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Current Affairs Magazine

Specially Developed only for UPSC CSE

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SIXTH SCHEDULE



INDIA-PAKISTAN TRADE



GAGANYAAN



PAINTINGS

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1 POLITY AND GOVERNANCE

1.1 6TH SCHEDULE

The Government has agreed to examine the process of implementation of provisions of the Sixth Schedule in Ladakh.

About 6th Schedule

- **Art 244** of the Indian Constitution provides for the **sixth schedule**.
- **Applicable to** - the state of **Assam, Meghalaya, Tripura and Mizoram**.
- **Purpose:** Formation of **autonomous administrative divisions** called **Autonomous District Councils (ADCs)** that have some legislative, judicial, and administrative autonomy within a state.
- **Composition of ADCs**
 - ADCs have up to **30 members** with a term of **five years**. Of these, **four are nominated** by the governor and the remaining **26 are elected** based on adult franchise.
 - The Bodoland Territorial Council in Assam is an exception, with more than 40 members.
 - Each autonomous region also has a **separate regional council**.
- **Powers of ADCs**
 - **Civil and judicial powers:** They can constitute village courts within their jurisdiction to hear trials of cases involving the tribes. Governors specify the jurisdiction of high courts for each of these cases.
 - **Legislative powers:** The councils are empowered to make laws on matters like land, forests, fisheries, social security, entertainment, public health, etc. with due approval from the governor.
 - The acts of Parliament or the state legislature do not apply to autonomous districts and autonomous regions or apply with specified modifications **and exceptions**.

Why Ladakh is Demanding for Inclusion in the 6th Schedule?

- **Political representation and autonomy:** The Jammu and Kashmir Reorganization Act 2019, created two separate UTs of J&K (with legislature) and Ladakh (without legislature).
 - While there had been four MLAs from the Ladakh region in the erstwhile J&K Assembly, now the administration of Ladakh is completely in the hands of bureaucrats. Thus, sixth schedule status is being demanded to ensure political representation and autonomy.
- **Lack of Local employment opportunities:** The administration of UT of Ladakh has failed to create local employment opportunities for the youth of Ladakh.
 - Also, **The Jammu and Kashmir reorganization Act, 2019** ended people's exclusive rights to land and jobs.
 - It also made the existing **Ladakh Autonomous Hill Development Councils (LAHDCs)** in Leh and Kargil powerless.
- **Preservation of Cultural Identity** - Sixth schedule status is also being demanded to protect Ladakh's unique cultural heritage and traditional customs.
 - For ex- Tribals like **Gujjars, Bakarwals, Bots, Changpas, Baltis and Purigpas** have distinct cultures which can better be preserved under the sixth schedule of the constitution.
- **Preservation of Ladakh's fragile ecosystem-** Climate activists have raised serious concerns regarding mining and industrialization in the fragile glacial ecological system of Ladakh.
 - Sixth schedule status is being demanded to protect the **high-altitude deserts, glaciers and alpine meadows** which are a crucial habitat for rare and endangered species.
- **Change in domicile policy of Jammu and Kashmir-** The change of domicile policy in UT of J&K has amplified demands for a sixth schedule for Ladakh to ensure domicile for Ladakh population.
- **Strengthening of democratic institutions-** The establishment of autonomous councils under the Sixth Schedule would also strengthen democratic institutions at the grassroots level.
 - For ex- More powers and autonomy to Ladakh Autonomous Hill Development Councils (LAHDC).

- The draft **Ladakh Industrial Land Allotment Policy, 2023**
- While the LAHDCs have the powers to make decisions on land use and its management, the draft policy designed to attract investments **completely excludes them from having any powers related to land allotment and lease-related decision-making.**

Challenges in Granting Sixth Schedule Status.

- **Constitutional amendment:** Granting sixth schedule status to Ladakh will need a Constitutional amendment under **Article 368** which requires a special majority.
- **Demand from other areas:** Granting a sixth schedule status to Ladakh will open the floodgates for the demand of the status of 6th schedule by many other communities.
- **Defense Issues:** As Ladakh is a frontier area bordering China and the “2020–2021 China–India skirmishes” in the **Galwan valley** compels the government to have a greater say in the administration of the area to protect it from any intrusion.
- **Diversified tribal populations and Inter-tribal conflicts:** The area is inhabited by different tribes like **Balti Beda, Bot (or Boto), Brokpa (or Drokpa, Dard, Shin), Changpa, Garra, Mon and Purigpa** and a variation in their cultures and customs can be seen.
 - A single autonomous council can potentially create tension between these tribal communities.

Way Forward

- **Tribal aspirations:** Considering more than **97% of Ladakh’s population of over 2.74 lakh** (2011 Census) is tribal and the **National Commission for Scheduled Tribes recommended in 2019** that Ladakh be brought under the Sixth Schedule, routes should be looked for to bring Ladakh under the sixth schedule.
 - This would help in protecting the rights and interests of the tribal people and promoting their development and fulfilling their aspirations.
- **Sustainable development:** Development is very important but not on the cost of ecology so a balance between these must be made in order to protect the environment of the area and the indigenous identity attached to it.
- **Democratic decentralization:** The center must ensure that local administration must remain with the residents and their participation in the development and administration of the area must be ensured so that they do not feel left out.
- **Process of autonomy:** The center must act in bringing in a genuine process of autonomy in the region and not a process of creating multiple power centers by making multiple bodies.

1.2 PUBLIC INTEREST LITIGATION (PIL)

The Madurai bench of Madras High Court Bar Association (MMBA) has succeeded in restoring the right of the Bench to hear all kinds of Public Interest Litigation (PIL) petitions apart from the 13 districts under its territorial jurisdiction.

About PIL

- **Janata Dal v. H.S. Chaudhary, 1993** defined PIL as “a legal action started in a court of law for the **enforcement of public/general interest** where the public or a particular class of the public have some interest (including pecuniary interest) that affects their legal rights or liabilities”.
- It facilitates the victim by **the relaxation of the traditional rule of “locus standi.”**
 - “**Locus standi**” is a legal maxim meaning only a person aggrieved can move the court for remedies.
- It is a judicial innovation and is **not defined in any statute or in any act.**
- The concept is suited to the principles enshrined in **Article 39A** of the Constitution of India to protect and deliver prompt social justice with the help of law.

Historical Background

- The concept of Public Interest Litigation (PIL) was first developed and originated in the **USA in the 1960s.**

- **Justice Krishna Iyer in the Mumbai Kamgar Sabha vs. Abdul Thai (1976)** - sowed the seeds of PIL in India.
- **Hussainara Khatoon vs. State of Bihar (1979)** - leading to the release of more than 40,000 under-trial prisoners was one of the earliest cases leading towards public Justice.
- **S.P. Gupta vs. Union of India (1981)** - Justice P. N. Bhagwat led bench formalized the PIL system by introducing guidelines. Since then, the cases of PIL are taken up by the judiciary on the precedent of this judgment.
- **Miss Veena Sethi vs. State of Bihar, 1982** - the court treated a letter addressed to a judge of the court by the Free Legal Aid Committee in Hazaribagh, Bihar as a writ petition under Article 32 of the Constitution of India.
- **Vishaka vs. State of Rajasthan (1997)**: It recognized sexual harassment as a violation of the fundamental rights of Article 14, Article 15, and Article 21

Guidelines to be followed for the PIL.

- Court must **encourage genuine and bonafide PIL** and effectively discourage and curb the PIL filed for extraneous considerations.
- PIL can be filed simply writing a letter to the court.
- Court shall be **prima facie satisfied regarding the correctness** of the contents of the petition before entertaining PILs.
- **Petitions involving larger public interest, gravity and urgency** must be given priority over other petitions.
- Petitions should aim at the redressal of genuine public harm and public injury.
- Any citizen can file a public case by filing a petition:
 - **Under Art 32 of the Indian Constitution**, in the Supreme Court.
 - **Under Art 226** of the Indian Constitution, in the High Court.
 - **Under sec. 133** of the Criminal Procedure Code, in a magistrate's court.
- It can be taken up by the court **Suo motto**.
- No personal gain, private motive or oblique motive can be behind filing a PIL.
- It can be taken **up only if the court is satisfied that the matter is of substantial public interest**.
- **Imposition of penalty in case of filing frivolous PILs.**

Who Can be Sued Under the PIL?

- A State/Central Govt., Municipal Authorities.
- According to **article 12**, the term State includes the Government and Parliament of India and the Government and the Legislatures of each of the States, and all local or other authorities within the territory of India or under the control of the Government of India. Any of these parties can be sued.
- A private person may be included in PIL as **'Respondent'**, after concern of state authority.

Significance of PIL

- **Legal transformation**: It serves as a tool for social transformation, preserving the rule of law, and accelerating the balance of law and justice.
- **Accessibility of justice**: PILs were created with the intention of making justice more accessible to the poor and marginalized.
- **Preservation of human rights**: It is a critical tool for bringing human rights to those who have been denied them.
- **Judicial oversight**: It aids judicial oversight of state institutions such as prisons, asylums, and protective homes, among others.
- **Strengthens judiciary and judicial review**: It's a crucial tool for putting the concept of judicial review into practice and allows courts to take **"suo motu"** action to address issues of public importance.
- **Public engagement**: The introduction of PILs ensures increased public engagement in the judicial review of administrative action.

Criticism of PIL

- **Judicial overreach or judicial activism:** Sometimes the cases in PIL result in judicial overreach and judiciary may go into the domain of other organs of the government like the legislature and the executive which creates confrontation.
 - Justice Markandey Katju (former SC Judge) has criticized PIL as a Frankenstein's monster.
- **Abuse for private gain:** It has been abused for private gain by people with vested interest. Many worthwhile projects have been halted as a result of PILs filed in the name of public interest.
- **Overburdening judiciary:** The PIL has **overburdened the judiciary** as there are already millions of pending cases. This can further lead to a backlog of cases.
- **Lack of implementation:** Many of the verdicts of the courts see a lack of implementation due to resentment from the implementing agency.
- **Favoring PIL:** There has been a tendency to favor PIL before large pending cases as it attracts more media attention. So, the regular cases keep waiting for months for a new date, but PIL gets easy time.

Way Forward

- **Discouraging frivolous PIL:** Allowing real PILs while discouraging frivolous ones is a good way for the judiciary to find a balance. This can be accomplished by limiting PIL to situations in which access to justice is hampered by a disability.
- **Financial incentives:** Financial incentives such as a protected cost order, legal assistance, pro bono litigation, support for PIL civil society, and amicus curiae briefs can be offered in exchange for legitimate PIL lawsuits.
- **Avoiding Judicial Adventurism:** Judicial Activism should not take the form of Judicial Adventurism while addressing PILs.

1.3 REGISTRATION OF BIRTH AND DEATH (AMENDMENT) ACT, 2023

According to model rules drafted by the Union Ministry of Home Affairs, while registering the birth of a child, parents will be required to separately record the religion of both the child's father and mother.

Background

- The registration of births and deaths falls under the **Concurrent List**.
- **The Law Commission (2018) recommended the inclusion of marriage registration** in the Registration of Births and Deaths Act, 1969
- As of 2019, the national level of registration of births was 93% and death registration was at 92%.
- It was given assent of the **President in August 2023**.
- The Registration of Births and Deaths (Amendment) Act, 2023 amended the 1969 Act.

Key Features of the Registration of Births and Deaths (Amendment) Act, 2023

- **Creation of Database of births and deaths:** The act provides for the appointment of a Registrar-General of India to issue general directions for registration of births and deaths. He will maintain a national database of registered births and deaths.
 - The new act adds that the Registrar General will maintain a national database of registered births and deaths and the Chief Registrar shall maintain a similar database at the state level.
 - Registrars will be appointed by states for local area jurisdiction and will be obligated to share data of registered births and deaths to the national database.
- **Electronic certificates:** The amended act provides for obtaining a birth or death certificate (electronically or otherwise) instead of the earlier provisions of extracts.
- **Aadhaar details of parents and informants required:** In cases of births, **the specified persons** (for example, the medical officer in charge of a hospital where a baby is born, jailor, manager of a hotel or lodge in case of births in such a place etc.) **shall also provide the Aadhaar number of the parents and the informant**.
 - They will be required to separately record the religion of both the child's father and mother.

- Earlier, only the family's religion was recorded in birth registers.
- Similar changes will be applied for parents of an adopted child.
- **Connecting database:** The national database may be made available to other authorities preparing or maintaining other databases. Such databases include Population register, Electoral rolls Ration card, and any other national databases as notified.
- **Use of birth certificate:** It makes it a requirement for the use of birth and death certificates as a single document to prove the date and place of birth for persons born on or after this Act comes into effect. The information will be used for purposes including:
 - Admission to an educational institution
 - Preparation of voter lists
 - Appointment to a government post, and
 - Any other purpose determined by the central government.
- **Appeal process:** Any person aggrieved by any action or order of the Registrar or District Registrar may appeal to the District Registrar or Chief Registrar, respectively.
 - Such an appeal must be made within 30 days from receipt of such action or order.
 - The District Registrar or Chief Registrar must give their decision within 90 days from the date of appeal.

Issues Associated with the Act

- **School admission:** Denying admission to school in case of not having a birth certificate may violate the fundamental right to education **under Article 21A**.
 - **Under the Right to Education Act, 2009**, for admission to elementary education, a child's age is determined based on their birth certificate or any other document that may be prescribed and also specifies that no child can be denied admission on the grounds of lack of age proof. This provision is in contradiction to the Act.
- **Right to vote:** **Article 326 guarantees** that every citizen above the age of 18 years has the right to vote. The absence of birth certificates (for age proof) does not fall within the mentioned disqualifications and the act is ambiguous regarding the issue.
- **Right to privacy:** In the **Justice K.S. Puttaswamy & Anr. vs. Union of India & Ors.** the Supreme Court observed the **right to privacy as a fundamental right under article 21 of the constitution of India**. Compelling to reveal information regarding the religion of both parents can be against the spirit of the right to privacy.
- **Against the Supreme Court verdict:** In 2016 the SC judgment had struck down the requirement of Aadhaar for bank accounts and mobile phone connections. This act is against the nature of the Judgement.
- **Against data security:** The **Srikrishna Committee**, which had suggested a data protection framework for India, had suggested that if personal data is collected for a specified purpose, it should not be processed for any other purpose.

Way Forward

- **Alternative arrangements:** In case where AADHAR card is not available with the parents, other government cards like the Voter ID card can be used.
- **Presenting Clarity:** The act is very ambiguous in many matters and more clarity on this should be presented like will a person be able to marry in case of having no birth certificate.
- **Protecting the right to privacy:** As the **Right to privacy** is a fundamental right so the protection of it must be very important and the government should clarify the use of data in exact manner without any room for interpretation.

1.4 ARMED FORCES SPECIAL POWERS ACT (AFSPA)

The Ministry of Home Affairs (MHA) recently extended the AFSPA in parts of Nagaland and Arunachal Pradesh for another six months.

About Armed Forces Special Powers Act

- The Act grants **special powers** to armed deployed in **disturbed areas**.
 - **Disturbed area**- An area where differences or disputes exist between members of different religious, racial, language or regional groups or castes or communities.
 - The Central Government, or the Governor of the State or administrator of the Union Territory has the power to declare an area as disturbed area.

Provisions of the Act

- **Special powers of the armed forces**
 - In a **disturbed area**, prohibiting **gathering of more than 5 people**, armed forces are allowed to use **lethal force** to maintain public order (Force personnel must issue appropriate warning before using such force)
 - Power to **destroy any arms dump, armed shelters, training camps, hide-outs etc.**
 - Power to **arrest any person without warrant**, based on reasonable suspicion.
 - Power to **enter and search** any premises **without warrant**.
- **Arrested persons to be handed over to the police**- Any person arrested and taken into custody under this Act shall be handed over to the officer in charge of the nearest police station.
- **Protection to persons acting under Act**- No prosecution, suit or other legal proceeding shall be instituted, **without the previous sanction of the Central Government** against any person acting under this act.

History of AFSPA

- **Origin:**
 - **Armed Forces Special Powers Ordinance 1942:** introduced to suppress the Quit India Movement of 1942.
 - Introduced by the then **Viceroy Lord Linlithgow**.
- **Post-Independence:**
 - **Armed Forces Special Powers (Assam and Manipur) Act, 1958:** To deal with the Naga insurgency in Assam. It can be now applicable to other north-eastern states.
 - **The Armed Forces (Punjab and Chandigarh) Special Powers Act, 1983:** To deal with the Khalistan movement in Punjab. As the Khalistan movement died down it was withdrawn in 1997.
 - **The Armed Forces (Jammu and Kashmir) Special Powers Act, 1990:** To deal with the insurgency issue in Jammu and Kashmir.

Supreme Court Judgment on AFSPA

- **Naga People's Movement of Human Rights vs. Union of India case 1998**
 - The Supreme Court **upheld the validity** of the act.
 - As per Supreme Court, the special powers granted under AFSPA are **not arbitrary or unconstitutional**.
 - **Supreme Court Guidelines on AFSPA-**
 - **Minimum Force-** The security personnel should use minimum force necessary while acting under the law.
 - **Consultation-** The state government should be consulted by the Central government before application of AFSPA in the state.
 - **Limited Duration and Periodic Review-** The act should be applied for minimum required period and a periodic review should occur every 6 months.
 - **Legal Arrests-** Persons arrested under the Act must be handed over to the nearest police station within 24 hours.
- **Other Cases-** Over the course of years various causes related to violation of human rights and fake encounters have been filed in AFSPA implemented areas-
 - **Judgment of 2016-** Every death in the 'disturbed areas', be it of a common person or insurgent, should be thoroughly enquired by the CID at the instance of the NHRC.
 - **Judgment of 2017-** The Supreme Court ordered the Central Bureau of Investigation to set up a special investigation team to probe encounter deaths.

Committees on AFSPA

- **Jeevan Reddy Committee, 2004** was formed in the backdrop of allegations of malafide use of Act in Manipur. The committee made following recommendations:
 - The Armed Forces (Special Powers) Act, 1958, should **be repealed**.
 - Security forces must be brought under the purview of ordinary criminal law rather than under army law.
 - **The Unlawful Activities Prevention Act 1967** should replace AFSPA.
- **Santosh Hegde Committee, 2013**, on unlawful encounters in Manipur, stated that AFSPA gave “sweeping powers” to men in uniform without granting citizens protection against its misuse.
- **The Second Administrative Reforms Commission** has also recommended the **repealing of AFSPA**.

Current Application in Northeast India

- Currently being implemented in some parts of Nagaland, Manipur, Assam and Arunachal Pradesh.
- The act was revoked in Tripura in 2015.
- Meghalaya was under the AFSPA for 27 years, until it was revoked from April 1, 2018.

Criticism of AFSPA

- **Violation of Human Rights**- This Act has led to several cases of fake encounters, custodial rapes and deaths.
- **Violation of Fundamental Rights**- This Act is in clear violation of **Article 22** of the constitution.
 - **Article 22**- Protection against arrest and detention (preventive and punitive) in certain cases.
- **Harassment by security forces**- Security forces often misuse the special power to enter or search premises without warrant, to harass local businesses.

Relevance of AFSPA

- **Extraordinary circumstances**- AFSPA has proved to be effective in areas where ordinary law of the land has failed.
- **Minimize losses**- The extraordinary powers provided to security personnel has not only reduced the casualty rate but also helped with curbing the terrorist activities.
- **Limited duration**- AFSPA is applied for a limited duration and is repealed when it is deemed no longer necessary.
 - E.g. Repeal of the Armed Forces (Punjab and Chandigarh) Special Powers Act.
- **Level playing field**- The Indian army has often cited that the presence of special laws like AFSPA allows officers to quickly and effectively respond against those terrorist elements who have no regard for life and property.

