

What is Geospatial Intelligence?

- It is the collection and integration of data from a network of technologies, including satellites, mobile sensors, ground-control stations, and aerial images.
- The data is used to produce real-time maps and simulations to help identify when, where, and to what extent a threat is likely to emerge.
- Government officials, individuals or both can use this information to make informed decisions.

Significance of Geospatial Intelligence:

- The National Hurricane Center relies on geospatial intelligence to monitor cyclone location, formation, and trajectory. This information aids in resource allocation, issuing warnings, and managing evacuations.
- After the 7.8 magnitude earthquake in Turkey and Syria (February 2023), geospatial intelligence identified damage and helped locate survivors. It facilitated the establishment of aid stations and emergency supply distribution.
- It predicts climate-related events that help in anticipating and preparing for disturbances. This is crucial in addressing the increasing threats posed by climate change-induced extreme weather events.
- It plays a vital role in reporting critical information, such as Russian ground forces' movements in the Ukrainian conflict and infiltration into India from Pakistan.
- GPS technology and geospatial data enable efficient management of global supply chains. It provides governments and businesses with essential information on cargo movement.
- High-resolution imagery aids city planners in designing safer and more efficient communities.
- It supports the development of autonomous vehicles by providing ground-level details. Safer and smarter transportation systems are being built.
- Digital twins are virtual replicas of real systems, used for modeling and predicting outcomes. They have proven effective in conflict settings for simulating weather and terrain.

Issues/Challenges in Geospatial Intelligence:

- There is no demand for geospatial services and products on a scale linked to India's potential and size due to the lack of awareness among potential users in government and private.
- The unavailability of foundation data, especially at high resolution, is also a constraint. Essentially, foundation data can be seen as common data tables which are shared between multiple applications or processes which are supposed to create a sturdy foundation for good service automation and management.
- The lack of clarity on data sharing and collaboration prevents co-creation and asset maximization.
- There are still no ready-to-use solutions especially built to solve the problems of India.

Indian government initiatives to promote Geospatial Technology:

- The government introduced the "Geospatial Information Regulation Bill, 2021" aimed to regulate the acquisition, dissemination, and use of geospatial information in India. It proposed to set guidelines for mapping and geospatial data collection, with a focus on national security concerns.
- National Geospatial Policy, 2022 was launched to streamline the utilization of geospatial intelligence.

NITROGEN POLLUTION

GS III – ENVIRONMENTAL POLLUTION

Context: According to a recent assessment, in 2010, one-fourth of sub-basins faced severe scarcity of clean water, 88 percent of which were "dominated by nitrogen pollution".

Nitrogen Pollution:

- It refers to the **excessive presence of nitrogen compounds in the environment**, primarily in water bodies like rivers and lakes.
- According to the **United Nations Environment Programme (UNEP)**, each year, 200 million tonnes of reactive nitrogen, 80% of the total, is lost to the environment.

Sources of Nitrogen Pollution:

- **Agricultural activity** is one of the main drivers of nitrogen pollution has been the rising consumption of **nitrogen-based fertilizer**, which can leach into groundwater or runoff into surface water bodies.
- **Industrial processes** like manufacturing processes, particularly those involved in the **production of nitrogen-based chemicals** and fertilisers, release nitrogen compounds into the environment.
- **Combustion of fossil fuels in industries** also emits nitrogen oxides (NOx) into the atmosphere.
- Livestock waste, primarily from **manure and urine**, contains nitrogen compounds such as **ammonia**. Improper storage and management of livestock waste can lead to nitrogen runoff, contaminating water bodies and contributing to eutrophication.
- Wildfires and burning of **cow dung cake as a fuel** release nitrogen oxide (NOx) and nitrous oxide (N₂O) into the atmosphere. These emissions contribute to **air pollution** and can have regional and global impacts on atmospheric chemistry and **climate**.

Consequences/Impacts of Nitrogen Pollution:

- Excess nitrogen acts as a **nutrient fertiliser for aquatic plants**, leading to excessive growth of **algae** and other aquatic vegetation. This phenomenon is known as **eutrophication** and leads to algal blooming. This **creates oxygen-depleted zones (dead zones)**, where aquatic life suffocates and dies.
- Nitrogen pollution can have direct and indirect effects on human health. High levels of nitrogen dioxide (NO₂) in the air can exacerbate respiratory conditions such as **asthma and increase the risk of respiratory infections**.
- Nitrate contamination of drinking water can also pose health risks, particularly to infants, by causing **methemoglobinemia or blue baby syndrome**.
- Nitrous oxide (N₂O) released into the atmosphere can lead to the depletion of the **stratospheric ozone layer**, which protects the Earth from harmful ultraviolet (UV) radiation. It can increase the **risk of skin cancer, cataracts, and other health problems in humans**, as well as harm marine ecosystems and agricultural crops.

Government measures to reduce Nitrogen Pollution:

- **Bharat Stage (BS VI) Emission Standards** have made stricter emission standards for vehicles and industries aimed to **curb the release of nitrogen oxides and particulate matter**, which are precursors to air and water pollution.
- **Nutrient-Based Subsidy (NBS)** incentivizes the use of **controlled-release fertilisers**, encouraging more efficient nutrient management.
- **Soil Health Cards** issued to farmers, these cards provide soil nutrient status and customised fertiliser recommendations, **promoting balanced nutrient application**.
- **Nano Urea** is a fertiliser patented and sold by the **Indian Farmers Fertiliser Cooperative Limited (IFFCO)**, which **reduces the unbalanced and indiscriminate use of conventional urea** and increases crop productivity.