Way Forward

- **Merit based use**: In cases of violation of human rights under the Act, each case should be reviewed on merit basis rather than demanding a complete ban on the law itself.
- **Inclusion of civil society**: Civil society organizations in AFSPA implemented areas should be included in policy making and investigation procedures to ensure safeguarding of human rights.
- **Implementation of Supreme Court guidelines**: The Supreme Court guidelines regarding periodic review and limited duration of application of AFSPA should be strictly implemented to ensure timely return to normal circumstances.
- **Alternate legislation**: As recommended by Jeevan Reddy Committee, an alternate law like UAPA 1967 with additional specific clauses can be used to replace AFSPA to avoid over regulation.

1.5 MAHATMA GANDHI NATIONAL RURAL EMPLOYMENT GUARANTEE ACT, 2005 (MGNREGA)

The latest statistics of the MGNREGA show that demand for work is more than the pre-pandemic level and on a steady rise.

Recent statistics

- A total of **305.2 crore person days** (one person working a normal shift) were generated in the financial year 2023-24 under MGNREGA.

- This is 12 crores more person days than in 2022-23 and 40 crores more than the first pandemic year in 2019-20.
- Active workers as of April 2024 - **Around 12 crore and 88 lacks.**

About MGNREGA

- **It is one of the largest work guarantee** programmes globally.
- **Launched in 2005** under the Ministry of Rural development.
- Provides a guaranteed **100 days of wage employment in a financial year to every household** whose adult members volunteer to do unskilled manual work.
- **The act binds the government to provide** work to an individual within 15 days of demanding it.
- At least one-third of beneficiaries must be women.
- **A demand-driven scheme** enables the self-selection of workers.
- State can provide additional man days of work over and above 100 days from its own resources.
- **An additional 50 days** of wage employment is provided over and above 100 days in the notified drought affected areas or natural calamity areas in the country on recommendation of the Ministry of Agriculture and Farmers Welfare.
- **Gram sabhas are mandated to recommend the** works that are to be undertaken along with executing **at least 50% of the work.**
- Wages must be paid according to the **Minimum Wages Act.**
- As per the act, the **Central Government can specify** the wage rate for its beneficiaries.
- **So, the Ministry of Rural Development notifies Mahatma Gandhi NREGA** wage rate every year for States/UTs.
- **To factor in inflation, the Ministry of Rural Development** revises the wage rate every year based on changes in Consumer Price Index for Agricultural Labor (CPI-AL).
- The wage rate is made applicable from **1st April of each Financial Year.**
- **Wage seekers shall be entitled to receive payment of** compensation for the delay in payment, at the rate of 0.05% of the unpaid wages per day of delay beyond the sixteenth day of closure of muster roll.
- **The funding pattern - 100% funding** for unskilled labor cost and 75% of the material cost by Central Government and rest shall be borne by the State Government.

Role of Different Organizations in MGNREGA

- **Gram Sabha**
 - Setting the works on the sequence of priority.
 - Monitors the execution of works.
 - Primary forum for social audits.
 - Works as a platform to resolve the query of workers related to any MGNREGA project.
- **Gram Panchayat**
 - Receives job applications and verifies them.
 - Registers all households in the area.
 - Issues MGNREGA job cards.
 - Responsible to allot work within 15 days from the application submission.
 - Preparation of annual report covering the achievement of the scheme.
 - Holding Rozgar Diwas in every ward every month
- **State Government**
 - Frames rules for the state's responsibility under the act.
 - Setting up the State Employment Guarantee Council.
 - State Employment Guarantee Fund (SEGF) is established by state governments.
 - It dedicates the Employment Guarantee Assistant (Gram Rozgar Sahayak), the PO and the staff at the State, district, cluster, and Gram Panchayat level, for the execution of the scheme.

Benefits of MGNREGA

- **Increase in economic security:** As the government provides a guaranteed work, it **injects liquidity at the lowest level** creating economic security to the people.
- **Decrease migration of labor:** It helps to reduce migration from the rural areas to the already overcrowded urban centers in search of jobs.
- **Infrastructure development:** It helps in the development of infrastructure and natural resource base in the underdeveloped rural areas of the country.
- **Combat poverty:** As guaranteed 100 days of employment through a **rights-based approach** is given.
- **Encourages democratic decentralization:** As it devolves a lot of powers of decision making to the "Gram Sabha " it encourages local participation which ensures decentralization.
- **Accountability and Transparency:** It also encourages accountability and transparency by the virtue of **decentralization and local participation** in decision making.
- **Bargaining power of workers increases:** as they are provided minimum wages and **guaranteed employment** which gives them room for negotiation of wages in other works.



Challenges Associated with MGNREGA.

- **Counterfeit job cards:** Counterfeit job cards are used to create dummy workers thus creating missing entries and delays issues.
- **Dysfunctional Gram sabhas:** It results in a bureaucratic dominance and the autonomy of the rural local bodies gets compromised.
- **Incomplete works:** Due to cost overruns and delay of funds and in inspection, many projects remain incomplete thus leading to wastage of public money.
- **Fabrication of Job cards:** There is the existence of **fake job cards, the inclusion of fictitious names, missing entries, and delays** in making entries in job cards.
- **Lack of skill development:** Even after 100 days, workers do not acquire any special skills which can help them to get work in other jobs.

Way Forward

- **Regularization of payouts:** The payouts must be released within the mandated 15 days.

- **Coordination:** The coordination between various government departments should be increased to avoid duplication of efforts and save resources.
- **Gram panchayat's role:** The Government should **encourage more role of "Gram Sabha"** by using methods like advertisement, training etc. to ensure that local projects solve local problems.
- **Removing counterfeit workers:** It can be done by linking AADHAAR with the job card for remaining workers thus creating a unique biometric for all cards.
- **State government's proactiveness:** State governments should ensure public work in every village to solve local problems of that village. It must also ensure that work starts immediately, without much delay.
- **Skill development:** Skill development of workers during work shall be given attention to make them less dependent on MGNREGA.

Wage Payment Process under MGNREGA

- **There are two stages in the wage payment process:**
- **Stage 1 - States** electronically send invoices to the Central government within eight days of completion of work at a worksite.
 - These invoices contain essential worker details like their names and bank account numbers.
- **Stage 2 -** The Central government then processes the invoices and transfers wages directly to the workers' accounts through Aadhaar-based payment system (ABPS).
 - ABPS uses the worker's Aadhaar number as their financial address. Worker's Aadhaar details are seeded to her job card and her bank account.
 - ABPS has been made **mandatory** by Centre for payment of wages from 1st January 2024.

Project UNNATI

- Project 'UNNATI' is a skilling project intended to upgrade the skill base of the MGNREGA beneficiaries.
- It is meant to provide training for one adult member (18-45 years) of a household who has completed 100 days of work under MGNREGA.
- The candidates undergoing training are paid a stipend for a maximum period of 100 days.
- Full expenditures towards a stipend, against wage loss compensation, are entirely borne by the Central Government.

1.6 THE ADJUDICATING AUTHORITY UNDER THE PMLA

- *The Adjudicating Authority under Prevention of Money Laundering Act, 2002 (PMLA) confirmed the attachment of National Herald assets worth Rs 751.9 crore in a money laundering case involving Young Indian, controlled by Sonia and Rahul Gandhi.*

About Adjudicating Authority under PMLA?

- "Adjudicating Authority" is statutory body established under the **PMLA in India**.
- It has the specific role of determining whether assets attached by the Enforcement Directorate (ED) in cases of **money laundering should be permanently confiscated**.

Aspect	Details
Appointment	Appointed by the Central Government.
Composition	Consists of a Chairperson and at least two other members.

Qualifications & Term	- Members must have been in service of the Central or State Government not below the rank of Joint Secretary or equivalent. - Members are selected based on their expertise and experience in law, finance, accounting, or administration.
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Process Followed:

- **Determination of Asset management:** The Adjudicating Authority decides within 180 days if the properties attached by the ED are involved in money laundering.
- **Challenging the Confirmation order:** After the adjudicating authority confirms the attachment, the accused has the right to challenge this order at the PMLA's Appellate Tribunal within 45 days.
- **Further Legal recourse:** If the Appellate Tribunal confirms the order, the accused can escalate the challenge to the High Court, and further legal proceedings may follow.

1.7 BHARAT RATNA

- *Karpoori Thakur, Mankombu Sambasivan (M.S.) Swaminathan, Pamulaparthi Venkata (P.V.) Narasimha Rao, Lal Krishna Advani, and Chaudhary Charan Singh were awarded the Bharat Ratna award in 2024.*

About Bharat Ratna

- Bharat Ratna is the **highest civilian award of the country**.
- It was **instituted in the year 1954**.
- It is awarded in recognition of exceptional **service/performance of the highest order** in any field of human endeavor.
- **Any person without distinction of race, occupation, position or sex is eligible** for these awards.
- The recommendations for Bharat Ratna are made by the Prime Minister himself to the President. No formal recommendations for this are necessary.
- On conferment of the award, the recipient receives a Sanad (certificate) signed by the President and a medallion.
- The Award does **not carry any monetary grant**.
- **Bharat Ratna recipients rank seventh** in the Indian order of precedence.
- **In terms of Article 18 (1) of the Constitution**, the award cannot be used as a prefix or suffix to the recipient's name. However, should an award winner consider it necessary, may use the following expression in their biodata/letterhead/visiting card etc. to indicate that he/she is a recipient of the award - 'Awarded Bharat Ratna by the President' or 'Recipient of Bharat Ratna Award'.

- The first recipients of Bharat Ratna were **C. Rajagopalachari, Sarvepalli Radhakrishnan and C. V. Raman**.
- **The 1954 statutes did not allow posthumous awards** but after modifications was allowed in 1966.
- **Lal Bahadur Shastri became the first recipient** to be honored posthumously in 1966.
- **Bharat Ratna award was suspended from July 1977 to January 1980** and for a second time from August 1992 to December 1995.

- **Other civilian awards in India**
 - **Padma Vibhushan** is the second highest civilian Award of the country.
 - **Padma Bhushan** is the third highest civilian Award of the country.
 - **Padma Shri** is the fourth highest civilian Award of the country.

1.8 MEDICAL TERMINATION OF PREGNANCY ACT

The Supreme Court on Monday permitted a 14-year-old rape survivor to undergo medical termination of her almost 30-week pregnancy.

History of Abortion Laws in India

- Before the 1960s, abortion was **banned** in India.
 - Any violation led to imprisonment or fines according to Section 312 of the Indian Penal Code.
- In the mid-1960s, the **Shantilal Shah Committee** was established to assess the necessity of abortion regulations.
- Following the Committee's recommendations, the **Medical Termination of Pregnancy (MTP) Act** was enacted in 1971.

MTP Act 1971

- The MTP Act of 1971 permits abortion up to **20 weeks** of gestation, with the consent of the woman and the advice of **one registered medical practitioner (RMP)**.

MTP Amendment Act 2021

- The amended MTP Act allows termination under the opinion of **one doctor** for pregnancies **up to 20 weeks**.
- For pregnancies between **20 and 24 weeks**, the amended law requires the opinion of **two doctors**.
- Seven categories of women are eligible for termination between 20 and 24 weeks of pregnancy -
 - Survivors of sexual assault or rape or incest
 - Minors
 - Change of marital status during the ongoing pregnancy (widowhood and divorce)
 - Women with physical disabilities
 - Mentally ill women, including mental retardation.
 - On grounds of Foetal malformation
 - Women with pregnancy in humanitarian settings or disaster or emergency situations.
- **For Pregnancy beyond 24 weeks - A four-member Medical Board**, established in each state under the MTP Act, must grant permission for this type of abortion.

- In the case of **Justice K.S. Puttaswamy vs. Union of India and Others (2017)**, SC recognized the constitutional right of women to make reproductive choices as a part of personal liberty under **Article 21** of the Indian Constitution.

1.9 RULES AROUND STAR CAMPAIGNERS

During this Lok Sabha Election, star campaigners are being appointed by political parties.

About Star Campaigner

- A star campaigner is a famous person with a huge fan following chosen by a political party to contest or campaign during elections.
 - **This can be anyone** - a political heavyweight, a movie star, a well-known celebrity, or even a sports person.
 - The only requirement is that these persons must be members of the **political party that appoints them**.
- **Legal provision: Section 77 of the Representation of the People Act, 1951 (RP Act)** provides for law relating to expenditure incurred by 'leaders of a political party'.
 - These 'leaders of a political party' are popularly known as 'star campaigners'.
 - There is **no specific definition of a star campaigner** in the law.
- **Number of campaigners:**
 - **Recognised political parties (national or State)** can appoint a maximum of 40-star campaigners.
 - While a registered **unrecognized political party** can appoint up to 20.

- These names are to be communicated to the **Election Commission (EC) and Chief Electoral Officer (CEO)** of the States.
- The ECI issues guidelines under the **Model Code of Conduct** regulating poll campaigns.
- **Benefits:** Expenditure incurred by the star campaigners **on account of travel** by air or any other means of transport for campaigning for their political party **shall not be part of the election expenditure of a candidate of such party.**
 - **The election expenditure limit for candidates:** ₹95 lakh per Lok Sabha constituency in larger States and ₹75 lakh in smaller States.
 - This is applicable only if the star campaigners limit themselves to general campaigning for the party.

1.10 UNCONTESTED ELECTION FOR LOK SABHA

Mukesh Dalal from BJP was elected unopposed from Surat Lok Sabha constituency after all the other candidates withdrew from the race.

News Details

- The BJP walkover in Surat came a day after the nominations of the Congress candidates were **rejected by the Election Commission (EC) while other nominees withdrew from the contest**, leaving the ruling party's nominee as the sole candidate in the race.
- Nominations of the Congress candidates were rejected as signatures of proposers were not genuine.
- Consequently, there will be no voting in the second-largest city of Gujarat in the ongoing polls.

About Uncontested Election

- **An uncontested election** is when a candidate is declared the winner without a single vote being cast.
- This occurs when all other contesting candidates either drop out of the race or their candidacy is rejected.
- **ECI handbook states** "If in any constituency there is only one contesting candidate, declare that candidate to have been duly elected immediately after the last hour for withdrawal of candidature". **In that event, a poll is not necessary.**
- However, the rules add that the date mentioned in the declaration has to be the date on which the result of the election is declared and not the date on which the declaration is dispatched.

Law for Nomination

- **Section 33 of the Representation of the People Act, 1951 (RP Act)** contains the requirements for a valid nomination.
- As per the RP Act, **an elector above 25 years of age can contest Lok Sabha election** from any constituency in India.
- The proposer(s) of the candidate should be elector(s) from that respective constituency where the nomination is being filed.
 - A recognized party (national or State) candidate **needs to have one proposer.**
 - Unrecognized party and independents candidate **needs to have ten proposers.**
- A candidate **can file up to four nomination papers** with different sets of proposers. This is to enable the acceptance of nomination of a candidate even if one set of nomination papers is in order.
- RP Act provides that the **Returning Officer (RO) shall not reject any nomination** for a defect that is not of a substantial character.
 - However, it specifies that the signature of the candidate or proposer **found not genuine is grounds for rejection.**
- If the nomination of the original candidate is rejected, election rules allow for a substitute candidate to be fielded by a political party.

What is a Proposer?

- A proposer is any person who proposes **the candidature of an individual for an election**.
- He/she must be a registered elector of the concerned Assembly or parliamentary constituency for which he/she is endorsing the nomination of the candidate.
- The nomination papers of the candidate **must be signed by the proposer as well as the candidate for them to be deemed valid**.
- **He/she has the right to sign more than one nomination** form for the same candidate as well as for different candidates.

Earlier Cases of Unopposed Elections

- There have been **at least 35 candidates** who have been elected unopposed to the Lok Sabha.
 - Majority of them were in the first two decades after independence with the last being in 2012.
 - In 1951, during the very first general elections, five candidates were elected unopposed.
 - Seven more candidates were elected unopposed to the Lok Sabha in 1957.
 - The former chief minister of Arunachal Pradesh Dorjee Khandu was elected unopposed thrice from Motto (1990, 2004, 2009).

Legal Recourse

- The election commission has the powers to reject the decision of the RO.
- **Article 329(b)** of the Constitution read with RP Act provides that no election shall be called into question except by an election petition before the concerned High Court.
- **So, Gujarat HC has the jurisdiction to the matter.**
- The RP Act provides that High Courts shall endeavor to conclude such trials within **six months**.

1.11 NATIONAL COMMISSION FOR BACKWARD CLASSES

- **The National Commission for Backward Classes (NCBC) is an Indian constitutional body under 338B of the Indian Constitution.**
- **It was constituted in 1993 under the National Commission for Backward Classes Act, 1993.**
- It was given **constitutional status** by the **102nd Amendment Act, 2018**.
- It functions under the jurisdiction of the **Ministry of Social Justice and Empowerment, Government of India**.
- **The Commission consist of**
 - a chairperson
 - Vice-Chairperson and
 - three other Members
- All 5 are appointed by the President.
- **Duties of the Commission are:**
 - **To investigate and monitor all matters** relating to the safeguards provided for the socially and educationally backward classes under this Constitution or under any other law.
 - **To inquire into specific complaints** with respect to the deprivation of rights and safeguards of the socially and educationally backward classes.
 - **To participate and advise on the socio-economic development** of the socially and educationally backward classes and to evaluate the progress of their development under the Union and any State.
 - **To present to the President**, annually and at such other times as the Commission may deem fit, reports upon the working of those safeguards.

1.12 CENSUS IN INDIA

- **The first census** in India was held in the year 1872 under Lord Mayo.
- The first regularized census **was held in 1881, by W.C. Plowden, Census Commissioner of India.**
- This exercise has been held every **10 years since, with the exception of 2021 due to COVID-19 crisis.**
- The Office of the **Registrar General and Census Commissioner of India under the Ministry of Home Affairs** is responsible for conducting the census.
- **Population census is listed in Union List (entry 69)** of Seventh Schedule in Indian Constitution.
- Census is conducted under the statutory provisions of the **Census Act, 1948** but no mention of periodicity is defined in the statute.
- **Census is constitutionally mandated in India** but there is no Constitutional or legal requirement that it needs to be conducted decennially.
 - There are repeated references to the Census exercise in the Constitution in the context of reorganisation of constituencies for Parliament and state Assemblies.

1.13 CURATIVE PETITION

- It is a way to ask the court to review and revise their own decision **and it is filed after a review petition is dismissed or used.**
- It is an extraordinary special jurisdiction carved out by the Supreme Court under its inherent powers under **Article 129 and 142 of the Constitution of India.**
- **Origin:** It has its origin in the **Rupa Ashok Hurra v. Ashok Hurra case 2002.**
- **Objective:** To cure gross miscarriage of justice and case of misfeasance.
- **Purpose:** It acts as the last resort for the people seeking justice by a way of review of the review.
- **Process:**
 - The petitioner is required to aver specifically that the grounds mentioned therein had been taken in the review petition filed earlier and that it was dismissed by circulation, which must be certified by a senior advocate.
 - It is then circulated to the three most senior judges and to the judges who delivered the impugned judgment if available.

- No time limit is given for filing a curative petition.
- It is guaranteed under **Article 137** of Constitution of India, which gives the power to the Supreme Court to review of its own judgements and orders.

Article 137 - Review of judgments or orders by the Supreme Court

- Subject to the provisions of any law made by Parliament or any rules made under **article 145**, the Supreme Court shall have power to review any judgment pronounced or order made by it.

1.14 DEFAMATION

- **Defamation is the act of communicating false statements** about a person that injure the reputation of that person.
- It has been put as **a reasonable restriction of the fundamental right of speech and expression under Article 19 (2)** of the constitution.
- **The Bharatiya Nyaya Sanhita, 2023** Section 356 deals with Defamation.
- **Earlier IPC Section 499 defined defamation** and Section 500 laid down the punishment for criminal defamation.

- **Section 356:** Whoever, by words either spoken or intended to be read, or by signs or by visible representations, makes or publishes in any manner, any imputation concerning any person intending to harm, or knowing or having reason to believe that such imputation will harm, the reputation of such person, is said, except in the cases hereinafter excepted, to defame that person.

Nature of Defamation:

- Defamation by nature is **both a civil and criminal offense.**
- In civil law, defamation is punishable under the Law of Torts by imposing punishment in the form of damages awarded to the aggrieved party.
- In Criminal law, **Defamation is a bailable, non-cognizable offense** and can be compounded.
- **Section 356 of the Bharatiya Nyaya Sanhita** provides punishment for it.

1.15 VVPAT

About VVPAT

- A VVPAT is intended as an **independent verification system** for voting machines designed to allow voters to verify that their vote was cast correctly, to detect possible election fraud or malfunction, and to provide a means to audit the stored electronic results.
- **First introduced** in India in the 2014 Lok Sabha elections.
- **Objective:** To **increase transparency in elections and eliminate doubts related to EVMs.**
- **EVM vs VVPAT:** EVMs and VVPATs are separate entities without being connected to any network.

How does VVPAT work?

- VVPAT system gives **instant feedback** to the voter showing that the vote polled has in fact been allotted against the candidate chosen.
- The printed paper (VVPAT) displays the name, serial number, and election symbol of the candidate for **7 seconds to the voter for verification.**
- After that it gets stored in a box used later for matching.

1.16 ZERO FIR

About Zero FIR

- **Zero FIR refers to an FIR that** can be registered irrespective of the area where the offense is committed.
- The police in any case can **no longer deny registering FIR on grounds of no jurisdiction.**
- The FIR is then later transferred to the concerned police station having the actual jurisdiction over the area where the offense is committed.
- **No regular FIR number is assigned in it.**

Legal Provisions

- It was introduced following the recommendation of the **Justice Verma Committee** formed after the brutal **Nirbhaya gang rape in Delhi in 2012.**
- **Sec 166A IPC** inserted to provide for punishment against public servants if failing to record information.

- It presents a legal obligation on the police to begin investigation without the excuse of absence of jurisdiction.
- FIR is not mentioned anywhere in the constitution or law.
- According to **Section 154 of the Code of Criminal Procedure (CrPC), 1973, the information given to a police officer and reduced to in writing is known as the first information.**
- It has not been defined under the CrPC but is understood in the context of the provisions under **Section 154.**

Judicial Interpretation

- **Lalita Kumari v. Government of U.P. (2014):** It is mandatory to register FIR under Section 154 if the complaint is related to a cognizable offense.
- **Kirti Vashisht vs State & Ors. on (2019): Delhi HC ordered** the Commissioner of Delhi Police to furnish an order to every police station in the National Capital Territory of Delhi to accept all and any information they receive which discloses the occurrence of a cognizable offense even if police station is incompetent on grounds of jurisdictional limitation and thereafter transfer the case to the competent police station.

1.17 FORM M

- **Form M is a form** related to special provisions of casting votes by the displaced people of the Kashmir valley during insurgency.
- By this the displaced people are allowed to vote for their **original constituency in Kashmir** from the inhabiting city by special polling stations.
- The Election Commission simplified the voting process for **Kashmiri migrants living in Jammu and Udhampur**, who will no longer have to fill out an additional 'Form M'.
- For Kashmiri migrants living outside of Jammu and Udhampur, the 'Form M' is still mandatory but would now require self-attestation rather than attestation by a gazette officer.
- The certified copy of the form is used for preparing **electoral rolls under sec 25 of the representation of people's act 1951.**

1.18 PREDICATE OFFENSE

- A **predicate offense is an illegal activity** that is the foundation or the first crime in the chain of another crime.
 - For example, **in money laundering, an illicit act of tax evasion** can be construed as a “predicate offense,” as the illegal proceeds generated from tax evasion would be laundered.
 - Predicate or scheduled offense is defined under **Section 2(y) of the the Prevention of Money-Laundering Act, 2002.**

Supreme Court Views

- **Vijay Madanlal Choudhary and Ors. v. Union of India and Ors.**
- The Supreme Court has **made it clear that while the offense of money laundering is an independent offense**, it is still dependent on the underlying predicate offense to the extent of the proceeds of crime having been derived or obtained **as a result of criminal activity relating** to or in relation to the scheduled offense.
- If the predicate offense fails, then the prosecution under the **Act cannot be continued by the Enforcement Directorate.**

The 21 Predicate Offenses of Money Laundering Cited by the FATF (Financial Action Task Force)

- Terrorism, including terrorist financing.
- Illicit arms trafficking
- Participation in an organized criminal group and racketeering
- Trafficking in human beings and migrant smuggling
- Sexual exploitation, including sexual exploitation of children.
- Tax crimes (related to direct taxes and indirect taxes)

illicit trafficking in stolen and other goods

- Corruption and bribery
- Forgery
- Counterfeiting currency
- Insider trading and market manipulation
- Environmental crime
- Murder, grievous bodily injury.
- Kidnapping, illegal restraint and hostage-taking
- Robbery or theft
- Smuggling; (including in relation to customs and excise duties and taxes)
- Illicit trafficking in narcotic drugs and psychotropic substances
- Extortion
- Fraud
- Piracy; and
- Counterfeiting and piracy of products.

2 INTERNATIONAL RELATIONS

2.1 IRAN-ISRAEL CONFLICT

Economists warn that Iran-Israel conflict can lead to higher gold and oil prices.

Iran-Israel Conflict: Historical Background

- **Pre 1979:**
 - Iran was the second Muslim-majority country after Turkey to establish **diplomatic ties** with Israel.
 - Iran and Israel shared **strategic interests**, including **military cooperation** against common adversaries such as Iraq.
 - They exchanged intelligence and cooperated on various projects, including agriculture and water management.
- **1979 Revolution:**
 - **The Iranian Revolution** transformed Iran into an Islamic Republic, leading to the overthrow of the Shah, who had close ties with Israel.
 - The regime's view of Israel changed, and it was seen as an **occupier of Palestinian land**.
- **Post-Revolution:**
 - **Hostility**- The new Iranian government adopted an **anti-Israel stance**, citing religious and ideological reasons.
 - Israel was viewed as a symbol of **Western imperialism** and oppression.
 - **Support for Enemies**- Iran's support for anti-Israel groups like **Hezbollah** in Lebanon and **Hamas** in the Palestinian territories intensified.

Dimensions of Iran-Israel Relations



- **Proxy War**- Till now Israel and Iran had avoided direct military confrontation and attempted to inflict damage on each other through proxies and limited strategic attacks.
- **Iran's Nuclear Programme**- Israel has covertly attacked Iranian nuclear facilities from time to time to prevent it from developing nuclear weapons.
 - In 2010, the US and Israel are believed to have developed **Stuxnet**, a malicious computer virus. Used to attack a uranium enrichment facility at Iran's Natanz nuclear site, it was the **"first publicly known cyberattack on industrial machinery"**.

Iran-Israel Conflict: Current Update

- **Airstrike on Iran's consular offices in Syria**- Recently an airstrike was launched on Iran's consular offices in Syria. The attack is being widely blamed on **Israel**.
- **Iran's Response**- Iran responded by launching its **first direct military assault on Israel**. More than 300 drones, cruise and ballistic missiles were launched, however Israel successfully intercepted most of them.

Iran-Israel Conflict: Global Implications

- **Economic Implications**-
 - **Increase in Crude oil prices** - A war in the Middle East will cause the crude oil prices to rise and **imports will become costlier**.
 - **Supply Disruptions**- The conflict can spill over to the Persian Gulf which is a major trade route for international trade.
 - **Equity Market Panic** - Significant escalation in tensions will lead to **panic selling and volatility in global equity markets**.
- **Geopolitical Implications**-
 - **Bipolar World**- This conflict can lead to creation of a bipolar world under Israel backed by the **US and G7 nations** and Iran backed by **Arab nations and Russia-China**.
- **Security Implications**- This conflict has the potential to throw the entire Middle East into turmoil leading to **full scale war** in the already volatile region.

India's Response

- **Peaceful Resolution**- India has called for peaceful resolution of the conflict through bilateral talks and diplomacy.
- **Non-Alignment**- India maintains its neutral status in the conflict. It has maintained good economic and diplomatic relations with both Iran and Israel.
- **Strong Naval Presence**- India has increased its naval presence in the Arabian Sea to counter the security risk posed by the conflict.

2.2 CHINA-TAIWAN CONFLICT AND INDIA'S INTEREST

Taiwan conducted air defense tests in response to increasing Chinese incursions.

News details

- Taiwan recently conducted a defense exercise using anti-aircraft artillery systems and US-made Patriot missiles.
- China responded by reiterating its resolution of creating a Unified China.

China-Taiwan Conflict: A Brief History

- **17th century** - Taiwan first came under the full control of the Chinese empire.
- **First Sino-Japanese War (1895)** - China lost and the island of Taiwan was handed over to Japan.
- **World War II (1945)** - Allied powers win, China regains control over Taiwan.
- **Chinese Civil War (1927-50)** - A civil war ensued between the Nationalist and Communist forces in China.
 - **People's Republic of China** (PRC- Mainland China)- established by Communist Party of China (CPC) after winning the civil war.
 - **Republic of China** (ROC- Taiwan) - established by the Nationalist Party leaders that fled to Taiwan after losing the civil war.
- **Conflicting claims**-
 - Beijing follows the One China Policy. PRC claims that ROC (Taiwan) is an integral part of China and refuses to acknowledge its sovereign existence.
 - ROC considers PRC to be its own territory and the sole representative of the people of China.



One China Policy

- It is the diplomatic acknowledgement of China's position that **there is only one Chinese government**.
- This means that countries **seeking diplomatic relations with the People's Republic of China (PRC, Mainland China) must break official relations with the Republic of China (ROC, Taiwan)** and vice versa.
- Today, only 12 countries (plus the Vatican) officially recognize Taiwan.
- However, various countries have maintained unofficial economic, trade and cultural relations with Taiwan.
- The US established formal diplomatic ties with Beijing in 1979 and **severed ties with Taiwan and closed its Taipei embassy**.
- India follows the One China Policy.

United States policy Towards Taiwan - "Strategic Ambiguity"

- **The US** is a key arms provider to the ROC.
- The US has also ensured Taiwan of assistance in case of military invasion by China on Taiwan.
- At the same time, the US also reiterates its commitment to One China Policy.
- **QUAD** is also seen as a direct counter to growing Chinese incursions in the South China Sea.

Global Significance of Taiwan

- **Strategic** - Taiwan sits in the so-called "**first island chain**", which includes a list of US-friendly territories that are crucial to Washington's foreign policy in the region.
 - Its location provides a **natural gateway to Southeast Asia** and the South China Sea, which are critical for global trade and security.
- **Economics** - Much of the world's electronics are powered by computer chips made in Taiwan.
 - A single Taiwanese company - the Taiwan Semiconductor Manufacturing Company - has over half of the world's market share in semiconductor manufacturing.

- **Military** - Control over Taiwan would enhance China's ability to project power into the western Pacific Ocean and potentially threaten key US allies such as Japan and South Korea.

India's Interests in Taiwan

- **Trade-** India and Taiwan have expanded trade seven-fold since 2001 and are exploring the possibilities of signing a Free Trade Agreement.
 - Recently Power chip Semiconductor Manufacturing Corporation, a Taiwanese firm, has partnered with the Tata Group to build India's first semiconductor fabrication plant.
 - A recent agreement has allowed Indian workers entry into Taiwan.
- **Diplomatic-** India has always respected the sovereignty of China by supporting the One China policy, however China has clearly disregarded India's sovereignty by laying claims over Indian territories like Arunachal Pradesh. The rising China- Taiwan conflict provides India an opportunity to **reconsider its stand on One China policy**.
- **Strategic-** Taiwan's location in the South China Sea and as an immediate neighbor of China make it a strong contender for **countering China's String of Pearls** strategy.
 - String of Pearls refers to the network of Chinese military and commercial bases in the Indian Ocean, established to surround India.

India's Concerns with the Conflict

- **Economy and Trade-** India has trade relations with both China and Taiwan. Any escalation in such conflict will not only hamper direct trade but can also disrupt India's trade routes.
- **Geographical Vicinity-** Given the proximity of the conflict zone any disruptive activities will have negative impacts on India like **increase in volume of illegal immigrants and refugees, harm to Indians** in Taiwan etc.
- **Strategic Challenge-** So far India has opted for a balanced approach. However, in future it may be forced to change its position due to international pressure or humanitarian concerns.

India's Role in solving the conflict.

- **Unique Position:** India being a member of both the **QUAD** and **SCO (Shanghai Cooperation Organization)** holds a unique position and can act as a facilitator to establish a dialogue between all the involved parties.
- **Non-Alignment:** India's association with the Non-Alignment Movement gives it credibility as a neutral third party which has always opted for a peaceful solution to international conflicts.

Way Forward

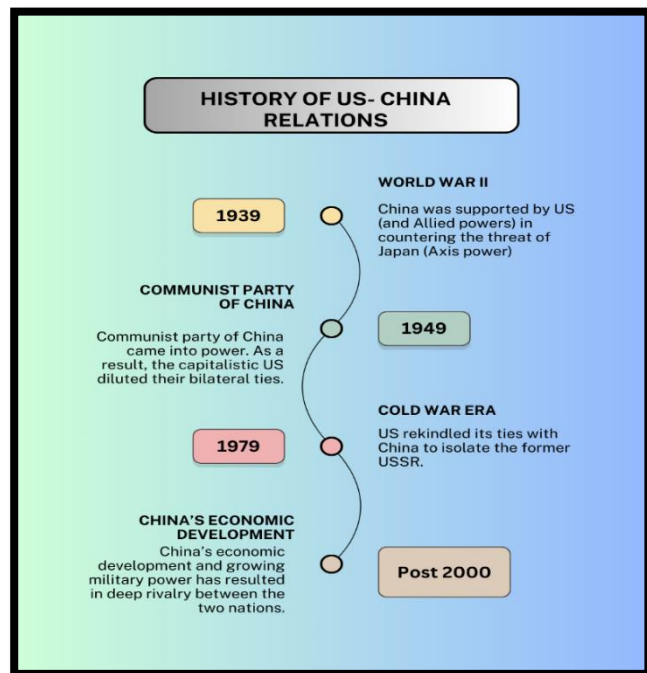
- **Peaceful Solution** - Modern day examples of Russia-Ukraine war and Israel-Palestine conflict have reaffirmed the futility of war and aggression and only a peaceful approach can lead to solution of such conflicts.
- **Safeguarding the Rights of the people:** Any solution should be centered around the people. Any solution that disregards the cultural identity or rights of the people is not acceptable.

2.3 US - CHINA RELATIONS

U.S. Treasury Secretary Janet Yellen in a recent visit to China said that future discussions between the U.S. and China will focus on Beijing's need to change its policy on industry and the economy.

US- China Relations: Issues involved

- **Taiwan:** US on one hand supports the **One China policy**, on the other hand it has given assurance to support Taiwan in case of an attack by China.
- **Chinese territorial claims:**
 - **South China Sea:** China lays claims to 80% of the South China Sea including the islands that lie in this region.
 - **US response:** US has opposed growing Chinese ambitions through various forums like the **QUAD** and **AUKUS** that are determined to create a safe and stable Indo-Pacific.
- **Trade restrictions:**
 - **Technology export ban:** The US banned the export of important technologies like semiconductor chip to China.
 - **Gallium and Germanium export ban:** China retaliated by banning export of raw materials needed to produce such chips.
- **Industrial overcapacity:** It refers to excess production of goods that undercuts global competitors on price.
 - **US Concerns-** Manufacturing overcapacity of China will flood the domestic markets of the US with cheap Chinese goods. It has asked China to review its industrial policy.



One China Policy

- It is the diplomatic acknowledgement of China's position **that there is only one Chinese government.**
- This means that countries **seeking diplomatic relations with the People's Republic of China (PRC, Mainland China) must break official relations with the Republic of China (ROC, Taiwan)** and vice versa.
- Today, only 12 countries (plus the Vatican) officially recognise Taiwan.
- However, various countries have maintained unofficial economic, trade and cultural relations with Taiwan.
- The US established formal diplomatic ties with Beijing in 1979 and severed ties with Taiwan and closed its Taipei embassy.
- **India** follows the One China Policy.

The QUAD- Quadrilateral Security Dialogue

- The Quad is a **diplomatic partnership** between **Australia, India, Japan, and the United States**
- **Objective-** To work for a free, open, prosperous, and inclusive Indo-Pacific region.
- **Formation-** Proposed by Shinzo Abe (Japan) in 2007
 - Formalised in 2017.

AUKUS

- AUKUS is a trilateral security pact between Australia, the United Kingdom, and the United States.
- **Objective-** Creating a secure Indo- Pacific.
- **Formation-** 2021

US- China Relations: Significance for India

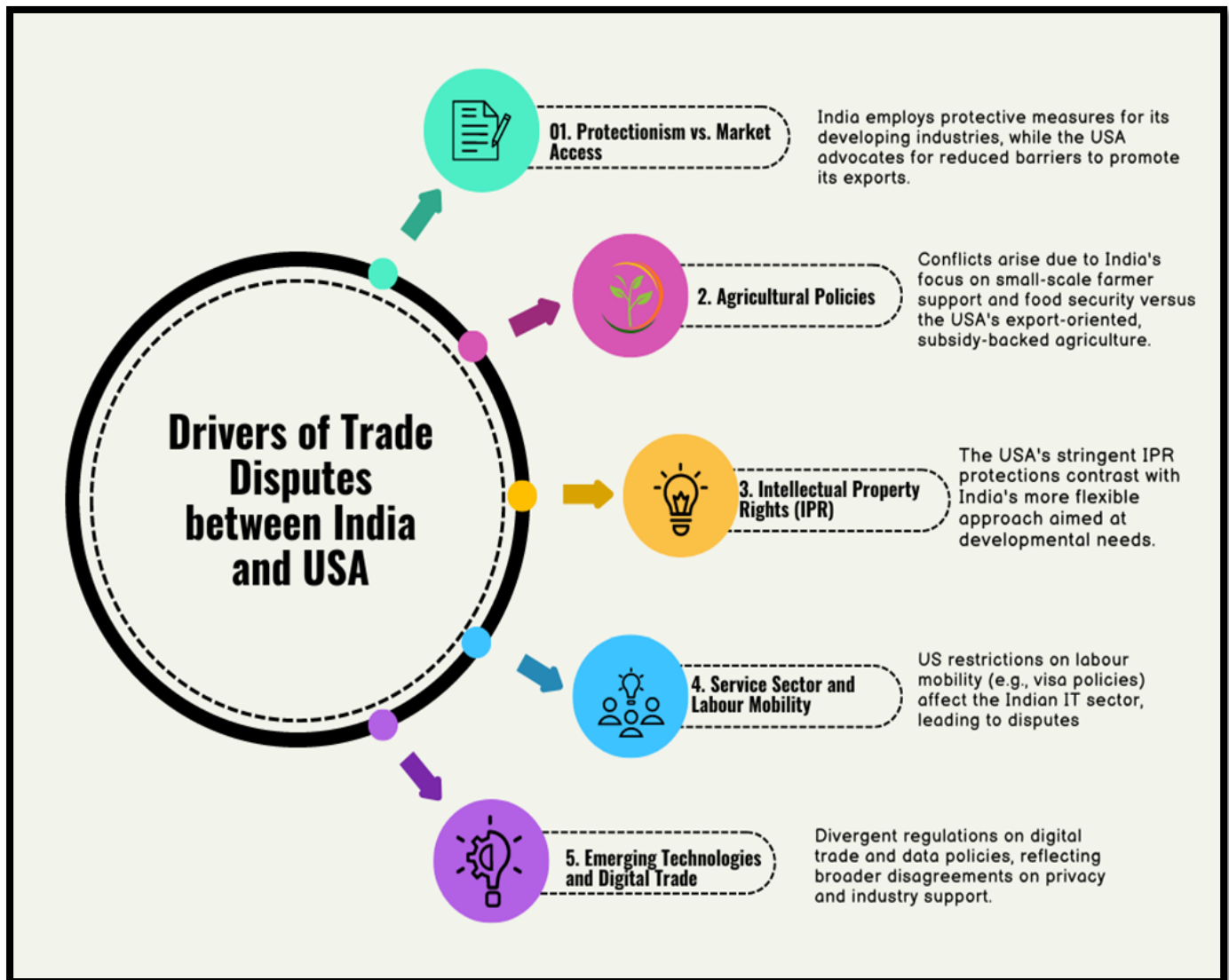
- **Economic opportunity-** The constrained US- China trade relations have presented a unique opportunity to the Indian manufacturing industry, to replace Chinese goods in the international market.
- **Stable South Asia-** US has acknowledged India as a prominent partner in creating a safe and secure Indo- Pacific, which fulfils India's objective of a stable South Asia.
- **Cheaper imports-** US sanctions and restrictive policies have forced China to look for other avenues like India. This has allowed India to import raw materials at favourable prices.