DRONES FOR DEFENCE

GS III – DEVELOPING NEW TECHNOLOGY

Context: DRDO successfully tested the autonomous flying wing technology demonstrator.

Autonomous Flying Wing Technology Demonstrator:

- It is an indigenous high-speed flying-wing Unmanned Aerial Vehicle (UAV). It has a tailless fixed-wing aircraft that houses its payload and fuel in its main wings.
- It is a scaled-down version of its futuristic unmanned combat aerial vehicle.
- It is designed and developed by DRDO's Aeronautical Development Establishment.

Significance:

- It allows take-off and landing from any runway with surveyed coordinates (using GPS Aided GEO Augmented Navigation (GAGAN)).
- India joined the elite club to master the flying wing technology.
- It can be employed as a covert stealth combat drone.

Significance/Need for drones for defence:

- They are used to identify enemy positions, assess the terrain, and track movements.
- They are equipped with precision-guided munitions, which can be used to target enemy positions.
- They are used to locate and rescue personnel in hazardous or inaccessible areas.
- They are faster and easier to deploy as they provide operational flexibility.

Government initiatives to promote drones:

- Drone Shakti scheme for institutionalizing and creating a framework where multiple stakeholders can work together.
- Production Linked Incentive (PLI) scheme for drones and drone components.
- India's Drone Rules 2021 to help start-ups and small and medium-sized enterprises.

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.

Indian Inland Fisheries: Significance and Challenges**Benefits:**

- Provides nutritional and food security due to fish's rich protein, omega-3 fatty acids, and Vitamin D.
- Provides economic benefits like employment opportunities and development of rural infrastructure.
- Helps maintain healthy ecosystems by controlling invasive species and supporting biodiversity.
- Supports ecological balance by benefiting other species.
- Contributes to cultural heritage through traditional knowledge systems.
- Promotes physical and mental well-being through recreational fishing.

Challenges:

- Slow adoption of advanced technologies.
- Limited extension services and inadequate cold chain facilities.
- Inadequate mechanisation and traditional boat use leading to 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.

DIGITIZATION OF AGRICULTURE

GS III – AGRICULTURE

Context: The G20 Delhi declaration has committed to promoting responsible, sustainable, and inclusive use of digital technology by farmers and an ecosystem of Agri-Tech start-ups and MSMEs.

Digitization of Agriculture:

- It is the integration of cutting-edge digital technologies into the farm production system, including Artificial Intelligence (AI), robotics, unmanned aviation systems, sensors, and communication networks is referred to as Digitization of Agriculture.

Digitization of Agriculture in India: Significance and Challenges

Significance of Digitization:

- Optimizes input resources like fertilizers, pesticides, and water.
- Increases operational efficiency and decreases production cost.
- Eliminates middlemen, increasing profitability.
- Aids scientific decision making in farming activities.
- Provides better agriculture governance using agriculture data.
- Bridges the gender gap through women-centric innovations.

Challenges in Digitization:

- Digital illiteracy and increased digital fraud cases.
- Lack of awareness about government schemes and subsidies.
- High initial capital requirement for small and marginal farmers.
- Fragmented landholdings hinder scalability of technology.
- Fear of unemployment due to automation reduction.
- Lack of infrastructure in rural areas.
- Limitations of available products.

Indian Government Initiatives in Digitization:

- Unified Portal for Agricultural Statistics (UPAg).
- Kisan Rin Portal (KRP).
- Weather Information Network Data Systems (WINDS).
- YES-TECH.
- National e-Governance Plan in Agriculture (NeGP-A).

SPACE-TECH START-UPS IN INDIA

GS III – SPACE TECHNOLOGY

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

Why there is a need for promoting 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, center allowed them to carrying 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 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-ups participation could free up ISRO to focus in 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 promotion of space-tech start-ups in India:

- Absence of 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.
- Lowest cost wins mentality of start-ups overlooks hidden expenses and future impacts, leading to unsustainable business models.
- Scarcity of skilled professionals adds to existing challenges.

Status of India in 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.

SUSTAINABLE FUNDING FOR RESEARCH AND DEVELOPMENT

GS III – SCIENCE AND TECHNOLOGY

Context: National Science Day celebrated annually on **28th February** highlights the importance of Science in Fostering Sustainable Development.

National Science Day:

- It is observed on the day Indian Physicist Chandrasekhara Venkata Raman discovered the **Raman Effect**.
- **The theme of 2024 is "Indigenous Technologies for Viksit Bharat"**.

India's R&D Spending and Challenges

- India's R&D expenditure has decreased to 0.64% in 2020-21 of GDP, a decrease from 0.8% in 2008-2009 and 0.7% in 2017-2018.
- The 2013 Science, Technology, and Innovation Policy aimed to increase R&D to 2% of GDP, but reasons for the reduction remain unclear.
- Most developed countries allocate between 2% and 4% of their GDPs to R&D, with the U.S. and the U.K. consistently exceeding 2% over the past decade.
- Experts advocate for India to allocate at least 1%, ideally 3%, of its GDP annually to R&D until 2047.
- Departments like DBT, DST, and DSIR have consistently under-utilized their budget allocations, leading to delays in grant and salary disbursements.
- Government funding for science is uncertain and subject to changes in political priorities, economic conditions, and competing demands for resources across various sectors.
- Private sector industry contributed 36.4% of the GERD in 2020-2021, a major share in economically developed countries.
- Private-sector funding hesitancy may be due to poor capacity to evaluate R&D in India, ambiguous regulatory roadmaps, lack of clear exit options, and fears of intellectual property rights theft.
- Future steps include encouraging wealthy individuals, corporations, foundations to invest in R&D, establishing dedicated funds or grants for scientific research, facilitating partnerships between academia and industry, encouraging venture capital firms and angel investors, and accelerating the implementation of initiatives like the Anusandhan National Research Foundation.

Raman Effect:

- It is the phenomenon where **light gets scattered when passed through a transparent material**, leading to changes in wavelength and energy.
- In 1928, on 28th February CV Raman discovered the Raman Effect.
- He also received the **Nobel Prize in Physics** in 1930 due to his significant contribution to the field of Physics.

SUSTAINABLE & INCLUSIVE DEVELOPMENT OF NATURAL RUBBER SECTOR (SIDNRS)

GS III – AGRICULTURE

Context: The financial assistance for the Rubber sector under the ‘Sustainable & Inclusive Development of Natural Rubber Sector (SIDNRS)’ has been increased by 23% from Rs 576.41 crore to Rs 708.69 crore for the next 2 financial years (2024-25 and 2025-26).

Sustainable & Inclusive Development of Natural Rubber Sector (SIDNRS) Scheme:

- It is an initiative by the Government of India to promote the sustainable and inclusive development of the natural rubber sector in India which was launched in the **FY 2017-18**.
- It is implemented by the **Rubber Board**, a statutory body under the **Ministry of Commerce and Industry**.

Objectives:

- To improve the **productivity and quality of natural rubber** production.
- To promote the **adoption of sustainable rubber production** practices.
- To improve the **income and livelihoods of rubber growers**.
- To create employment opportunities in the rubber sector.
- To promote the development of the rubber-based industry.

Components of the Scheme:

- Financial assistance is provided to rubber growers for replanting old and uneconomic rubber trees with high-yielding and disease-resistant varieties.
- Financial assistance was provided to rubber growers for intercropping rubber with other crops such as pineapple, banana, and cocoa. Intercropping helps to improve soil fertility, conserve moisture, and provide additional income to rubber growers.
- Training and extension services provided to rubber growers on best practices in rubber production, processing, and marketing.
- Financial assistance was provided for the development of infrastructure facilities such as roads, water harvesting structures, and processing units in rubber-growing areas.
- Financial assistance was provided for the establishment and expansion of rubber-based industries such as tire manufacturing, footwear manufacturing, and latex processing units.

Rubber Board:

- It is a **statutory organization** constituted under Section (4) of the **Rubber Act, 1947**, and functions under the administrative control of the **Ministry of Commerce and Industry**.
- The Board is headed by a chairman appointed by the Central Government and has 28 members representing various interests in the natural rubber industry.
- The Board’s **headquarters** is located at **Kottayam in Kerala**.
- The Board is responsible for the development of the rubber industry in the country by assisting and encouraging research, development, extension, and training activities related to rubber.

E-CIGARETTES

GS III – ISSUES RELATING TO HEALTH

Context: As per the World Health Organization (WHO), urgent action is needed to protect children and prevent the uptake of e-cigarettes.

E-Cigarettes: A Threat to Health and Regulations

- E-cigarettes, defined by the Prohibition of Electronic Cigarettes (PECA) 2019, are electronic devices that heat a substance to create an aerosol for inhalation.
- Despite being banned in India in 2019, e-cigarettes are easily available in tobacco shops and online.
- E-cigarettes contain harmful substances like nicotine and other toxic substances, increasing the risk of heart disease, lung disorders, and limiting fetal brain development.
- Despite the ban, e-cigarettes are easily available in tobacco shops and online.
- E-cigarettes target children through social media and influencers.
- Evidence of their use as cessation aid is inconclusive.
- Governments should not permit the sale of e-cigarettes as consumer products.
- Governments pursuing a smoking cessation strategy should control e-cigarette access conditions.
- Authorities should implement strict bans and take punitive action against local vendors and online sellers.
- Awareness campaigns should focus on the banned product and PECA 2019 provisions.

Key findings of the WHO:

- Children 13–15 years old are using e-cigarettes at rates higher than adults in all WHO regions. Between 2017–2022, rates of e-cigarette use among 16–19-year-olds in Canada have doubled.

STATUS OF SNOW LEOPARDS IN INDIA**GS III – CONSERVATION OF WILDLIFE**

Context: The Ministry of Environment, Forest, and Climate Change (MoEFCC) released the Report on the Status of Snow leopards in India.

Snow Leopard (*Panthera Uncia*):

- It is declared the State animal of Ladakh and Himachal Pradesh.
- It is considered a medium-sized cat and weighs around 30-55kg.
- Their exquisite, smoky-grey fur is patterned with dark grey to black rosettes which helps to camouflage them against rocky slopes.
- The 12 snow leopard range countries - Afghanistan, Bhutan, China, India, Kazakhstan, Kyrgyzstan, Mongolia, Nepal, Pakistan, Russia, Tajikistan, and Uzbekistan.

Key findings of the report:

- The 70% of land used by snow leopards is still unprotected.
- The majority of their habitat (which is between altitudes of 10,500 to 17,000 feet) remains inaccessible.
- Unlike tigers, zebras, or even leopards, snow leopard evade detection by artificial intelligence software.

Recommendations from the report to conserve Snow Leopard:

- It has proposed establishing a dedicated Snow Leopard Cell at WII under MoEFCC with a primary focus on long-term population monitoring.
- States and UTs can consider adopting a periodic population estimation approach (every 4th year) in the Snow leopard range to identify challenges, address threats, and formulate effective conservation strategies.
- Landscape-level management planning and coordination for effective implementation and management.
- Engage Indian security forces on the border of neighbouring countries (Pakistan, Nepal, Bhutan, and China) through proper training, and focus programs to raise awareness and foster long-term cooperation for the conservation of critical snow leopard habitats.