2.4 INDIA - USA WTO DISPUTES

India-US successfully resolved all seven pending WTO disputes bilaterally.

Recent resolution of the disputes

- Discussions on settling pending WTO disputes between India and the USA commenced during the January 2023 Trade Policy Forum (TPF) meeting.
 - The TPF aims to resolve trade and investment issues between both nations.
 - It has five focus groups -- Agriculture, Investment, Innovation and Creativity (intellectual property rights), Services and Tariff and Non-Tariff Barriers.



List of Disputes

Dispute	Key Issue	India's Stand	USA's Stand
US Import Duty on Steel and Aluminium	US imposed a 25% duty on steel and 10% on aluminium citing national security.	India appealed against the tariffs at the WTO, arguing they are protectionist and harm Indian exporters.	The USA defends the tariffs as necessary for national security and protecting domestic industries.
India's Retaliatory Tariffs	India imposed additional duties on 28 US products including chickpeas, lentils, and apples in retaliation.	India positions these tariffs as necessary countermeasures to US steel and aluminium tariffs.	The USA views these retaliatory tariffs as unjustified and appealed against them under WTO rules.
India's Renewable Energy Subsidies	Dispute over domestic content requirements and subsidies by eight US states in the energy sector.	India argues that the US subsidies are discriminatory and harm Indian producers by favouring local products.	The US maintains that its subsidies are lawful and essential for promoting local renewable energy sectors.
US Appeal against India's Export Subsidies	US challenged India's export subsidy programmes, claiming they distort international trade.	India defends its subsidies as vital for economic development and supporting various sectors including exports.	The US argues that these subsidies give Indian companies an unfair competitive advantage in the global market.
Countervailing Duties by India	India imposed countervailing duties on US imports of certain hot-rolled carbon steel flat products.	India justifies the duties as necessary to counteract unfair US subsidies that disadvantage Indian manufacturers.	The US objects to these duties as restrictive and against the principles of free trade.
Digital Services Tax	US investigation into India's imposition of taxes on digital services, which could affect US-based tech companies.	India contends that the tax is a fair way to ensure digital companies pay their fair share within its jurisdiction.	The US argues that such taxes target American companies and are inconsistent with international tax principles.
Resolution of Poultry Import Dispute	Originally on poultry import restrictions due to health concerns,	India agreed to cut import duties on some farm items as	The US pushed for the reduction of import duties and other barriers to ensure fair access for American poultry.

Dispute	Key Issue	India's Stand	USA's Stand
	leading to a broader discussion on import duties.	a part of settling this dispute.	

Effect of such Disputes on Bilateral Relations

- The effect of WTO disputes on bilateral relations between India and the USA spans multiple dimensions, impacting not just trade but also diplomatic and strategic interactions:
- **Trade relations:**
 - **Strained Negotiations:** Disputes can complicate ongoing trade negotiations, delaying or derailing potential trade agreements.
 - **Retaliatory Measures:** Each country may impose retaliatory tariffs or restrictions, impacting bilateral trade volume and economic ties.
 - **Sector-Specific Impacts:** Specific sectors (like agriculture or technology) may face heightened uncertainty and disrupted market access, affecting businesses and employment.
- **Diplomatic relations:**
 - **Political Tensions:** Frequent trade disputes can lead to broader political tensions, influencing other areas of diplomacy such as defence, technology sharing, and international cooperation.
 - **Influence in International Forums:** Disputes can affect how each country supports the other in international organizations beyond the WTO, such as the UN or regional forums.
- **Economic Policy:**
 - **Policy Revisions:** Disputes often force governments to revise their economic policies, which can have wider implications for their domestic economies and global economic positioning.
 - **Investment Flows:** Ongoing disputes may deter investors, concerned about stability and predictability, from investing in sectors prone to international litigation.
- **Public and cultural relations:**
 - **Public Perception:** Repeated disputes can shape public perception of the bilateral relationship, sometimes fostering a sense of competition rather than cooperation.
 - **Cultural Exchanges and Collaborations:** Strained relations might affect cultural, educational, and scientific collaborations, which are often tied to diplomatic warmth and mutual interest.
- **Strategic and security concerns:**
 - **Alliance Calculations:** Persistent trade disputes may influence broader strategic alliances and security cooperation's, especially in regions of mutual strategic interest like the Indo-Pacific.
 - **Technology Transfers:** Disagreements in trade areas can spill over into restrictions or hesitations in technology transfers, which are crucial for sectors like defence and telecommunications.

Way Forward

- **Enhanced dialogue and communication:**
 - **Regular Bilateral Talks:** Establish regular trade talks to address issues before they escalate to formal disputes. This could involve semi-annual summits specifically dedicated to trade relations.
 - **Technical Exchanges:** Facilitate exchanges between technical experts to understand and align on regulatory standards and practices, particularly in rapidly evolving sectors like digital technology and renewable energy.
- **Strengthening Dispute Resolution Mechanisms:**
 - **WTO Reforms:** Work collaboratively to strengthen the World Trade Organization's dispute resolution mechanism, making it more efficient and responsive to the needs of both developed and developing economies.

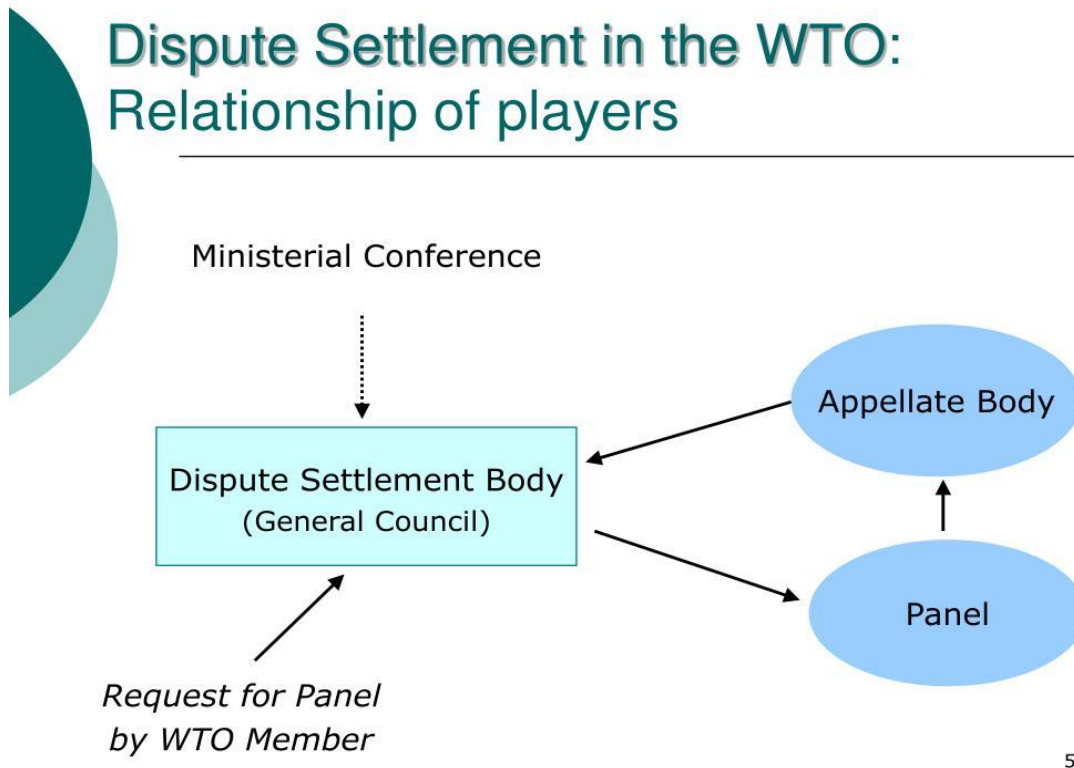
- **Alternative Dispute Resolution (ADR):** Develop bilateral ADR mechanisms that can operate more swiftly and flexibly than the WTO process, tailored to the specific trade relationship between India and the USA.
- **Policy Harmonization and Standardization:**
 - **Mutual Recognition Agreements (MRAs):** Negotiate MRAs that acknowledge the regulatory standards of each country, particularly in sectors like pharmaceuticals, medical devices, and electronics, to reduce non-tariff barriers.
 - **Alignment on Emerging Technologies:** Collaborate on creating aligned standards for emerging technologies, including digital services and artificial intelligence, to prevent disputes related to new and evolving sectors.
- **Trade Facilitation Initiatives:**
 - **Simplifying Customs Procedures:** Work on simplifying and harmonizing customs procedures to facilitate smoother trade flows, reducing the scope for disputes over goods classification and valuation.
 - **Enhancing Transparency:** Increase transparency in trade policies and measures, providing early notifications and consultations on changes that could affect bilateral trade.
- **Strategic Economic Partnerships:**
 - **Sector-Specific Partnerships:** Establish partnerships in key sectors with potential for mutual growth, such as energy, technology, and healthcare, which can include joint ventures and shared initiatives.
 - **Investment in Trade Infrastructure:** Jointly invest in trade-related infrastructure projects, such as ports and digital connectivity platforms, to enhance trade capacity and efficiency.
- **Public and Stakeholder Engagement:**
 - **Involving Industry and Civil Society:** Engage more actively with industry groups and civil societies in both countries to gather input on trade issues and potential impacts of policy changes.
 - **Educational and Cultural Exchanges:** Promote educational and cultural exchanges focused on trade and economic cooperation, fostering a deeper understanding and building trust between the stakeholders of both nations.
- **Focus on Long-Term Collaborative Goals:**
 - **Sustainable Development Goals (SDGs):** Align trade and investment initiatives with broader goals like sustainable development, climate change mitigation, and social inclusivity, ensuring that trade policies support these global objectives.
 - **Joint Research and Development (R&D):** Promote joint R&D projects in cutting-edge technology and innovation sectors, which can lead to shared intellectual property and reduce conflicts over technology transfer and IPR issues.

What is World Trade Organisation (WTO)?

- **About:**
 - WTO (1995) is an international organization that regulates and promotes global trade – emerged as the successor of GATT established in 1947.
 - It was established in 1995 and currently has 164 member countries (including the European Union).
 - It provides a forum for member countries to negotiate and enforce trade agreements, resolve disputes, and promote economic growth and development.
 - It is headquartered in Geneva, Switzerland.
- **Origin of WTO:**
 - The Agreement Establishing the WTO, commonly known as the “**Marrakesh Agreement**”, was signed in Marrakesh, Morocco in 1994.
 - **India was one of the founding members** of the 1947 GATT and its successor, the WTO.

- Main difference between GATT and WTO was that GATT mostly dealt with trade in goods, the WTO and its agreements could not only cover goods but also trade in services and other intellectual properties like trade creations, designs, and inventions.

- **Dispute Settlement System:**



2.5 G7 GROUP

- The G7 is an informal grouping of seven industrialized democracies consisting of **Canada, France, Germany, Italy, Japan, the United Kingdom, and the United States**.
- **Formerly called:** Library Group, Group of Six (G6), Group of Eight (G8)
- **Purpose:** The G7 was established to facilitate discussions and cooperation on issues of mutual interest, such as global economic governance, international security, and energy policy.
- **Secretariat:** The G7 operates without a formal charter or secretariat, and its presidency rotates among member countries each year.
- The origins of the G7 can be traced back to **the 1973 oil crisis**, which led to a global economic recession and highlighted the need for greater international economic cooperation.
- It was the informal gathering of finance ministers of **5 countries - the U.S.A, U.K, West Germany, Japan, and France formed in 1973**.
- **In 1975 First G6 Summit** was held in France, with the participation of the United States, Japan, Germany, France, and the United Kingdom and Italy. Further, in **1976 Canada joined** the G6, making it the G7.
- In **1994 Russia joined** the G7, creating the G8. However, in **2014** The G8 became the G7 again after **Russia was suspended** from the group following **its annexation of Crimea**.

2.6 THE UNITED NATIONS CONFERENCE ON TRADE AND DEVELOPMENT (UNCTAD)

- The United Nations Conference on Trade and Development (UNCTAD) is an intergovernmental organization within the United Nations Secretariat that promotes the interests of developing countries in world trade.
 - **Established** 1964 by the United Nations General Assembly (UNGA)
 - **Reporting** To UNGA and the United Nations Economic and Social Council (ECOSOC).
 - **Composition** 195 member states and works with nongovernmental.
 - **Headquarters** Geneva, Switzerland.

Objectives

- To formulate **policies relating to all aspects of development**, including trade, aid, transport, finance and technology.
- **To counter the inefficiencies of GATT** (now replaced by the **World Trade Organization**), the **International Monetary Fund (IMF)**, and the World Bank in not properly handling the particular problems of developing countries.
- It is a forum **where developing nations could discuss and address problems** relating to their economic development

Reports

- Commodities and Development Report
- Digital Economy Report
- Economic Development in Africa Report
- Handbook of Statistics
- Least Developed Countries Report
- Review of Maritime Transport
- Technology and Innovation Report
- Trade and Development Report
- World Investment Report
- Trade & Development Report
- World Development Report
- The Least Developed Countries Report
- Information and Economy Report
- Commodities and Development Report
- Technology and Innovation Report

2.7 UN RELIEF AND WORKS AGENCY FOR PALESTINE REFUGEES IN THE NEAR EAST (UNRWA)

- **Establishment:** UNRWA was established by **UN General Assembly Resolution 302 (IV)** of 8 December 1949 “to carry out direct relief and works programmes” for Palestine refugees.
 - The Agency began operations on 1 May 1950.
- **Objective:** UNRWA has a **humanitarian and development mandate** to aid and protection to **Palestine refugees** pending a just and lasting solution to their plight.
- **Mandate:** Derives its mandate from the UN General Assembly, the Agency’s parent organ, and it is only the General Assembly that can define the UNRWA mandate.
- **Field of operation:** It provides services in **five fields of operation, Jordan, Lebanon, Syria, West Bank, including East Jerusalem, and Gaza.**
 - The Agency does not have a mandate to engage in political negotiations or durable solutions.
- **Funded by:** (UNRWA) is funded almost entirely by voluntary contributions from UN.
- **HQ:** Originally headquartered in Beirut, Lebanon, but was moved to Vienna, Austria, in 1978.

3 ECONOMY

3.1 INDIA-PAKISTAN TRADE

Pakistan recently decided to lift its nearly two-year ban on imports of cotton and sugar from India.

Background

- Pakistan suspended bilateral trade with India in August 2019, after the Indian government abrogated **Article 370** of the Indian Constitution which granted special status to Jammu and Kashmir.
- However, an underlying reason for suspending trade was the **200 per cent tariff** imposed by India on Pakistani imports after India revoked Pakistan's **Most Favoured Nation (MFN) status**.
 - India took this step in the aftermath of the **Pulwama terrorist attack** of 2019.

Composition of India-Pakistan trade

- **Before the ban**
 - **Negative List-** Despite having **MFN status since 1996**, Pakistan maintained a Negative List of 1,209 products that were not allowed to be imported from India.
 - Only 138 products were allowed to be imported from India through the **Wagah-Attari border** land route.
 - **Trade Surplus-** Despite the negative list, India maintained a significant trade surplus over Pakistan.
 - **Items Exported to Pakistan-** **Cotton and organic chemicals** were major exports. Other commodities exported were plastic, tanning/dyeing extracts, nuclear reactors, boilers, machinery, and mechanical appliances etc.
 - **Items Imported from Pakistan-** Mineral fuels and oils, edible fruits and nuts, salt, sulphur, stone and plastering materials, ores, slag and ash and raw hides and leather.
- **After the ban-** Pakistan's imports of these products fell drastically while cotton imports stopped altogether.
 - The only increase was in pharmaceutical products, as Pakistan looked to ensure sufficient supplies of medicines during the Covid-19 pandemic.

Most Favoured Nation (MFN)

- It is the founding principle of the **World Trade Organization**.
- This clause requires a country **to extend the same trade terms to all trading partners**.
- In international trade, MFN treatment is synonymous with **non-discriminatory** trade policy.
- **Exceptions**
 - trade blocs, which are allowed to discriminate against imports from outside the bloc.
 - trade barriers in response to unfair competition
 - trade preferences extended to developing countries.
 - trade in services, on a limited basis.

Why is Pakistan Reconsidering Trade with India?

- **Political change-** There has been a change in Prime Minister following elections held earlier this year and a new government indicates the possibility of a new policy.
- **Poor economic condition-** Devastating floods in 2022, high inflation, and political instability alongside structural issues, have led to multiple crises related to meeting the food and energy needs of the population.
- **Low Foreign Exchange Reserves-** Importing goods from faraway countries further depletes Pakistan's low foreign exchange reserves.
 - Pakistan has already exhausted its loan options from the IMF or other friendly countries like Saudi Arabia and China.
- **Low yield and High cost of imports-** In case of cotton, Pakistan suffers from low domestic yield. The cost of imports from Brazil and the United States are too high compared to India.

Benefits to India

- **Employment generation-** Suspension of trade ties has negatively impacted traders and informal workers like truck drivers especially in the Wagah-Attari border region.
- **Boost to export-** India has always enjoyed a **trade surplus** with Pakistan. Resumption of trade ties will benefit the exporters of Punjab.
- **Cheaper imports-** India can restart importing cheap mineral oil and leather from Pakistan reducing our import bill.
- **Stable Pakistan-** Trade with India will bring economic stability to Pakistan which can hopefully translate into a stable Pakistan ensuring mitigation of terrorist activities.

Way Ahead

- **No compromise on terrorism-** The resumption of trade ties should come with the condition that Pakistan will make concrete efforts to end terrorist activities in its soil.
- **Reduce Chinese influence-** India should use this opportunity to repair its ties with Pakistan and reduce the already waning influence of China on Pakistan.
- **Diplomatic advantage-** India should use its economic advantage to get diplomatic gains on issues like **Kashmir**.
- **Solution of bilateral issues-** India has also been provided with the opportunity to solve long standing bilateral issues like the **Indus Water Treaty** that can have long lasting implications.