Note:

- Khelo India Winter Games 2024 has adopted a snow leopard as its mascot and named it 'Sheen-e She' or Shan in Ladakh region.

Snow Leopard Population Assessment in India (SPAII):

- It was launched by MoEFCC in 2019 as part of the Global Snow Leopard and Ecosystem Protection Program (GSLEP) called Population Assessment of the World's Snow Leopards (PAWS).

- It was endorsed in the 2013 Bishkek Declaration, GSLEP is an alliance of all 12 snow leopard range countries and non-governmental partners.
- SPAI covered over 70% of the potential snow leopard range in the country across the trans-Himalayan region, including Union Territories of Ladakh and J&K, and states like Himachal Pradesh, Uttarakhand, Sikkim, and Arunachal Pradesh.

CROWD DISASTER MANAGEMENT

GS III – DISASTER MANAGEMENT

Context: Recently a platform at Delhi's Kalkaji temple collapsed leading to injuries to many people including one death.

Crowd Disaster Overview

- Crowds are groups of people gathered for a common purpose based on emotions.
- Movements in crowds involve voluntary and involuntary forces.
- Uncoordinated rush or push of people can result in a crowd disaster or stampede.
- Majority of crowd disasters in India occur at religious places, music concerts, nightclubs, and shopping malls.
- Factors that may prompt crowd disasters include collapse of structures, fire in habitation or shop, underestimation of audience/staffing/services, mad rush to exit/parking space, security agency firing/teargas/using force, and lack of coordination among stakeholders.

Crowd Management Strategies:

- Understanding crowd type and visitor motives.
- Developing long-term infrastructure based on popularity, event frequency, weather, terrain, local population.
- Planning for physical or virtual locations and multiple routes for vulnerable groups.
- Identifying and separating trouble-creating persons at the earliest.
- Community-based approach to crowd control instead of force-based control.
- Enforcing or restoring order by restricting or limiting group behavior.
- Timely information management and dissemination among stakeholders.
- Safety and security measures like CCTV monitoring, VIP plans, and fire safety standards.
- Immediate medical attention after a fatal incident.
- Utilizing public transportation to minimize the impact of undesired crowds and traffic.

CRITICAL TECH SECTORS

GS III – AWARENESS IN THE FIELDS OF COMPUTERS

Context: The Ministry of Electronics and Information Technology (MeitY) recently unveiled draft road maps for Critical Tech Sectors.

Critical Technology Sectors:

- Critical Technologies are those technologies identified by government as 'Critical' for a nation's
 - future economic growth,
 - national security, and
 - technological advancement.
- These often involve:
 - cutting-edge research,
 - innovation, and
 - strategic importance.
- These sectors typically receive heightened oversight from the government and improving technology investment environment.
- They are important for the state's critical infrastructure.
- Examples of Critical Technology Sectors include Artificial Intelligence (AI), Quantum computing, Internet of Things, and Blockchain.

Significance of Critical Tech Sectors:

- They promote India's technological leadership; and cooperation with partners to advance and maintain shared technological advantages, making India a trustworthy international technology partner.
- They help deter foreign hostile forces from economic espionage and strengthen the protection of key technologies. It avoids the damage to national and industrial interests caused by illegal technology outflows.
- It drives innovation and competitiveness across key industries creates job opportunities and boosts GDP growth.
- Enterprise-grade security systems are particularly crucial for businesses to safeguard their intellectual property, customer data, and operational continuity.
- Robust cryptographic techniques are essential for protecting sensitive data, securing online transactions, and maintaining trust in digital interactions.
- It is crucial to mitigate risks like disrupting critical services and ensure the resilience of IoT ecosystems.

Issues/Challenges in Developing Critical Tech Sectors:

- Despite producing a large number of STEM graduates, there's often a gap between the skills taught and those required by industries.
- India faces a brain drain in AI algorithms and hardware accelerators as many opt for post-graduate training in the USA and Europe.
- While India has made strides in R&D, there's still a need for increased funding and investment in R&D to foster innovation and technological breakthroughs.
- India faces stiff competition from other countries like China, the USA, etc., particularly in emerging technology sectors such as AI and quantum computing.
- Technology sector growth requires addressing energy consumption, electronic waste management, and sustainable manufacturing practices.

PAPER 4

SELF-DRIVING CARS AND ETHICAL DILEMMAS

GS IV – ETHICAL CONCERNS AND DILEMMAS

Context: The recent National Crime Records Bureau (NCRB) report highlights a decline in overall crime rate in 2022, However it highlights a 4% rise in crimes against women. The crime rate dropped to 258.1 per lakh population in 2022 from 268 per lakh in 2021, but crimes against women increased.

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.

CONSUMERISM AND ETHICS

GS IV – CONSEQUENCES OF ETHICS IN HUMAN ACTIONS

Context: In the last few decades, it has been noticed that the tendency of consumerism has been rising among people.

What is Consumerism?

- Consumerism is the idea that increasing the consumption of goods and services purchased in the market is always a desirable goal and that a person's well-being and happiness depend fundamentally on obtaining consumer goods and material possessions.
- Consumerism is an ideology where consumers are motivated or manipulated to buy something, even if they don't need it.
- It is mainly derived from lifestyle obsession instead of necessity. For instance, replacing a perfectly working mobile phone or laptop because a new model is launched.
- It is based on the assumption, that possession of material wealth and things make a person happy and satisfied.

Consumerism and Its Impact:

Drivers of Consumerism:

- **Advertising:** The power of persuasion drives consumerism.
- **Credit Cards:** Credit cards, store cards, and 'buy now, pay later' schemes increase expenditure.
- **Obsolescence:** Capitalism's realization that product life cycles can be planned and managed.

- The tendency to have multiple products.

Ethical Values Undermined by Consumerism:

- Consumers and brands can resort to unethical means.
- Consumers lose consciousness, preventing them from making the right decisions.
- Societies driven by consumerism have large disparities and undermine Social Justice.
- Consumerism leads to loss of traditional cultures and values, and the decline of altruism and community.
- Consumerism creates a selfish society, focusing on individual needs.
- Increased demand leads to changes in inland use, threatening biodiversity and generating more waste.

Balancing Needs and Desires:

- Adopting Ethical Consumerism: Minimizing negative impact on social and environmental consequences.
- Importance of Moral and Consumer Education: All education levels should include this.
- Adoption of 'Stakeholder Capitalism': Corporations should serve all stakeholders, not just shareholders.
- Regulation Authorities: Authorities like the Advertising Standards Council of India should monitor advertisements attempting to manipulate consumers.
- Celebrities/influencers: Celebrities should model responsible consumption and sustainable choices.
- Control: Taxes on luxury goods and incentives for sustainable practices can control consumerism.

LABOUR ETHICS

GS IV – DETERMINANTS AND CONSEQUENCES OF ETHICS IN HUMAN ACTIONS

Context: An ILO report highlighted that among various work-related risks, long working hours are the leading cause of death among employees which has raised debate surrounding labour ethics.

Labour Ethics:

- It includes consideration of right and wrong on a wide range of questions having to do with the treatment of labour. It entails that employers are ethically required to provide a safe and healthy workplace for their employees.
- The Universal Declaration of Human Rights affirms that people have a right to rest and leisure, including reasonable limitations on working hours and periodic holidays with pay.

Ethical arguments for long work hours:

- For maintenance of essential services, during emergency situations like pandemic, wartime, etc. (Situational Ethics).
- Often results in a shortage of staff and a paucity of skilled workers. (Situational Ethics)
- To improve work productivity, efficiency, and competitiveness of industries and countries. (Utilitarian Ethics).

Ethical concerns against overtime and long work hours:

- It leads to violation of the ethical principle of non-maleficence which dictates that care should be taken not to harm others. Long working hours cause exhaustion leading to medical negligence, and disasters e.g. Chernobyl, Space Shuttle Challenger accident, etc.
- Choosing extra overtime income compromises the physical and mental health of the employee. E.g. job burnout in investment banking.
- Mandating long work hours is against a sustainable work culture where businesses are mindful of workers' health.
- It leads to the erosion of family and societal values by eroding time for personal relationships and ties to the broader community.



Practice Questions



Q1.) With reference to Anti defection law, consider the following statements:

1. The Anti-Defection Law in India is governed by the Seventh Schedule of the Constitution.
2. The law applies to both Parliament and state assemblies.
3. An independent candidate joining a political party after the election face disqualification under Anti defection law.
4. The decision of the Presiding Officer is not subject to judicial review.

How many of the above statements are correct?

- a. Only one
- b. Only two**
- c. Only three
- d. All four

Q2.) The Pancheshwar Multipurpose Project (PMP), recently seen in news is planned to be developed on which one of the following rivers?

- a. Kaladan River
- b. Teesta River
- c. Mahakali River**
- d. Manas River

Q3.) Consider the following statements about Financial Action Task Force (FATF):

1. FATF is an inter-governmental body that sets global standards for anti-money laundering and combating the financing of terrorism.
2. It was established in 2011 during the G20 Summit held in Paris.
3. India is not a member of FATF.

How many of the above statements are correct?

- a. Only one**
- b. Only two
- c. All three
- d. None

Q4.) Consider the following:

1. Nagarajunasagar- Srisailem
2. Panna
3. Satpura

Leopards are found in how many of the above given Tiger Reserves?

- a. Only one

- b. Only two
- c. All three**
- d. None

Q5.) With reference to Regulatory Sandbox (RS) scheme, consider the following statements:

1. The Regulatory Sandbox scheme is an initiative of NITI Ayog.
2. The RS aims to foster responsible innovation in financial services.
3. It involves live testing of new financial products or services in a controlled regulatory environment.
4. RS scheme Participants must ensure compliance with provisions of the Digital Personal Data Protection Act, 2023.

How many of the above statements are correct?

- a. Only one
- b. Only two
- c. Only three
- d. All four**

Q6.) Consider the following statements about United Nations Human Rights Council (UNHRC):

1. UNHRC is an intergovernmental body within the United Nations system.
2. The UNHRC reviews the human rights records of all United Nations Member States.
3. India is not a member of UNHRC.

How many of the above statements are correct?

- a. Only one
- b. Only two**
- c. All three
- d. None

Q7.) With reference to the Bureau of Energy Efficiency (BEE), consider the following statements:

1. The Bureau of Energy Efficiency is a statutory body.
2. It focuses on self-regulation and market principles to enhance energy efficiency across various sectors.
3. The State Energy Efficiency Index 2023 was released by the Bureau of Energy Efficiency in India.

How many of the statements given above are correct?

- a. Only one
- b. Only two
- c. **All three**
- d. None

Q8.) Consider the following statements about Nano Urea?

1. It is the only nano fertilizer approved by the Government of India.
2. Nano Urea is developed and patented by the Indian Farmers Fertiliser Cooperative Limited.
3. Nano Urea reduces nitrate leaching and water contamination compared to traditional urea.