3.2 GEOGRAPHICAL INDICATION (GI) TAGS

Over 60 products from across India were awarded the Geographical Indication (GI) tag in March 2024.

About GI tags

- **A GI tag is a name or sign used** on certain products that correspond to a specific geographical location or origin.
- The GI tag ensures that only the authorized users or those residing in the geographical territory are allowed to use the popular product name.
- The tags are given under the **Geographical Indications of Goods (Registration and Protection) Act, 1999**.
- GI tag is recognized as a form of intellectual property rights under the **TRIPS Agreement of the World Trade Organization (WTO)**
- **Validity:** 10 years
- Administered by the **Department for Promotion of Industry and Internal Trade (DPIIT)** under the Ministry of Commerce and Industry.

Important stats regarding GI tags

- **Tamil Nadu** has the **highest number of GI tags (61)** compared to other states in India.
- **Uttar Pradesh** has the **second highest number of GI tags (56)**.
- As per 2020 data with the World Intellectual Property Organization, **Germany leads in GI registrations, with 15,566 registered products, followed by China (7,247)**.
- Globally, wines and spirits comprise 51.8 per cent of registered GIs, followed by agricultural products and foodstuffs at 29.9 per cent.

International Conventions on GI Tags

- **Paris Convention:** The **Paris Convention for the Protection of Industrial Property (1883)** provides a multilateral framework for the protection of industrial property rights, including geographical indications.
 - It establishes the **principles of national treatment and the right of priority**.

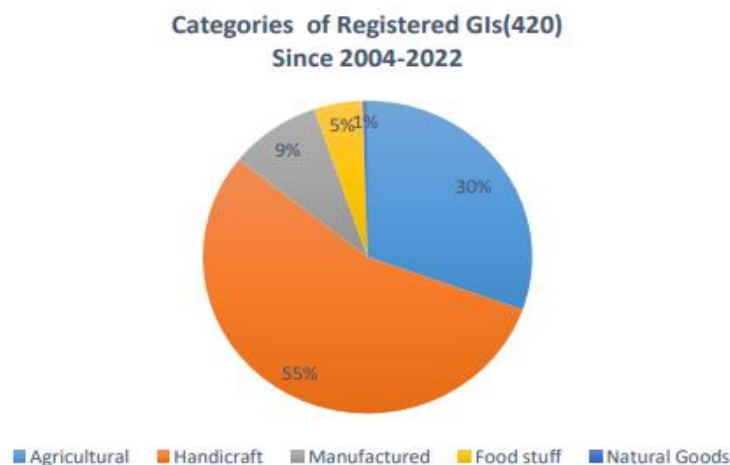
- **Lisbon System:** The **Lisbon Agreement for the Protection of Appellations of Origin** and their International Registration (1958) establishes an international registration system for appellations of origin, a specific type of GI.
 - It provides a centralised filing procedure and ensures protection for all contracting parties.
- **Madrid System:** The **Madrid System for the International Registration of Marks**, while primarily focused on trademarks, can also be utilised for the protection of geographical indications through the registration of collective or certification marks.

Advantages of GI tags

- **Legal protection:** It gives legal protection to the product made with the specific method or of a particular place as others cannot use the same name for marketing purposes.
- **Authorized use:** It prevents unauthorized use of GI tag products by others.
- **Quality products:** It ensures delivery of quality products to the consumers and is assured of the authenticity of the product.
- **Economic prosperity:** by enhancing demand of products in national and international markets.

Challenges Associated with GI Tags.

- **Disparity among states in registering GIs:** Some states have received multiple registered GIs whereas other states are far lagging with just one or two.
 - E.g. Tamil Nadu has 61 GI tags whereas Jharkhand and Tripura have only 1.
- **Disparity in the percentage of GI Categories:** Most GIs are registered for Handicraft and Agricultural goods. Whereas, the rest GIs are registered in other domains namely, foodstuff, manufactured and natural goods.



Source: National law university, Nagpur

- **Economical and Technical challenges:** Developing countries like India lack the financial and technical assistance to promote their product in the international market.
- **Social challenges:** like lack of awareness about GI Laws in India.
- **Conflicting claims:** There have been cases where two different states are fighting for the GI of the same product.
 - For example, **West Bengal and Odisha** for the GI tag of “Rasgulla” although awarded to both.

Way Forward

- **Expedited examination procedures:** To resolve the intricacies involved in the registration process, the introduction of expedited examination procedures should be employed.
- **Marketing assistance:** The Department of tourism can help in marketing GI products.
 - India’s embassies should also promote GI-based product.

- e-NAM must carry a separate tab for GI-based products to provide an easy interface to all buyers and sellers.
- **Subsidies on GI products:** Producers and artisans should receive export subsidies from the government so they may continue to compete on the international market.
- **Remote accessibility:** To counter the challenge on geographical grounds, the government should establish branches at few places for remote accessibility.
- **Testing Labs:** Establishment of testing laboratories at different markets can ensure that consumers have faith in the quality of these products.

3.3 INHERITANCE TAX

Chairman of Indian Overseas Congress, Sam Pitroda, has backed the party's stand on redistribution of wealth and advocated an inheritance tax law in the country.

About inheritance tax

- An inheritance tax, also referred to as **estate tax**, is a levy imposed on the entirety of a **deceased individual's financial assets and possessions** prior to their distribution among their rightful heirs.
- This tax is commonly assessed according to the total value of the deceased's estate, factoring in any applicable exemptions or deductions.
- **Objective** - Generating **government revenue** and facilitating **wealth redistribution**.

History of Inheritance Tax in India

- **Estate Duty Act 1953** - The inheritance tax was introduced in 1953 under **the Estate Duty Act** in a bid to reduce economic disparity.
 - However, the tax was **unpopular** among the people.
 - Estate duty rates were as high as **85 per cent** on properties whose value exceeded **Rs 20 lakh**.
 - Multiple factors including fierce criticism eventually led to the abolition of tax in 1985 by then **finance minister VP Singh**.

Present Situation

- In India, there is currently **no tax on inheritance**.
- **Income tax implications on inheritance** - If the inherited properties generate income, such as rent or interest then the new owner is obligated to report this income and pay the relevant taxes.
- **Taxation on capital gains from sale of inherited property** - Capital gains from the **sale of inherited property** are taxed based on the duration of ownership.

Inheritance tax across the world

- Japan - 55 percent
- South Korea - 50 percent
- France - 45 percent
- United Kingdom - 40 percent
- United States - 40 percent

Need of Inheritance Tax in India

- **Reduction of Inequality:** Inheritance tax aids in diminishing inequality by redistributing wealth.
- **Call for Direct Taxes:** India's heavy reliance on indirect taxes accentuates the burden on **poor sections**, necessitating a shift towards more direct forms of taxation.
- **Public Welfare Funding:** Implementing inheritance tax can generate substantial revenue for the government, which can then be allocated to finance public welfare initiatives.
- **International Precedents:** Several countries, including England, France, Germany, the USA, and Greece, have imposed inheritance tax, reflecting global practices in taxing inherited wealth.

Challenges to Introduction of Inheritance Tax in India

- **Tax avoidance:** Wealthy individuals may employ various legal and accounting strategies to minimize their tax liabilities, including shifting assets to tax havens or creating complex trust structures.

- **Administrative complexity:** Introducing an inheritance tax would add another layer of complexity to the tax code, potentially leading to administrative difficulties and increased compliance costs.
- **Impact on small businesses and farmers:** Inheritance tax could have adverse effects on small businesses and family-owned enterprises, particularly in sectors like agriculture, where land is a primary asset.
- **Alternative Measures:** Critics argue that there are alternative ways to address wealth inequality and raise revenue, such as implementing more effective **property taxes** or increasing the progressivity of income taxes.
- **Economic impact:** Some fear that an inheritance tax could **discourage savings and investment**, as individuals may be disincentivized to accumulate wealth if they anticipate a significant portion of it being taxed upon inheritance. This could potentially dampen economic growth and investment.

Conclusion

- Although inheritance tax may have its proponents as a means of promoting wealth redistribution and funding public services, its implementation in India would likely face significant challenges and require careful consideration of its potential consequences.

3.4 ASIAN DEVELOPMENT OUTLOOK REPORT

Asian Development Bank (ADB) pegged India's GDP growth at 7% in 2024-25 and 7.2% in 2025-26 in the Asia Development Outlook report 2024.

About Asian Development Outlook Report

- It is an annual publication produced by the Asian Development Bank (ADB).
- It offers economic analysis and forecasts, as well as an examination of social development issues, for most countries in Asia.

Key Findings

- India's growth in the country's Gross Domestic Product (GDP) is forecast to slow from 7.6% in 2023-24 to 7% in 2024-25 before improving to 7.2% in 2025-26.
- The expected retail inflation will ease to 4.6% this year and 4.5% in 2025-26.
- India's 'persistent' food inflation is expected to drop to 5.7% as farm output returns to trend this year.
- The growth is forecast to remain strong as rising consumption complements continued investment growth.
- India accounts for 80% of South Asia's GDP, it is still the fastest-growing sub-region with improving domestic demand.
- South Asia is expected to grow 6.3% this year and 6.6% in 2025.

Areas of Concern

- **Global supply chain shock:** The projections may face a downside risk from global shocks such as a spike in crude oil and energy prices leading to higher global inflation and tighter financial conditions.
- **Weather hazards:** On the domestic side, there is a risk of underperformance in agriculture due to weather shocks that can affect demand and inflation.

Asian Development Bank (ADB)

- A regional development bank that was **established in 1966**.
- It is headquartered in **Manila, Philippines**.
- Currently, it has 68 members.
- **India is a founding member** of the ADB.
- ADB holds the **status of an official United Nations Observer**.
- Shareholding:
 - Japan 15.571%

- The United States 15.571%
- China 6.429%
- India 6.317%
- Australia 5.773%
- The highest policy-making body of the bank is the **Board of Governors**, composed of one representative from each member state.
- It was **modelled closely on the World Bank and has a similar weighted voting system**, where votes are distributed in proportion with members' capital subscriptions.
- Voting power share:
 - Japan 12.751
 - United States 12.751
 - China 5.437
 - India 5.347
 - Australia 4.913

3.5 INDEX OF INDUSTRIAL PRODUCTION

As per the data provided by the Ministry of Statistics and Programme Implementation (MoSPI), the Index of Industrial Production (IIP) in India rose 5.7 per cent in February as against 3.8 per cent in January.

About Index of Industrial Production

- It is an index which shows the growth rates in different industry groups of the economy in a given time period.
- Published by- Central Statistical Organisation (CSO) under the **Ministry of Statistics and Programme Implementation (MoSPI)**.
- **Frequency- Monthly.**
- **Industry groups -**
 - **Broad sectors-** Mining, Manufacturing and Electricity
 - **Use-based sectors-** Basic Goods, Capital Goods and Intermediate Goods.
- **Base Year- 2011-12**

Core Sectors

- **There are 8 core industries-** Electricity, Steel, Refinery products, Crude oils, Coal, Cement, Natural gas and Fertilizers.
- **Index of Industrial Production tracks mining, manufacturing, and electricity production out of the core sectors.**

3.6 NATIONAL INVESTMENT AND INFRASTRUCTURE FUND LTD. (NIIF)

NIIF has invested \$200 million in iBUS Network and Infrastructure Pvt Ltd., a connectivity technology firm, to support the growth of India's digital infrastructure.

About National Investment and Infrastructure Fund

- It is India's first ever sovereign wealth fund created for the purpose of infrastructure specific investment.
- **Establishment:** February 2015.
- **As Collaborative Investment Platform:** NIIF is a collaborative investment platform for international and Indian investors with a mandate to invest equity capital in domestic infrastructure.
- **Registration with SEBI:** It was registered with SEBI as Category II Alternative Investment Fund.
- **NIIF is 49% owned by the Indian government** and has more than \$4.9 billion in assets under management, making it the country's biggest infrastructure fund.

- **Investment categories:** NIF invests across asset classes such as infrastructure, private equity, and other diversified sectors in India, with the objective of generating attractive risk-adjusted returns for its investors.
- **Objective:** The objective behind creating this fund was to **maximize economic impact mainly through infrastructure investment** in commercially viable projects, both Greenfield and Brownfield.

3.7 ANTI DUMPING DUTY

DGTR recently recommended anti-dumping duty on sodium cyanide imports.

Anti-Dumping Duty

- **Dumping-** It occurs when a country or company exports a product at a **price that is lower** in the **foreign importing market** than the price in the **exporter's domestic market**.
- **Anti-Dumping Duty-** An anti-dumping duty is a **protectionist tariff** that a domestic government imposes on foreign imports that it believes are priced below fair market value.
- **Objective-** To rectify the situation arising out of the dumping of goods and its **trade distortive effect**.
- **Impacts:**
 - **Protection of Local Industries-** Anti dumping duties protect local industries and jobs from trade distorting effects of dumping.
 - **Higher Prices-** These tariffs can also lead to higher prices for domestic consumers.
 - **Reduction in Competitiveness-** In the long-term, anti-dumping duties can reduce the international competition of domestic companies producing similar goods.
- **World Trade Organisation on Anti-Dumping-**
 - **Allowing Anti-Dumping Duty-** WTO **Anti-Dumping Agreement** allows governments to act against dumping where there is **genuine ("material") injury** to the competing domestic industry.

Directorate General of Trade Remedies (DGTR)

- The DGTR is a **quasi-judicial body** that independently undertakes investigations before making its recommendations to the Central Government.
- It is the **single national authority for administering all trade remedial measures** including **anti-dumping, countervailing duties**, and safeguard measures.
- It is an attached office of the Department of Commerce, **Ministry of Commerce & Industry**.

Countervailing Duty (CVD)

- A countervailing duty (CVD) is a tariff or import tax imposed by a government on imported goods **to counteract the subsidies** provided by the exporting country to its producers.
- **Objective-** It is intended to level the playing field for domestic producers who may be adversely affected by unfair competition resulting from subsidized imports.

Sodium Cyanide

- Sodium cyanide is a **highly toxic**, white, crystalline compound.
- It is commonly used in various **industrial processes**, including gold mining, electroplating, and chemical manufacturing.
- In **gold mining**, sodium cyanide is particularly significant, as it helps dissolve and separate gold from ore.

3.8 CDP-SURAKSHA

Recently, a new digital platform CDP-SURAKSHA was launched.

- Aim - to disburse subsidies to horticulture farmers under the Cluster Development Programme (CDP) utilizing the e-RUPI voucher by NPCI.
- SURAKSHA stands for "System for Unified Resource Allocation, Knowledge, and Secure Horticulture Assistance."

- Database Integration: CDP-SURAKSHA has database integration with PM-KISAN, cloud-based server space from NIC, UIDAI validation, eRUPI integration, local government directory (LGD), content management system, geo-tagging, and geo-fencing.
- The move seeks to push the growth of India's horticulture sector, which contributes nearly one-third to the agriculture gross value addition (GVA).

How is the new system different from the old one?

Aspect	Old System	CDP-SURAKSHA Platform
• Purchase of Planting Materials	• Farmers buy materials on their own.	• Farmers get upfront subsidies at purchase.
• Subsidy Distribution	• Subsidies released after purchase.	• Subsidies applied directly at the point of sale.
• Payment	• Farmers approach government officials for the payment of subsidies	• Payment after farmers verify delivery.

e-RUPI

- e-RUPI voucher is one-time payment mechanism from the NPCI used for the specific purposes that can be redeemed without a card, digital payments app or internet banking access, at the merchants accepting e-RUPI.

Cluster Development Program (CDP)

- The CDP is a component of the central sector scheme of National Horticulture Board.
- Aim: Leveraging the geographical specialization of horticulture clusters and promoting integrated and market-led development of pre-production, production, post-harvest, logistics, branding, and marketing activities.
- Financial Assistance: According to the size of the cluster —
 - up to Rs 25 crore for mini cluster (size up to 5,000 ha),
 - up to Rs 50 crore for medium clusters (5,000 to 15,000 ha),
 - up to Rs 100 crore for mega clusters (more than 15,000 ha).
- **Distribution of Clusters:** So far, **55 horticulture clusters** have identified, out of which 12 have been selected for the pilot with four more clusters in West Bengal, Kerala, and Tamil Nadu & Gujarat.
- **Coverage:** According to the government, about 9 lakh hectares of area will be covered through all 55 clusters, covering 10 lakh farmers.

3.9 SOVEREIGN GREEN BOND

The Reserve Bank of India (RBI) green lighted investments in the country's Sovereign Green Bonds (SGrBs) by Foreign Institutional Investors (FIIS).

- SGrBs are a kind of government debt that specifically funds projects attempting to accelerate transition to a low carbon economy.
- Proceeds raised from SGrBs to finance or refinance expenditure (in part or whole) for various green projects, including renewable energy, clean transportation, energy efficiency, climate change adaptation etc.

SGrBs in India

- **In the 2022-23 Union Budget**, Finance Minister announced the government's decision to issue SGrBs to accelerate funding government projects.
- Finance Ministry released **India's first SGrB Framework in November, 2022** detailing the kind of projects that would receive funding through this class of G-Secs.
 - **These included** - investments in solar/wind/biomass/hydropower energy projects (under 25 MW) that integrate energy generation and storage; supporting public lighting improvements (e.g. replacement with

LEDs); supporting construction of new low-carbon buildings as well as energy-efficiency retrofits to existing buildings; projects to reduce electricity grid losses, etc.

- The RBI had issued SGrBs worth ₹16,000 crore in two tranches in January and February last year with maturities in 2028 and 2033.
- Indian SGrBs are **classified** under the **Statutory Liquidity Ratio (SLR)**, a liquidity rate fixed by the RBI that financial institutions must maintain with themselves before they lend to their customers.

Related Terms

- **Greenium:** SGrBs yield lower interest than conventional G-Secs, and the amount foregone by a bank by investing in them is called a greenium.
- **Green taxonomy** - A way to assess emissions credentials to ensure the project is **not an attempt at greenwashing**.
- **Greenwashing** - It is the process of conveying a false impression or misleading information about how a company's products are environmentally sound.

3.10 SCORES 2.0

SEBI recently launched the new version of the SEBI Complaint Redress System (SCORES 2.0).

About SCORES

- SCORES is a web-based **centralized grievance redress system of Securities and Exchange Board of India (SEBI) launched in 2011**.
- **SCORES enables investors** to lodge and follow up on their complaints and track the status of redressal of such complaints online from anywhere.
- **This enables market intermediaries** and listed companies to receive complaints online from investors, redress such complaints, and report redressal online.
- **An investor who is not familiar with SCORES or does not have access** to SCORES can lodge complaints in physical form at any of the offices of SEBI.

Types of complaints that can be registered in the SCORE portal.

- Complaints can be lodged on SCORES for any issues covered under the SEBI Act, Securities Contract Regulation Act, Depositories Act, and rules and regulations and provisions of the Companies Act, 2013.
- Entities against which complaints are handled by SEBI include:
 - Listed companies / registrar & transfer agents.
 - Brokers / stock exchanges
 - Depository participants / depository
 - Mutual funds
 - Portfolio Managers

Key Features of SCORES 2.0

- It will feature reduced and uniform timelines for redressal of investor complaints, which is **21 calendar days** from the date of receipt of the complaint.
- An **auto-routing of complaints** to the concerned regulated entity will be facilitated to eliminate time lapses, if any, in the flow of complaints.
- Designated bodies will have to monitor the **timely redressal of investors' complaints**.
- There will be two levels of review.
- The first review will be by the **'designated body'** if the investor is dissatisfied with the resolution provided by the concerned regulated entity. The second review will be by SEBI if the investor is still dissatisfied after the first review.

SEBI

- It is the **regulatory body** for securities and commodity markets in India.
- It is under the administrative domain of the **Ministry of Finance**.
- It was established on **12th April 1988** but was made a statutory body under the **SEBI Act, 1992**.
- Headquartered in **Mumbai, Maharashtra**
- **Functions**
 - To protect the interests of investors in securities.
 - To regulate the securities market and for matters connected therewith or incidental thereto.
- **Members**
 - **A Chairman.**
 - Two members from the **Finance Ministry**.
 - **One member from the Reserve Bank of India.**
 - Five other members of whom at least three shall be the whole-time members, to be appointed by the Central Government.

3.11 LIQUIDITY ADJUSTMENT FACILITY AND MONETARY POLICY COMMITTEE

The Monetary Policy Committee decided to keep the policy repo rate under the liquidity adjustment facility (LAF) unchanged at 6.50% on April 5, 2024.

Liquidity Adjustment Facility

- It is a monetary policy instrument used by the **RBI to inject or absorb liquidity in the economy**.
- It was introduced on **the recommendation of the Narasimham Committee** on Banking Sector Reforms of 1998.
- **In 1999 RBI introduced interim LAF and in 2000 RBI introduced full-fledged LAF.**
- LAF has two components -
 - Repo (repurchase agreement)
 - Reverse repo.
- **Objectives of LAF:**
 - Maintaining price stability
 - Regulating short-term interest rates
 - Controlling the money supply.
- **A higher rate of LAF will suck out liquidity** from the market and a low rate will inject liquidity.
- **Minimum bid under the LAF is Rs.5 crore.**

- **Repo Operation:** In a repo operation, banks borrow money from the central bank by pledging government securities as collateral.
- **Reverse Repo Operation:** In a reverse repo operation, the central bank borrows money from banks by offering them government securities as collateral.

The Monetary Policy Committee (MPC)

- The MPC is a **statutory body** under Section 45ZB of the Reserve Bank of India (RBI) Act, 1934.
- It was constituted by an amendment of the RBI Act by the Finance Act, 2016.
- **The Urjit Patel Committee** first suggested forming the Monetary Policy Committee.
- It is responsible **for fixing the policy rate in India**.
- The committee has six members -
 - The RBI Governor is the "ex officio" chairperson of the committee.
 - Two officials of the RBI and
 - Three external members appointed by the Government.
- The Quorum of the committee is 4 members.
- MPC members are appointed for a term of four years without being eligible for reappointment.
- The mandate of the committee is to maintain the **consumer price inflation (CPI) at 4% with a room for (+/- 2%)**

- The committee is answerable to the government if the inflation targets are not met for three consecutive quarters.
- Governor **enjoys the casting vote** (in case of the governor's vote will be taken as the decision of the committee)
- The MPC is required to meet at least four times in a year, but it meets every two months.
- It calls for a Monetary Policy Report to be presented by the RBI.
- The decision of the Monetary Policy Committee shall be binding on the Bank.

3.12 HOUSEHOLD DEBT

India's household debt levels are reckoned to have touched an all-time high of 40% of the GDP by December 2023.

About Household Debt

- It is defined as the **net liabilities of households including non-profit institutions serving households**, requiring payments of interest or principal by households to the creditors at a fixed date in the future.
 - In India, it comprises consumer durables, house loans and personal loans for education, medical etc.

Current scenario of household debt in India

- Increasing Debt-to-Income Ratio: India's household debt levels are reckoned to be 40% of Gross Domestic Product (GDP) as of December 2023.
- The Banking system accounts for more than four-fifths of household debt in India.
- Housing finance companies (HFCs) and other non-banking finance companies (NBFCs) account for approximately 10 % each.
- DSR Calculation: Based on an effective interest rate of 10% and a residual maturity of 5.3 years in FY23, calculations indicate that Indian households had a DSR of approximately 12%.

Debt Service Ratio (DSR)

- **Debt Service Ratio**, also known as DSR or referred to as debt ratio, is the ratio of a person's **total debt to their household income**. It measures the ability of a person to settle their debt obligations.
- DSR serves as a critical metric for evaluating the **sustainability of debt, gauging the proportion of income allocated to servicing debt-related obligations**.

Impacts of household debt

- **Short term impact-** In the short term, household debts can increase **consumption and aggregate demand** in an economy leading to a boost in economic development and employment opportunities.
- **Long term impact-** In long term household debts generally can have **negative effects** on the economy as it may cause households to face difficulties in debt repayments due to the condition of rise in interest rates or a fall in the income. This will create a pressure on the balance sheet of banks due to increase in **NPAs (Non-performing Assets)**.

3.13 GOLD ETF

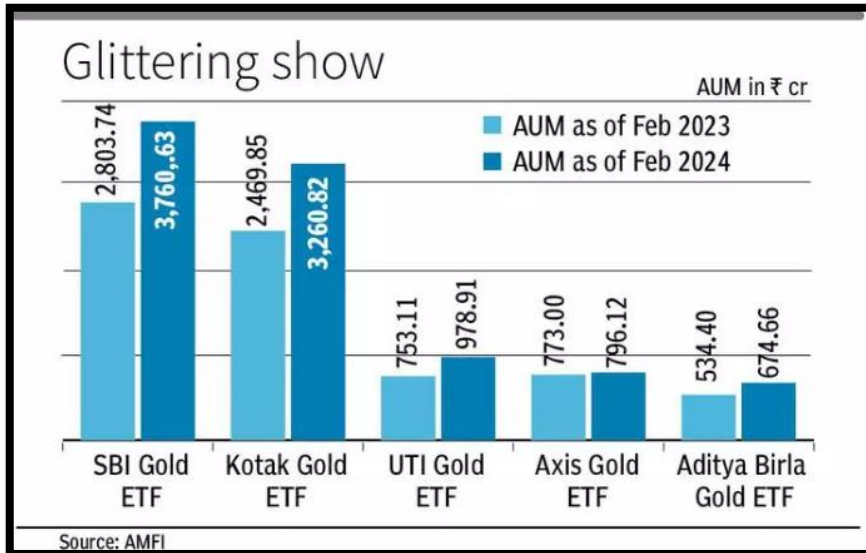
The asset under management of gold ETF went up by 33 per cent to ₹28,530 cr in February 2024 against ₹21,400 cr in February 2023.

About Gold ETF

- A Gold ETF is an exchange-traded fund (ETF) that **aims to track the domestic physical gold price**.
- Gold ETFs are **units representing physical gold which may be in paper or dematerialized form**.
- One Gold ETF unit is equal to 1 gram of gold and is backed by physical gold of very high purity.
- Gold ETFs combine the flexibility of stock investment and the simplicity of gold investments.
- Gold ETFs can be sold at the stock exchange through the broker using a demat account and trading account.

Types of Gold ETFs

- **Physical Gold ETFs:** Physical Gold ETFs hold actual gold bullion as their underlying asset. The ETF is backed by physical gold held in a vault, and the shares of the ETF represent a portion of the gold held.
- **Synthetic Gold ETFs:** Synthetic Gold ETFs invest in gold derivatives, such as futures and options, instead of physical gold bullion. The ETF tracks the price of gold through these derivatives.



Purity and Price

- Gold ETFs are represented by 99.5% pure physical gold bars.
- Gold ETF prices are listed on the website of BSE/NSE and can be bought or sold anytime through a stockbroker.
- Unlike gold jewelry, gold ETF can be bought and sold at the same price Pan-India.

Exchange-traded fund (ETF)

- An exchange-traded fund (ETF) is a basket of securities that trades on an exchange just like a stock does.
- It is a type of **pooled investment security that can be bought and sold much like an individual stock**.
- An ETF can be structured to track anything from the price of an individual commodity to a large and diverse collection of securities.
- The main difference between an ETF and a mutual fund is that though a mutual fund is also a pooled investment, it trades only once a day after market closes.
- ETFs can even be designed to track specific investment strategies.
- **Nifty Bees was the first exchange traded fund (ETF)** launched in India and it tracks the **Nifty 50 Index**.
- It was introduced in India by Benchmark Asset Management in December 2001.
- There are mainly five types of ETFs-
 - Equity ETF
 - Bonds ETF
 - Commodity ETF
 - International ETF and
 - Sectoral/thematic ETF.

3.14 JOBS FOR RESILIENCE REPORT BY WORLD BANK

The World Bank (WB) in its 'South Asia Regional Update: Jobs for Resilience report' warned that the South Asia region including India was not making use of its demographic dividend.

Key Highlights of the Jobs for Resilience Report

- **Output growth in South Asia**, projected at 6.0-6.1% in 2024–25, continues to exceed that in other emerging markets and developing economies (EMDE).
- Private investment **growth has slowed sharply** from pre pandemic averages in all South Asian countries.
- South Asia is highly vulnerable to climate change.

India Specific observations in report:

- India's employment growth was **"well below" the average** growth in its working age population for the 2000-23 period.
 - Between 2000-2022, **India's employment ratio** fell by more than in any other South Asian country except Nepal.
 - The weak employment trends in the region were **concentrated in non-agricultural** sectors.
- India's economy was expected to post a "robust growth" of 7.5% in FY23/24.
 - Report projected a **strong 6.0-6.1% growth for 2024-25** for South Asia region.
- **Missed Opportunity:** South Asia is failing right now to fully capitalize on its demographic dividend.
- **Recommendations:** Supporting the participation of women in the economy, increasing access to finance, increasing openness to trade, easing financial sector regulations, and improving education.

3.15 PRIORITY WATCH LIST

The US has once again included India in the 'priority watch list' of countries, along with China, Russia, and Venezuela etc. for alleged problems related to IP protection and enforcement.

What is the US's Priority Watch list?

- The US Trade Representative (USTR) places countries with deficient intellectual property (IP) protection and enforcement on a "Priority Watch List."
- It's a warning sign that could lead to trade sanctions.

Why is India in the Watch List?

- The USTR cited concerns like-
 - Inadequate IP enforcement
 - High rates of online piracy
 - Extensive trademark opposition backlog
 - Insufficient legal means to protect trade secrets.
 - India still needs to fully implement the WIPO Internet Treaties

Consequences

- No action is threatened by the US against countries on the 'priority watch list', but if a country slips further and is categorized as a 'priority country', Washington may impose 'retaliatory' measures like
 - **Higher tariffs** or import restrictions.
- It also tarnishes India's image as an **innovation hub**.

India's Response

- India has always maintained that its intellectual property laws were in strict adherence to the WTO's Trade Related Intellectual Property Rights (TRIPS) Agreement.
- Moreover, India has finalized the **Patents (Amendments) Rules, 2024** that will further improve India's IP protection regime.

3.16 FOREIGN DIRECT INVESTMENT (FDI) IN INDIA

The Finance Ministry has notified amended rules under the Foreign Exchange Management Act to operationalize its earlier decision to allow up to 100 per cent foreign direct investment (FDI) for the space sector.

About Foreign Direct Investment

- Foreign direct investment (FDI) is when a company takes controlling ownership in a business entity in another country.
- With FDI, foreign companies are directly involved with day-to-day operations in other countries.
 - This means they aren't just bringing money with them, but also **knowledge, skills and technology**.

- **FPI vs FDI** - In foreign portfolio investments passively hold securities from a foreign country while in case of FDI investors are actively involved with the operation of the company.

FDI in India

- India initiated economic liberalization in response to the **1991 crisis**, and since then, Foreign Direct Investment (FDI) has been steadily increasing in the country.
- Today, India is among the top 100 countries in the Ease of Doing Business (EoDB) rankings and holds the **global top position in Greenfield FDI** ranking.

Routes through which India gets FDI.

- **Automatic route** - The non-resident or Indian company does not require prior nod of the RBI or government of India for FDI.
- **Government route** - The government's approval is mandatory in this route.
 - The company will have to file an application through **the Foreign Investment Facilitation Portal**, which facilitates single-window clearance.
 - The application is then forwarded to the respective ministry, which will approve/reject the application in consultation with the **Department for Promotion of Industry and Internal Trade (DPIIT)**, Ministry of Commerce.

Sectors which come under the 100% Automatic Route

- Agriculture & Animal Husbandry
- Food Processing
- Healthcare
- Petroleum & Natural gas
- Renewable Energy

Sectors which come under Government Route

- Banking & Public sector: 20%
- Food Products Retail Trading: 100%
- Satellite (Establishment and operations): 100%
- Mining & Minerals separations of titanium bearing minerals and ores: 100%.

Sectors where FDI is prohibited.

- Atomic Energy Generation
- Betting and gambling
- Investment in Chit funds
- NIDHI company

- Cigars, Cigarettes, or any related to the tobacco industry.

Trends in FDI

- India received 67% of its total FDI in the past 9 years itself compared to the last 23 years.
- **Sectors receiving highest FDI** -
 - Services Sector - 16%
 - Computer Software & Hardware - 15%
 - Trading - 6%
 - Telecommunications - 6%
 - Automobile Industry - 5%
- **Top Sources of FDI in India** -
 - Mauritius - 26%
 - Singapore - 23%
 - USA - 9%
 - Netherland - 7%
 - Japan - 6%

3.17 INDIA - MAURITIUS TAX TREATY PROTOCOL

The Mauritius Revenue Authority (MRA) has reported that the protocol amending the Mauritius-India Double Taxation Avoidance Agreement (DTAA) to comply with the base erosion and profit shifting minimum standards, is yet to be ratified.

Double taxation Avoidance Agreement between India and Mauritius

- The Government of India and the Government of Mauritius came to a unanimous decision in 1983 regarding the avoidance of double taxation in the form of the Double Tax Avoidance Agreement or DTAA between India and Mauritius.
- **Applicability** - The conventions of DTAA signed between India and Mauritius will be applicable to **residents of one or both contracting states**.

- **Subjects covered** - Taxation on income, the technique for elimination of double taxation, special provisions, **capital gains tax** etc.
- **Significance** - India-Mauritius DTAA will **encourage mutual trade and investment** in both countries.
 - Due to this DTAA, residents of contracting states will get a **deduction on tax payments** that they already pay in the other contracting state.

Double Taxation

- Double taxation is a tax principle that occurs when **taxes are imposed twice** on the same source of income.
- Double Taxation occurs in international trade or investment context, when the same income is taxed in two different countries.

Double Taxation Avoidance Agreement

- A Double Taxation Avoidance Agreement (DTAA) is a **bilateral pact** signed by two nations aimed at promoting capital investment, trade in goods and services, and other economic activities between them **by preventing International Double Taxation**.

Protocol amending the Double Taxation Avoidance Agreement (DTAA)

- India and Mauritius recently amended their tax treaty to introduce the Principal Purpose Test (PPT) requirement for Foreign Portfolio Investors (FPIs) and other investors.
- **PPT** - This test assesses the primary reason behind an investment structure.
- **Why was the PPT introduced** - The PPT aims to prevent "**treaty abuse**," where investors use jurisdictions like Mauritius solely to benefit from lower tax rates, without having a genuine economic connection to the country.
- **Significance** -The protocol underlines India's commitment for enhanced transparency and legitimate business practices.

Impacts of Protocol

- **Denial of Benefits** - If the sole purpose of using Mauritius is to gain tax benefits under the treaty (without a legitimate business connection), the treaty benefits will be denied.
- **Impact on Investors** - This change might lead to increased scrutiny from Indian tax authorities.
- **Initial backlash** - Since the signing of the protocol FPIs have withdrawn approximately Rs 8,000 crore from the Indian market.
- **Fulfills BEPS MLI Commitments** - The protocol serves to fulfill India's commitments on Multilateral Convention to Implement Tax Treaty Related Measures to Prevent Base Erosion and Profit Shifting (BEPS MLI).

BEPS MLI

- It is a multilateral convention to implement tax treaty related measures to prevent BEPS.
- The BEPS MLI offers concrete solutions for governments to close the gaps in existing international tax rules by transposing results from the **OECD/G20 BEPS Project** into bilateral tax treaties worldwide.
- India is a **signatory** to BEPS MLI.

BEPS - Base Erosion and Profit Shifting

- Base Erosion and Profit Shifting (BEPS) refers to the erosion of a **national tax base**.
- It occurs when **multinational companies** shift the profits generated in the **higher tax location to lower or zero tax location**.
- **Objective** - To minimize tax burden and maximize profit.

Foreign Portfolio Investments (FPIs)

- Foreign portfolio investment (FPI) is a common way to invest in **overseas economies**.
- It includes **securities and financial assets** held by investors in another country.

- Securities (in FPI) include **stocks or American Depositary Receipts (ADRs)** of companies in nations other than the investor's nation.
- It also includes **bonds or other debt** issued by these companies or foreign governments, **mutual funds, or exchange-traded funds (ETFs)** that invest in assets abroad or overseas.

3.18 CORRELATION BETWEEN PRICES OF GOLD AND THE U.S. DOLLAR

A positive correlation between the price of gold and the U.S. dollar has been observed recently.

Gold Prices and Inflation

- Gold prices have a **direct effect** on inflation in a country.
- To import gold from another country, the central bank will be printing a larger number of notes to pay for it and due to a **surplus of currency notes, inflation would be caused in the country.**

Gold Prices and Hedging Inflation

- **Gold can protect against inflation as well.**
- **Since gold is a commodity** that is traded and invested in the market, the purchase of gold by investors helps in combating inflation in a country.
- Due to this, **most investors are more inclined to purchase gold when inflation is high** as gold becomes a safe-haven and is more consistent in its value and prices.

Gold Value and the U.S. dollar

- **Negative Correlation** - The gold rate in the market and its relation to the U.S. dollar is **inversely proportional**.
- A stronger U.S. dollar tends to keep the price of gold lower and more controlled, while a weaker U.S. dollar is likely to drive the price of gold higher through increasing demand (because more gold can be purchased when the dollar is weaker).

Current Positive Correlation

- **Short term Aberration** - The current positive correlation between gold's price and the price of the U.S. dollar (exchange rate) is a short-term aberration, which is likely to get corrected.
- **Why is it occurring** - Both the U.S. dollar and gold are being demanded as reserve assets and safe havens of investment given the current global uncertainties.

3.19 GIFT CITY

- The Indian Renewable Energy Development Agency Ltd. (IREDA) has established an office in GIFT City, Gandhinagar.
- **Gujarat International Finance Tec-City (GIFT City)** is a central business district under construction in the Ahmedabad district in Gujarat, India.
- **It is India's first** operational Greenfield smart city and international financial services center.
- **It has India's first International Financial Services Center (IFSC).**

GIFT City is divided into two zones:

- **Domestic Tariff Area (DTA):** This zone is for domestic companies and is subject to Indian laws and regulations.
- **Special Economic Zone (SEZ):** This zone is meant for international companies and is designed to promote exports and foreign investments.
 - The SEZ has been further divided into two zones:
 - SEZ PA (Processing Area) and
 - SEZ NPA (Non-Processing Area).
 - **Companies operating in these zones enjoy** a range of incentives, including tax exemptions, duty-free imports and exports, and simplified regulatory procedures.

- **The city is divided by area into:**
 - International Financial Services Centre (IFSC)
 - Domestic Finance Centre (DFC)
 - Multi-services SEZ
 - Social and Civic Infrastructure
 - Residential Zone.
 - Transit-Oriented Development (TOD)

The International Financial Services Centers Authority (IFSCA)

- It is the regulatory body for the Indian special economic zones.
- **It is a statutory body under the International Financial Services Centers Authority Act, 2019.**
- It is located in Gujarat International Finance Tec-City (GIFT City).
- It was established in 2020.
- **It is headed by a chairperson who is appointed by the Government of India.** The chairperson is assisted by a full-time Member (Finance) and such number of other Members as may be appointed by the Central Government.