How many of the statements given above are correct?

- a. Only one
- b. Only two
- c. **All three**
- d. None

Q9.) Consider the following centrally sponsored schemes:

1. Pradhan Mantri Adarsh Gram Yojana
2. Pradhan Mantri Awas Yojna
3. Babu Jagjivan Ram Chhatrawas Yojana

How many of the above are the components of Pradhan Mantri Anusuchit Jaati Abhyuday Yojana (PM-AJAY)?

- a. Only one
- b. **Only two**
- c. All three
- d. None

Q10.) In India, melanistic royal Bengal tigers can be found in their natural habitat in:

- a. Ranthambore Tiger Reserve
- b. **Similipal Tiger Reserve**
- c. Bandipur Tiger Reserve
- d. Kaziranga Tiger Reserve

Q.11) Consider the following statements:

Statement-I:

The National Urban Cooperative Finance and Development Corporation Limited (NUCFDC) is an

umbrella organization for Urban Cooperative Banks in India.

Statement-II:

Its primary role is to modernize and strengthen the Rural Cooperative Banking Sector in India.

Which one of the following is correct in respect of the above statements?

- a. Both Statement-I and Statement-II are correct and Statement-II is the correct explanation for Statement-I
- b. Both Statement-I and Statement-II are correct and Statement-II is not the correct explanation for Statement-I
- c. **Statement-I is correct but Statement-II is incorrect**
- d. Statement-I is incorrect but Statement-II is correct

Q12.) With reference to National Commission for Protection of Child Rights (NCPCR), consider the following statements:

1. NCPCR is a statutory body established by the Government of India.
2. NCPCR operates under the Ministry of Women & Child Development of the Central Government.
3. Chairperson and members are appointed by the Central Government.
4. The Chairperson and other members serve a term of three years.

How many statements given above are correct?

- a. Only one
- b. Only two
- c. Only three
- d. **All four**

Q13.) With reference to Carbon Capture and Storage (CCS), consider the following statements:

1. CCS captures carbon dioxide (CO₂) emissions from industrial processes and preventing them from entering the atmosphere.
2. CCS allows to continue using fossil fuels while minimizing their environmental impact.
3. CCS can be applied to sectors like cement production, steel manufacturing, and chemical industries.

How many of the above given statements are not correct?

- Only one
- Only two
- All three
- None**

Q14.) Consider the following statements:

Statement-I:

The Consumer Protection Act, 2019 is a comprehensive legislation enacted in India to safeguard the rights and interests of consumers.

Statement-II:

The Act establishes Central Consumer Protection Authority to addresses improper trade practices, misleading advertisements, and violations of consumer rights.

Which one of the following is correct in respect of the above statements?

- Both Statement-I and Statement-II are correct and Statement-II is the correct explanation for Statement-I**
- Both Statement-I and Statement-II are correct and Statement-II is not the correct explanation for Statement-I
- Statement-I is correct but Statement-II is incorrect
- Statement-I is incorrect but Statement-II is correct

Q15.) Consider the following statements:

- The buffer zone and core zone in national parks are defined and regulated by the Wildlife Protection Act, 1972.
- In core zone, regulated activities like sustainable use of natural resources, environmental education, and controlled tourism occur.

Which of the statements given above is/are correct?

- 1 only**
- 2 only
- Both 1 and 2
- Neither 1 nor 2

Q16.) With reference to the e-Kisan Upaj Nidhi, Consider the following statements:

- It is a Digital Gateway initiative launched by the Warehousing Development and Regulatory Authority (WDRA).

- The e-Kisan Upaj Nidhi initiative allows farmers to store their produce without collateral in WDRA-registered warehouses.

Which of the statements given above are correct?

- 1 only
- 2 only
- Both 1 and 2**
- Neither 1 nor 2

Q17.) With reference to MethaneSAT, consider the following statements:

- MethaneSAT is developed by ISRO.
- It is an Earth observation satellite designed to detect and monitor methane emissions globally.

Which of the statements given above is/are correct?

- 1 only
- 2 only**
- Both 1 and 2
- Neither 1 nor 2

Q18.) Consider the following:

- Severe flooding
- Increased coastal erosion
- Extreme weather conditions

How many of the above can be the possible impact of reduced ice cover in arctic region?

- Only one
- Only two
- All three**
- None

Q19.) With reference to Indian Biological Data Center (IBDC), consider the following statements:

- It serves as India's first national repository for life science data.
- It stores diverse biological data generated from publicly funded research within the country.

Which of the statements given above is/are correct?

- 1 only
- 2 only
- Both 1 and 2**
- Neither 1 nor 2

Q20.) With reference to the Uttar Poorva Transformative Industrialization Scheme - 2024 , consider the following statements:

1. Uttar Poorva Transformative Industrialization Scheme is a Central Sector Scheme.
2. It aims for the development of Industries and generation of employment in the states of North East Region.
3. It will be implemented by the Department for Promotion of Industry and Internal Trade.

How many of the statements given above are not correct?

- a. Only one
- b. Only two
- c. All three
- d. **None**

Q21.)With reference to India Artificial Intelligence (AI) mission, consider the following statements:

1. It is an initiative by the Ministry of Electronics and Information Technology (MeitY).
2. It aims to position India as a global leader in AI research and innovation.
3. It will be implemented by the 'IndiaAI' Independent Business Division (IBD).

How many statements given above are correct?