3.20 INDEX OF EIGHT CORE INDUSTRIES

- The Index of Eight Core Industries (ICI) is a production volume index an important lead indicator for overall industrial performance and general economic activities in the economy.
- It considers eight core industries **Cement, Coal, Crude Oil, Electricity, Fertilizers, Natural Gas, Refinery Products and Steel** which comprise 40.27 percent of the weight of items included in the Index of Industrial Production (IIP).
- It should be noted that **Index of Industrial production (IIP)** is published by **CSO, Ministry of Statistics and Program implementation** while **Index of Eight core Industries (ICI)** is published by **Office of Economic Advisor, Ministry of Commerce, and Industry** with the base year as 2011-12.
- **Weightage of different sectors in the Index:**

Sector	Coal	Crude Oil	Natural Gas	Refinery Products	Fertilizers	Steel	Cement	Electricity	Overall Index
Weight	10.33	8.98	6.88	28.04	2.63	17.92	5.37	19.85	100.00

3.21 LETTER OF CREDIT

- **A Letter of Credit** is a contractual commitment by the foreign buyer's bank to pay once the exporter ships the goods and presents the required documentation to the exporter's bank as proof.
- The letter of credit is limited in terms of time, **the validity of credit, the last date of shipment**, and how late after shipment the documents may be presented to the nominated bank.

Purpose:

- It is a payment mechanism used in international trade to provide an economic guarantee from a creditworthy bank to an exporter of goods.
- As a trade finance tool, **Letters of Credit are designed to protect both exporters and importers.**
- For exporters, **a letter of credit can also be pledged as collateral against working capital loans to help you fill your order.**

Parties Involved:

- First party is the bank's customer, the importer, or the buyer of the goods. They work with the bank to **issue the letter of credit to the beneficiary.**
- The beneficiary is the exporter, otherwise known as the seller or supplier of the goods.

3.22 PARADOX OF THRIFT

- **The paradox of savings or paradox of thrift refers to the theory** that a rise in the savings rate of individuals can surprisingly cause a fall rather than a rise in the overall savings in an economy.
- **Origins of the theory:** popularized by British economist John Maynard Keynes in his 1936 book **The General Theory of Employment, Interest, and Money**.
 - Prior to Keynes, it was discussed by economists William T. Foster and Waddill Catchings in works such as **Business without a Buyer and The Dilemma of Thrift**.
- **Keynesian economists** believe that higher savings is bad for the wider economy, and that boosting consumer spending is the way to grow an economy.
- It calls for a **lowering of interest rates to boost spending levels during an economic recession**.
- **Criticism:** paradox of thrift ignores the potential for saved income to be lent out by banks.
 - It also ignores the **potential for inflation or deflation**. If higher current spending causes future prices to rise concordantly

3.23 FOREX RESERVE

- **India's forex reserves rose by \$140 million** to hit a fresh peak of \$642.63 billion on 1st April 2024.
- **India ranks fourth** in the world in terms of forex reserves as of March 2024.
- **China claims the first** position, followed by Japan and Switzerland.
- **Foreign exchange reserves (Forex Reserve)** are the reserve assets held by the central bank of a country in foreign currencies.
- Components of Forex Reserve
 - **Foreign Currency Assets**
 - **Gold reserves**
 - **Special Drawing Rights (SDR)**
 - **Reserve tranche position with the International Monetary Fund (IMF).**

- **Individuals and private entities cannot hold SDRs.**
- The SDR is neither a currency nor a claim on the IMF.
- **The Reserve Tranche Position (RTP)**
 - It is the difference between the International Monetary Fund's (IMF) holdings of that country's currency and the country's IMF-designated quota.
- It is the reserve capital with the IMF that the country can access any time without any conditions.

Special Drawing Rights (SDR)

- The SDR is an **international reserve asset and not a currency**.
- The SDR serves as the unit of account of the IMF and other international organizations.
- SDR is calculated from a weighted basket of five currencies that includes.
 - **The US dollar,**
 - **the euro,**
 - **Japanese yen,**
 - **Chinese yuan Renminbi, and**
 - **British pound.**

3.24 BANK ACCOUNT VS DEMAT ACCOUNT

Topic	BANK ACCOUNT	DEMAT ACCOUNT
Definition	It serves as a financial repository managed by a bank or financial institution, where transactions such as deposits, withdrawals, and transfers are recorded.	It serves as a secure digital vault for holding various securities. It stores securities in electronic format, a process known as dematerialization, effectively converting physical shares into digital assets.
Purpose	It facilitates various financial transactions such as deposits, withdrawals, transfers, bill payments, and online transactions.	It allows investors to buy, sell, and transfer securities seamlessly.
Types of Assets Held	They hold funds in the form of cash, which can be deposited, withdrawn, or transferred as required. Some bank accounts may also hold fixed deposits, savings certificates, or other financial products offered by the bank.	Securities held in a demat account are in electronic or digital form. These include stocks, bonds, debentures, mutual fund units, government securities, and other financial instruments.
Regulatory Authority	They are regulated by banking regulators such as the Reserve Bank of India (RBI) in India.	They are regulated by securities market regulators such as the Securities and Exchange Board of India (SEBI) in India. Depositories like the National Securities Depository Limited (NSDL) and Central Depository Services Limited (CDSL) oversee the functioning.
Interest and returns	They may earn interest on the funds deposited, depending on the type of account and prevailing interest rates. Some bank accounts also offer rewards or cashback on transactions	They do not generate interest or returns on the securities held in the account. Returns are generated based on the performance of the securities held.

4 SCIENCE AND TECHNOLOGY

4.1 CAR-T AND NEXCAR19

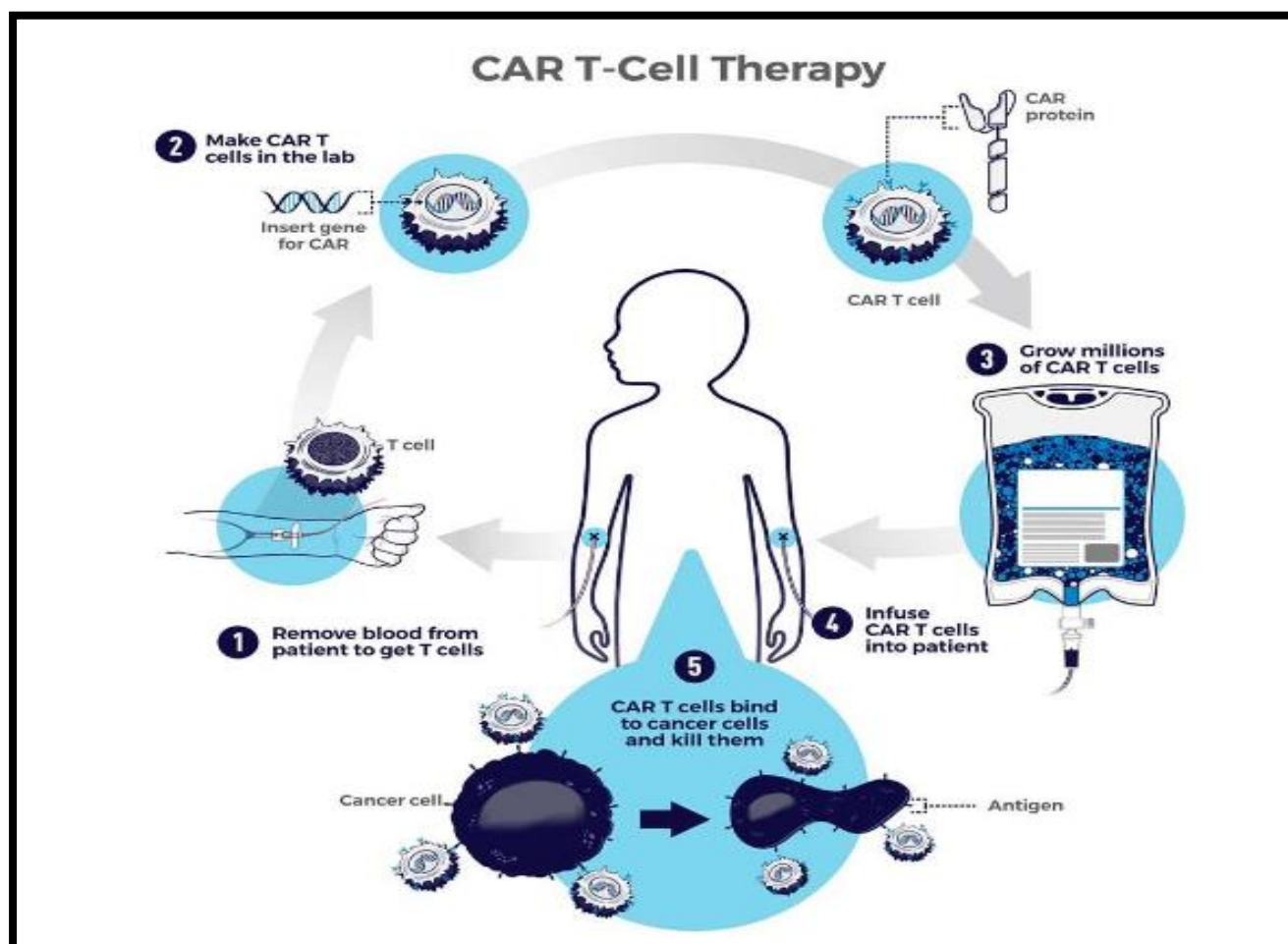
President Droupadi Murmu has unveiled 'NexCAR19' India's first indigenously developed CAR T-cell therapy for cancer treatment.

About Chimeric Antigen Receptor (CAR) - T cell Therapy

- CAR-T cell therapy involves **genetically modifying a patient's T cells** to fight malignant tumor cells.
 - T cells are a type of white blood cell developed from the stem cells in the bone marrow and are a vital part of the immune system.
 - T cells help orchestrate the immune response and directly kill cells infected by pathogens.
- CAR-T cell therapy involves **collecting T cells from the patient and re-engineering them in the laboratory** to produce proteins on their surface called chimeric antigen receptors, or CARs.
- The CARs recognize and bind to specific proteins, or antigens, on the surface of cancer cells.

Process of CAR-T cell therapy

- **Collecting T Cells:** Blood is drawn from the patient's arm, and T cells are separated from the blood using an apheresis machine.
- **Engineering T Cells:** In a laboratory, the T cells are modified by adding a manufactured CAR, and they are allowed to multiply and grow.
- **Infusing CAR-T Cells:** Once enough CAR-T cells are prepared, they are injected back into the patient's arm.
 - Chemotherapy may be recommended before CAR-T cell infusion to enhance treatment effectiveness.
 - The process can take place in an outpatient infusion centre or a hospital setting.



History

- The initial development of CAR T-cell therapies focused largely on the most common cancer in children, acute lymphoblastic leukemia (ALL).
- **The United States** was the first to work on the treatment system.
 - In 2017, it approved the first commercial CAR-T cell therapy.
 - The cost of the treatment was anywhere between ₹3 and 4 crores, excluding hospitalization to treat side effects.
 - It was rendered to be unaffordable to middle and low-income countries, including India.
- CAR T-cell therapy has now been studied long enough that details about the long-term outcomes in children are beginning to emerge.
- The FDA has approved **six CAR-T cell therapies till now, and four of them target CD19.**

About NexCAR19

- NexCAR19 is designed to target **cancer cells carrying the CD19 protein**, a marker on cancer cells, enhancing precision in treatment.
- It has been **developed jointly** by **IIT Bombay and the Tata Memorial Centre.**
- Initially approved for **patients aged 15 and above** with B-cell lymphomas who did not respond to standard treatments, leading to relapse or recurrence.
- Approximately **70% of patients respond** to NexCAR19 treatment, with some achieving complete remission.
- A key difference between the CAR-T cell therapies developed in the US and NexCAR19 lies in the composition of antibody fragments.
- CAR **developed in the US originates from murine (mice) sources, NexCAR19 has human proteins added to the mouse antibody, resulting in a 'humanized' CAR.**

Off the shelf therapies Under Research

- **CRISPR:** the off-the-shelf CAR T cells now being tested in small clinical trials, gene-editing technologies like TALON and CRISPR are being used to induce **the donated T cells to produce CARs.**
- **Natural killers:** Other off-the-shelf CARs also use a different type of immune cell, called natural killer (NK) cells. Much of this research is still in its early days, but some CAR NK cell therapies are already being tested in small clinical trials.
- **mRNA:** Using **nanotechnology and mRNA-based approaches allows CAR T cells** to be created inside the body.

Challenges Associated with CAR T-cell Therapies.

- **Mass die-off:** CAR T-cell therapies can cause severe side effects, including a mass die-off of antibody-producing B cells and infections.
- **Flooding of cytokines:** The infused T cells can flood the bloodstream with cytokines, causing serious side effects, including dangerously high fevers and precipitous drops in blood pressure. In some cases, severe CRS can be fatal.
- **Neurological effects:** including severe confusion, seizure-like activity, and impaired speech.
- **High Cost:** Cost remains relatively high ranging from ₹40 to 45 lakh although it is a fraction of what is the price in the USA.

Way Forward

- **Cost reduction:** Labor, logistics, materials, and facility expenses as well as marketing, distribution, and intellectual property development all play a significant role in pricing and efforts should be made for its reduction.
- **Diversification:** Diversifying the centers of the treatment to multiple centers of the country to ensure better reach to the people in need.
- **Government subsidy:** Government must subsidize the treatment process to make it cheaper and so that it can be made use of by most of the people.

4.2 SPACE DEBRIS

According to the Indian Space Research Organization (ISRO), its PSLV-C58/XPoSat mission (POEM-3) had practically left zero debris in earth's orbit.

About Space Debris

- **Space debris or "Space Junk"** are **defunct human made objects in space** principally in Earth orbit which no longer serve a useful function.
- These include derelict spacecraft (nonfunctional spacecraft and abandoned launch vehicle stages), mission-related debris, and particularly numerous in-Earth orbit fragmentation debris from the breakup of derelict rocket bodies and spacecraft.
- Most Space debris is moving very fast and can **reach speeds of 18,000 miles per hour**.
- The majority of the **debris is in the Low Earth Orbit (LEO)**.

Current Status

- There are around 23,000 objects larger than 10 cm (4 inches) and about 100 million pieces of debris larger than 1 mm (0.04 inches).
- As of March 7th, 2024, **the satellite tracking website "Orbiting Now"** lists 9,494 active satellites in various Earth orbits which will also eventually be converted into debris.
- In **2022, four on-orbit break-up events occurred, contributing to most of the debris created that year:**
 - **March 2022:** Intentional destruction of Russia's Cosmos 1048 in an anti-satellite test adding 1408 fragments of debris.
 - **July 2022:** Break-up of the upper stage of **Japanese H-2A** while deploying GOSAT-2 satellite adding 52 fragments of debris.
 - **November 2022:** Accidental explosion of the upper stage of **China's Yunhai-3** adding 533 pieces of debris.
 - **November 2022:** Breakup of the Japanese H-2A upper stage for the deployment of GCOM satellite adding 30 pieces of debris

Sources of Space Debris

- There are two sources of space debris, natural and artificial. The artificial debris is the result of anthropogenic activities of humans. Some of the sources are:
- **Dead spacecraft:** e.g. Vanguard 1's launch rocket and its associated piece of debris, are the oldest surviving artificial space objects from 1958 and are still in orbit and are expected to be until after the year 2250.
- **Lost equipment:** The equipment that has been lost by the astronauts or the machines that were sent to space. E.g. Space debris includes a glove lost by astronaut Ed White on the first American spacewalk (EVA).
- **Abandoned satellites:** More than 3000 satellites were decommissioned as of 2023 which remains in the orbit as space junk.
- **Launches:** Satellites launch into space create junks due to various factors such as breaking up due to decomposition of unvented fuel in the rocket upper stages.
- **Weapons:** like anti-satellite weapons (ASATs) tested by the U.S. and Soviet Union, China, India.
- **Fragmentation of space debris:** Due to many factors which may be natural or otherwise like collision, explosion, degradation etc.

Harmful Effect of Space Debris

- **To spacecraft:** Space junk can be a hazard to active satellites and spacecraft. It has been suggested that Earth orbit could even become impassable if the risk of collision becomes too great.
- **Space station vulnerability:** Space debris poses highest threats to the Space stations and the safety of astronauts in them.

- **Kessler syndrome:** The Kessler syndrome **proposed by NASA scientist Donald J. Kessler in 1978**, is a theoretical scenario in which the density of objects in low Earth orbit (LEO) is high enough that **collisions between objects could cause a cascade effect** where each collision generates space debris that increases the likelihood of further collisions.
- **On Earth:** Although most debris burn up in the atmosphere, larger debris objects can reach the ground intact. According to NASA, an average of one cataloged piece of debris has fallen back to Earth each day for the past 50 years.

Initiatives for Space Debris Removal

- **United Nations Committee on Peaceful Uses of Outer Space (COPUOS) (1958):** to govern the exploration and use of space for the benefit of all humanity. India is one of the 18 founding members.
- **Outer Space Treaty (1967):** For sustainable exploration of space.
- **Inter-Agency Space Debris Coordination Committee (IADC) (1993):** It is an international governmental forum for the global coordination of activities concerning man-made and natural debris in space. **ISRO** is a member of the committee.
- **Clean Space Initiative (2012):** By the European Space Agency (ESA) to ensure the sustainability of the space environment for future generations.
- **JAXA (Japan) - Commercial Removal of Debris Demonstration (CRD2)-** A programme to demonstrate technologies that are viable for removing space debris.
- **China's Solar Sail-** Solar sail is designed to de-orbit defunct spacecraft, accelerating their re-entry into Earth's atmosphere.
- **ISRO System for Safe & Sustainable Operations Management (IS4OM) (2022):** To ensure the safety of space assets and the continued use of outer space for national development.
- **Project Netra (Network for Space Object Tracking and Analysis):** An early warning system in space to detect debris and other threats to Indian satellites. It can spot, track, and catalog objects as small as 10 cm, up to a range of 3,400 km.
- **ISRO SSA (Space Situational Awareness) Control Centre (2020):** It functions as a hub of all space situational awareness activities within India, to ensure safe and sustainable space operations.
- **POEM-3 (2024):** To achieve the dream of “zero debris” by ISRO.

Way Forward

- **International covenant:** As of now there are no international space laws to clean up debris in our LEO. So, a measure of global contribution in reduction of debris and cleaning debris should be made to avoid risks.
- **Global coordination:** On technology and other areas dedicated for the reduction of the debris necessary to manage the increasing congestion in Earth's orbit.
- **Removal:** Various technologies, such as harpoons, magnets, lasers, and slingshots, etc. are already being developed and a global coordination can be developed in funding and development of such technologies.
- **Global data center:** A Global data center to keep live updated information regarding debris and the potential threat it can come up with.

PSLV Orbital Experimental Module (POEM)

- It is a platform that helps perform **in-orbit experiments** using the **final stage** of ISRO's rocket, the Polar Satellite Launch Vehicle (PSLV).
 - The PSLV is a **four-stage rocket** where the **first three spent stages fall back into the ocean**, and the **final stage (PS4)** — after launching the satellite into orbit — ends up as **space junk**.
- In the **PSLV-C53 mission** undertaken in 2022, the spent **final stage** was utilized as a “**stabilized platform**” to perform experiments.
 - It was the **first time** the PS4 stage orbited the earth as a **stabilized platform**.