- a. Only one
- b. Only two
- c. **All three**
- d. None

Q22.) Consider the following statements about the National Commission for Scheduled Castes (NCSC):

1. The National Commission for Scheduled Castes is a constitutional body.
2. The Chairperson of the NCSC is appointed by the Prime Minister of India.

Which of the statements given above is/are correct?

- a. **1 only**
- a. 2 only
- b. Both 1 and 2
- c. Neither 1 nor 2

Q23.)With reference to Desert Star dunes, consider the following statements:

1. Star dunes are formed by opposing winds with changing directions.

2. Unlike other dunes, star dunes never collapse due to the continuous reorganization process.
3. Star dunes are currently found in deserts of African region only.

How many of the statements given above are correct?

- a. Only one
- b. **Only two**
- c. All three
- d. None

Q24.)With reference to the Avaana Sustainability Fund (ASF), consider the following statements:

1. The Avaana Sustainability Fund (ASF) is a venture capital fund.
2. It aims to invest in early-stage climate technology companies in India.
3. It is launched by the Small Industries Development Bank of India (SIDBI).

How many of the statements given above are correct?

- a. Only one
- b. Only two
- c. **All three**
- d. None

Q25.) The Sabroom Land Port, recently seen in news is located in India, along the international border with

- a. Myanmar
- b. **Bangladesh**
- c. Nepal
- d. Bhutan

Q26.)With reference to the Agni-V Missile, consider the following statements:

1. Agni-V is an advanced surface-to-surface ballistic missile.
2. It is developed indigenously by the Defence Research and Development Organisation (DRDO) of India.
3. Agni-V missile with MIRV technology can carry multiple warheads that can independently target different locations.

How many of the statements given above are correct?

- a. Only one

- b. Only two
- c. **All three**
- d. None

- b. All three
- c. None

Q27.) With reference to the Mines and Minerals (Development and Regulation) Act, 1957, consider the following statements?

1. The act is applicable to all minerals except minor minerals and atomic minerals.
2. As per the Act, State Government has the authority to specify the royalty rates for various minerals.
3. Under the Act, states have the authority to collect royalties.

How many of the statements given above are correct?

- a. Only one
- b. **Only two**
- c. All three
- d. None

Q28.) Consider the following statements about Minimum Alternate Tax (MAT):

1. It ensures that companies contribute a minimum amount of tax, regardless of their tax exemptions and deductions.
2. It applies to all companies in India, including foreign companies.

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

Q29.) With reference to Juno Space craft, consider the following statements:

1. Juno Space craft is launched by ISRO.
2. Juno aims to study Jupiter's composition, magnetic and gravity fields, and polar magnetosphere.
3. It seeks to investigate the planet's formation, origin, and the presence of water in its atmosphere.

How many of above given statements are correct?

- a. Only one
- a. **Only two**

Q30.) Consider the following:

1. Studying ocean currents
2. Monitoring climate patterns and changes
3. Enhancing cyclone prediction
4. Identifying potential fishing zones.

Data from Oceansat -3 is applicable to how many of the above given purposes?

- a. Only one
- b. Only two
- c. Only three
- d. **All four**

Q31.) Consider the following countries:

1. Armenia
2. Belarus
3. Kazakhstan
4. Kyrgyzstan
5. Afghanistan
6. Russia

How many of the above-mentioned countries are the members of the Eurasian Economic Union (EAEU)?

- a. Only two
- b. Only three
- c. Only four
- d. **Only five**

Q32.) With reference to Indian Network for Fishery and Animal Antimicrobial Resistance (INFAAR), consider the following statements:

1. It is a network of laboratories established under the Indian Council of Agricultural Research (ICAR).
2. INFAAR collates surveillance data to evaluate baseline data and identify AMR trends in livestock, poultry, and fisheries.
3. It seeks to understand the impact of interventions required for the mitigation of antimicrobial resistance.

How many of the statements given above are not correct?

- a. Only one
- b. Only two
- c. All three
- d. **None**

Q33.) Consider the following statements:

1. The Global Methane Tracker is an annual report released by the International Energy Agency (IEA).
2. It provides the most recent data on methane emissions from the energy sector.

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

Q34.) With reference to the T+0 settlement cycle, consider the following statements:

1. It is introduced by the Reserve Bank of India.
2. In this settlement cycle, investors selling their stocks will receive money on the same day of the sale.

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

Q35.) The Darién Gap, recently found in news is a geographic region in the Isthmus of Darién connecting the

- a. Africa and West Asia
- b. Europe and Asia
- c. **Central and South America**
- d. South Korea and Japan

Q36.)With reference to fluoride contamination, consider the following statements:

1. Fluoride leaches from rocks and soil into groundwater.
2. when fluoride levels exceed 1.5 mg/L, it becomes toxic to humans.
3. Excessive fluoride leads to skeletal fluorosis.

How many of the statements given above are not correct?

- a. Only one
- b. Only two
- c. All three
- d. **None**

Q37.) Consider the following pairs:

Geo-heritage sites	States
1. Pandavula Gutta	- Karnataka
2. Siwalik Fossil Park	- Himachal Pradesh
3. Lonar Lake	- Maharashtra

How many of the above pairs are correctly matched?

- a. Only one
- b. **Only two**
- c. All three
- d. None

Q38.) With reference to the Reusable Launch Vehicle (RLV) Pushpak, consider the following statements:

1. It is developed by the Indian Space Research Organisation.
2. Its primary goal is to enable low-cost access to space.

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

Q39.)With reference to Agnipath Scheme, consider the following statements:

1. It is a short-service manpower model introduced by the Ministry of Defence.
2. It aims for recruiting soldiers across the Army, Navy, and Air Force.
3. Unlike regular servicemen, Agniveers do not receive pension benefits.
4. The government assists in rehabilitating soldiers who leave the services after four years by providing skill certificates and bridge courses.

How many of the above statements are correct?

- a. Only one
- b. Only two
- c. Only three
- d. **All four**

Q40.) The Gulf of Tonkin is a maritime region located in the northwestern portion of the

- a. Black Sea
- b. Red Sea
- c. **South China Sea**
- d. Arabian Sea

Q41.) With reference to Reserve Bank Integrated Ombudsman Scheme (RB-IOS), consider the following statements:

1. RB-IOS aims to provide cost-free redress of customer complaints involving 'deficiency in service' on the part of entities regulated by the RBI.
2. RBI Governor serve as the Appellate Authority under the scheme.

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

Q42.) Consider the following statements about 'Ghost Particles':

1. Ghost Particles are miniscule subatomic particles that hardly interact with anything.
2. They belong to the family of particles known as leptons.

Which of the statements given above is/are not correct?

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

Q43.) Consider the following National Parks:

1. Papikonda National Park
2. Sri Venkateswara National Park
3. Rajiv Gandhi National Park

How many of the above are located in Andhra Pradesh?

- a. Only one
- b. Only two
- c. **All three**
- d. None

Q44.) Consider the following statements:

1. Equinoxes are occurring twice a year when the Sun is exactly above the Equator.
2. The spring equinox marks the start of spring in the Northern Hemisphere and autumn in the Southern Hemisphere.

How many statements given above is/are correct?

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

Q45.) Consider the following statements:

Statement-I:

The State of the Global Climate 2023 report is an annual report issued by the World Meteorological Organization (WMO).

Statement-II:

It provides crucial insights into climate trends, extreme events, and the impact of human activities on our planet.

Which one of the following is correct in respect of the above statements?

- a. **Both Statement-I and Statement-II are correct and Statement-II is the correct explanation for Statement-I**
- b. Both Statement-I and Statement-II are correct and Statement-II is not the correct explanation for Statement-I
- c. Statement-I is correct but Statement-II is incorrect
- d. Statement-I is incorrect but Statement-II is correct

Q46.) Consider the following statements:

Statement-I:

As per the Plastic Waste Management (Amendment) Rules, 2024, the term "producer" also includes persons engaged in manufacturing of intermediate material used for manufacturing plastic packaging.

Statement-II:

The manufacturer of compostable plastic/biodegradable plastic will have to inform the Central Pollution Control Board (CPCB) the quantity of such commodities introduced in the market and the pre-consumer waste generated by it.

Which one of the following is correct in respect of the above statements?

- a. **Both Statement-I and Statement-II are correct and Statement-II is the correct explanation for Statement-I**

- b. Both Statement-I and Statement-II are correct and Statement-II is not the correct explanation for Statement-I
- c. Statement-I is correct but Statement-II is incorrect
- d. Statement-I is incorrect but Statement-II is correct

Q47.) With reference to UN World Happiness Report 2024, consider the following statements:

1. Finland continues to hold the top spot as the world's happiest country for the seventh consecutive year.
2. India maintains its position at 126th in the global happiness index, which is the same as last year.
3. Afghanistan remained at the bottom of the list.

How many of the statements given above are correct?

- a. Only one
- b. Only two
- c. **All three**
- d. None

Q48.)With reference to The National Internet Exchange of India (NIXI), consider the following statements:

1. National Internet Exchange of India (NIXI) is a statutory body
2. NIXI was created to enhance the use of Internet Service Protocols (ISPs) within India.
3. NIXI operates the Indian Registry for Internet Names and Numbers (IRINN), which serves as the National Internet Registry.

How many of the statements given above are correct?

- a. Only one
- b. Only two
- c. **All three**
- d. None

Q49.) With reference to World Air Quality Report, 2023, consider the following statements:

1. The annual World Air Quality Report reviews the status of air quality around the world.
2. China is the most polluted country in the world.
3. India had the four most polluted cities in the world.

How many of the statements given above are correct?

- a. Only one
- b. **Only two**
- c. All three
- d. None

Q50.) Consider the following statements about the e-Shram Portal:

1. The e-Shram Portal is a government initiative launched by the Ministry of Labour & Employment in India.
2. Its primary objective is to provide social security and welfare schemes to unorganized workers across the country.

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



IASBABA

One Stop Destination for UPSC Preparation



Congratulates!



In UPSC CSE 2023



In Top 100 in
UPSC CSE 2023



From Across all
Programs & Website



From Our Paid Courses
in The Last 8 Years!



Toppers From
Karnataka

Baba's Toppers in Top-100



ADITYA SRIVASTAVA
AIR 1



SIDHARTH RAMKUMAR
AIR 4



MEDHA ANAND
AIR 13



KUNAL RASTOGI
AIR 15



AYAN JAIN
AIR 16



SHIVAM KUMAR
AIR 19



PRAJNANANDAN GIRI
AIR 24



NANDALA
AIR 27



VISHNU SASIKUMAR
AIR 31



AYUSHI PRADHAN
AIR 36



AKANCHHA SINGH
AIR 44



RAMYA R
AIR 45



CHANDANA JAHNAVI
AIR 50



JAYASREE PRADHAN
AIR 52



SURABHI SRIVASTAVA
AIR 56



BENJO P JOSE
AIR 59



ABHIMANYU MALIK
AIR 60



PRIYA RANI
AIR 69



ESHANI ANAND
AIR 79



SAKSHI JAMUAR
AIR 89



VIJETA B HOSAMANI
AIR 100