- To cut down on space debris, ISRO has been taking steps such as **lowering** the orbit of **defunct satellites** and the last stages of the rockets and removing excess fuel.
 - It ensures that the mission leaves **no debris**.
- So far, on **three POEM platforms**, ISRO has flown a total of 21 experiments.

POEM 3

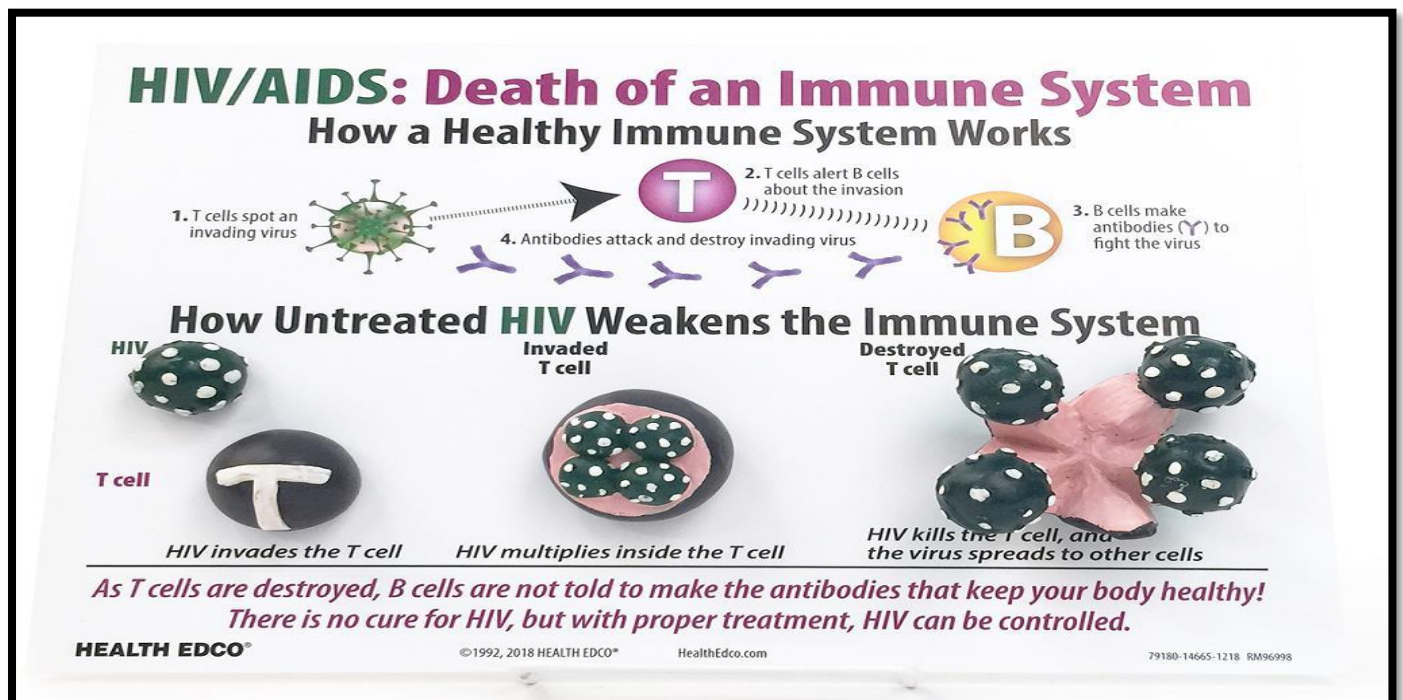
- It uses the **spent PS4 stage of the PSLV-C58 rocket** that launched XPoSat on January 1 this year.
- POEM-3 flew with nine Payloads from VSSC, PRL, Academia, and Space start-ups inducted through IN-SPACe. Over this period, each payload was put into operation, as planned and performance was demonstrated.
- POEM-3 is a **three-axis-attitude controlled platform** with power generation and tele command and telemetry capabilities, for supporting payloads.
- With the likely re-entry of POEM-3 in the next few days, the PSLV-C58 XPoSat mission will be leaving zero debris in space.

4.3 PREVENTION OF HIV IN INDIA

April 1, 2024, marks twenty years of free Antiretroviral Therapy (ART), for Persons living with HIV which is one of the successful and a key intervention in the fight against HIV/AIDS.

About HIV

- HIV (human immunodeficiency virus)** is a virus that attacks the **body's immune system**. If HIV is not treated, it can lead to AIDS.
- Spread:** HIV can spread through **sexual contact**, shooting of illicit drugs or use of shared needles, and contact with infected blood.
 - It can also spread from parent to child during pregnancy, **childbirth, or breastfeeding**.
- Emergence:** In Africa, HIV had spread from chimpanzees to humans sometime early in the 20th century.
 - The earliest known case of HIV-1 infection in human blood is from a sample taken in 1959 from **a man who died in Kinshasa in what was then the Belgian Congo**.



Treatment for HIV

- The treatment for HIV is called **antiretroviral therapy (ART)**. ART involves taking a combination of HIV medicines (called an HIV treatment regimen) every day.

- ART **cannot cure HIV**, but it can help people with HIV live longer, healthier lives. ART also reduces the risk of HIV transmission.

How does HIV medicines work?

- **Medicines stop HIV multiplication:** HIV medicines work by preventing the virus from making copies of itself, which helps in reducing the amount of HIV in the body (known as viral load).
 - **Boosts immune system:** Lowering the HIV levels in the body gives the immune system a chance to bounce back and produce more immune cells, which are essential for fighting off infections.
 - **Strengthens immune response:** With a decreased viral load, even though some HIV remains in the body, the immune system becomes stronger and better equipped to defend against infections and HIV-related cancers.
 - **Reduces transmission risk:** By decreasing the amount of HIV in the body, these medicines also lower the risk of transmitting the virus to others.
- **Immediate antiretroviral therapy (ART)** - starting HIV treatment as soon as possible after the diagnosis of HIV infection, preferably on the first clinic visit (and even on the same day as the HIV diagnosis). Also known as “rapid ART,” “same-day ART,” and “treatment upon diagnosis.”

Present Status

Indicator	Data
• HIV Prevalence (15-49 years)	• 0.20% (CI: 0.17%-0.25%)
• Estimated PLHIV	• 2.4 million
• India's Share in Global PLHIV	• 6.3% (Down from 10% two decades ago)
• PLHIV Aware of Their HIV Status	• 82%
• PLHIV on ART	• 72%
• Annual New HIV Infections Decline	• 48% (Against global average of 31%) Baseline 2010
• Annual AIDS-Related Mortalities Decline	• 82% (Against global average of 47%) Baseline 2010

Launch of ART Treatment in India

- The Indian Government launched free ART Treatment **on April 1, 2004**. (November 2006, the free ART for children as well).

Significance of free ART in India

- **Viral load suppression:** ART not only initiates treatment but also ensures that the viral load (amount of HIV in the body) remains low and suppressed, effectively halting the transmission of the disease.
- **Decrease in HIV prevalence:** By 2023, the prevalence of HIV in the 15-49 age group had decreased to 0.20% with a confidence interval of 0.17%-0.25%.
 - The burden of HIV/AIDS in terms of estimated People Living with HIV (PLHIV) has significantly reduced to 2.4 million.
- **Global contribution:** India's share in the global population of **PLHIV has reduced to 6.3% from around 10%** two decades ago.
- **Awareness and treatment coverage:** As of 2023, 82% of PLHIV knew their HIV status, 72% were on ART, and 68% were virally suppressed.
- **Decline in new infections:** The annual rate of new HIV infections in India has dropped by 48% since the baseline year of 2010, outpacing the global average of 31%.
- **Decrease in AIDS-related deaths:** AIDS-related mortalities have declined by 82% in India since 2010, surpassing the global average decline of 47%.

Reasons for Success

- Political will and **constant support of successive governments**.

- **Sustained and sufficient funding,**
- Regular programme reviews and field-based monitoring,
- A series of complementary initiatives.
- Community and stakeholder engagements and participation.
- **People-centric modifications** in the service delivery.

Targets for 5th phase of National AIDS Control Programme

- By 2025 reduce the annual new HIV infections by 80%, reduce AIDS-related mortalities by 80% and eliminate vertical transmission of HIV and syphilis.
- It calls for the attainment of ambitious **targets of 95-95-95 by 2025**, where.
 - 95% of all people living with **HIV know their HIV status.**
 - **95% of all people diagnosed with HIV infection** receive sustained antiretroviral therapy (ART) and
 - **95% of all people receiving antiretroviral therapy** achieve viral suppression by 2025.

Way Forward

- **Avoid delayed enrolment:** Prompt enrolment in Antiretroviral Therapy (ART) facilities is crucial to prevent further progression of HIV/AIDS.
- **Address loss to follow up:** Patients feeling better on ART may lead to missing doses or dropping out, causing resistance. Strategies are needed to tackle this "loss to follow up" issue.
- **Ensure sustained ART supply:** Continuous availability of ART across all regions of the country is essential to provide uninterrupted treatment to people living with HIV/AIDS (PLHIV).
- **Engage private sector:** Involvement of the private sector in caring for PLHIV should be emphasized to broaden access to services and support.
- **Provide training and capacity building:** Ongoing training and capacity building are necessary to enhance the skills of healthcare professionals involved in HIV/AIDS care.
- **Integrate with other health programs:** Integration with programs addressing hepatitis, non-communicable diseases like diabetes and hypertension, and mental health is important as PLHIV often face other health issues that require attention.

4.4 DEEPFAKE TECHNOLOGY: IMPLICATION AND LEGAL FRAMEWORK

Actor Ranveer Singh files FIR against deepfake video that showed him slamming BJP government.

About Deep Fake

- Deep Fake is a **deep learning-based technique** that can create fake videos by swapping the face of a person by the face of another person.
 - This method requires a large amount of image and video data to train models to create photo-sensible images and videos.
 - The term "deepfake" was first coined in late 2017 by a Reddit user of the same name.
 - This user created a space on the online news and aggregation site, where they shared pornographic videos that used open-source face-swapping technology.
- Deep fakes also refer to "**synthetic media**" - images, sound, and video that appear to have been generated through conventional means but that have, in fact, been plugged by complex software.
- Audio can be deepfake too, to create "voice skins" or "voice clones" of public figures.

About shallow fakes

- Coined by **Sam Gregory** at the human rights organization Witness, shallow fakes are videos that are either presented out of context or are doctored with simple editing tools.

- E.g. A shallow fake video that slowed down **Nancy Pelosi's speech** and made the US Speaker of the House sound slurred reached millions of people on social media.

Methods of Deepfake Video Generation:

- Use of AI and Machine Learning: Fake image which is created through the help of the Generative Adversarial Network (GAN).
 - Prominent work in deepfake generation includes DeepFaceLab7 (DFL) and FaceSwap.
 - These are based on the state-of-the-art deep neural network (DNN) techniques, which learns the probability **distribution of a training dataset** and samples from the probability distribution to generate fake samples.
- **Key Technology** - Generative Adversarial Networks (GANs):
- **Generator:** Creates images or video.
- **Discriminator:** Assesses the realism of the generated media.
- **Training Process:** Both models iteratively improve to produce more realistic outputs.

Relevance of Deepfake Technology

- **Governance:** As deepfakes become more sophisticated, they can create convincing fake news that can undermine trust in governmental institutions and media outlets, manipulate public opinion, and sway electoral outcomes.
- **Media:** In the realm of journalism and online content, deepfakes pose challenges to the authenticity of information, requiring new tools and protocols to verify visual and audio content before dissemination.
- **Personal Security:** On a personal level, deepfakes can be used for blackmail, fraud, and social engineering attacks, directly impacting individual privacy and security.

Applications of Deepfake:

- **Advertisement and social messaging:** The technology is used to manipulate facial movements example- The video was created by the malaria must die campaign, **features legendary soccer player David Beckham who speaks nine different languages.**
- **Restore the voice:** Voice-cloning deep fakes can restore people's voices when they lose them to disease. Brings historical figures to life in exhibitions, making history more engaging and relatable for visitors. Allows detailed reenactments of historical events with accurate visual and audio representations.
- **Medical simulations:** Provides realistic training scenarios for medical students, including interactive patient responses and complex medical conditions. Enhances surgical simulation accuracy, improving training and preparation for actual procedures.
- **Dubbing industry:** For the entertainment industry, technology can be **used to improve the dubbing on foreign-language films.**

Challenges with Deepfake:

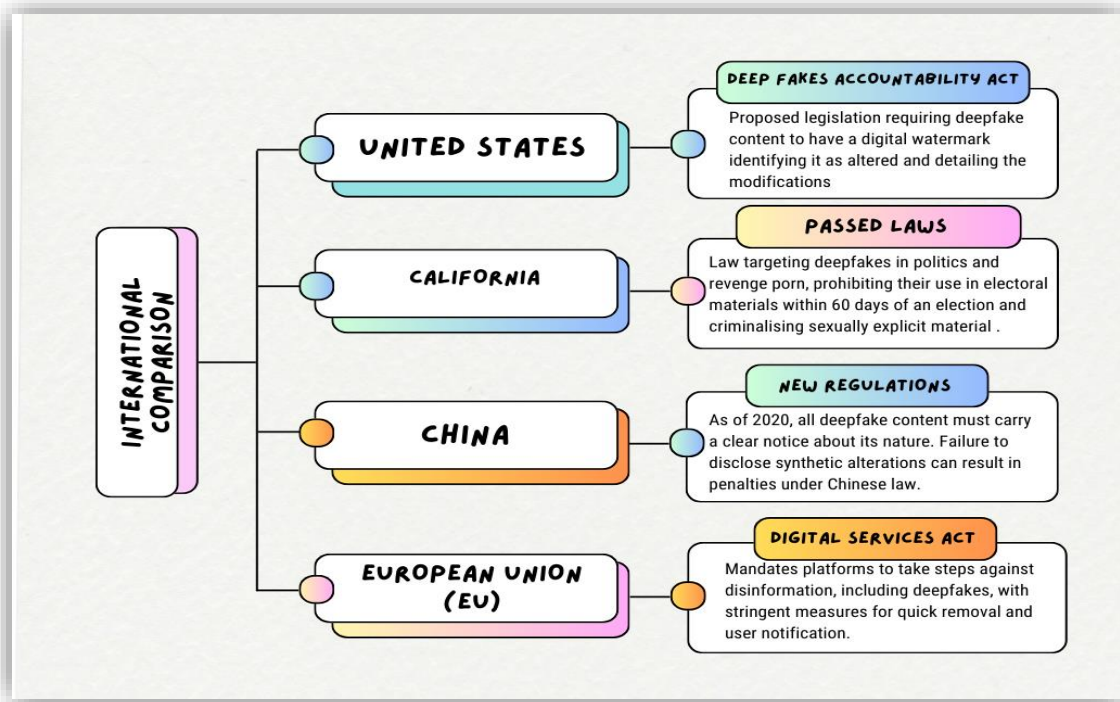
- **Spreading False information:** deep fake videos of politicians or celebrities can be used to influence public opinion or sway elections.
 - E.g. Deepfakes can be used to influence elections, in a doctored video of Madhya Pradesh Congress chief Kamal Nath recently went viral, creating confusion over the future of the State government's Ladli Behna Scheme.
 - In 2018, for example, a Belgian political party released a video of Donald Trump giving a speech calling on Belgium to withdraw from the Paris climate agreement.
- **Harassment and Intimidation:** Deepfakes can be designed to harass, intimidate, demean, and undermine people.
 - For example, Revenge porn severely damages the reputation of celebrities and prominent figures.
 - Rashmika Mandanna went viral on social media. The seconds-long clip, which featured Mandanna's likeness, showed a woman entering a lift in a bodysuit.

- A 2019 study conducted by AI firm Deeptech found that a staggering 96% of deep fakes were pornographic, and 99% of them involved women.
- **Tool for Polarization:** This technology **manipulates idols** and turn them into something what they're not that effects their reputation.
- **Financial frauds:** Deep fakes have been used for financial fraud (**using voice samples for account verifications**).
- **Strategic challenges:** It can also be used to generate **fake satellite images of the earth to contain an object** that does not exist to **confuse the military**.
- **Accessibility of technology:** Deepfakes can easily be **generated by semi-skilled and unskilled individuals** by morphing audio-visual clips and images.
- **Legal vacuum:** The existing laws are not adequate given the fact that they were never sort of designed keeping in mind these emerging technologies.

Way Forward

- **Comprehensive Legislation:** India could benefit from specific legislation that addresses all aspects of deepfake creation, distribution, and misuse, similar to proposals in the US.
- **Public Awareness and Education:** Implement national campaigns to educate the public on the implications of deepfakes and the importance of verifying digital content.
- **International Cooperation:** Enhance collaboration with international bodies to establish global standards and share best practices for regulating Deepfake technology.
- **The proposed deep learning-based deep fake detection framework.** This framework has applied various models **CNN, ResNet50** which are able to detect **whether the image is real or fake**.
- **Artificial intelligence already** helps to spot fake videos, but many existing detection systems have a serious weakness: they **work best for celebrities**, because they can train on hours of **freely available footage**.
- **The blockchain online ledger system** could hold a tamper-proof record of videos, pictures and audio so their origins and any manipulations can always be checked.
- **International best practices**
 - **Watermarking:** In the USA, the Department of Commerce has been tasked with developing standards to label AI-generated content to enable easier detection also known as watermarking.
 - **The European Union (EU) has strengthened its Code of Practice on Disinformation** to ensure that social media giants **like Google, Meta, and Twitter start flagging deepfake** content or potentially face multi-million-dollar fines.
 - The Massachusetts Institute of Technology (**MIT**) created a **Detect Fakes website** to help people identify **deepfakes** by focusing on small intricate details.





4.5 NEW ELECTRIC VEHICLE (EV) POLICY

Government approves E- Vehicle policy to promote India as a manufacturing destination for EVs.

News Details

- Electric vehicle (EV) sales in India are expected to rise **66 per cent** in 2024.
- This comes after India's EV sales nearly **doubled in 2023**, driven by rising consumer interest and concerns over climate change.
- By **2030**, EVs are expected to represent nearly **one-third** of India's Passenger Vehicle market.
- This policy will provide Indian consumers with access to latest technology, boost the Make in India initiative, strengthen the EV ecosystem by promoting healthy competition among EV players.

New EV Policy Features

- Minimum investment** of INR 41.5 billion (US\$500 million) required, with **no maximum limit** on investment.
- Manufacturing timeline set at three years** to establish facilities and commence commercial production of EVs, with a mandatory target of achieving **25 percent domestic value addition (DVA)** by the third year and 50 percent DVA by the fifth year.
- Customs duty of 15 percent** (as applicable to CKD units) with a minimum cost, insurance and freight (CIF) value of US\$35,000 and above, for a five-year period, contingent upon setting up manufacturing facilities within three years.
- A maximum import limit of 40,000 EVs** at the rate of not more than 8,000 per year will be permissible for investments of US\$800 million or more. The carryover of unutilized annual import limits, however, will be permitted.
- Investment commitments must be backed by a **bank guarantee**, which will be invoked in case of non-compliance with DVA and minimum investment criteria.

Need of the Policy

- To attract investments** - from leading automotive companies like Tesla to establish their presence in India and anchor the high-tech development of the industry's domestic ecosystem.

- **To claims position among competitors** - Given the **slowdown in the EV market** in other key regions such as the **United States and Europe**, and geopolitical tensions around **China**, India offers an attractive base for global firms to expand their operations and diversify their market reach.
- **Make in India** - Electric vehicle (EV) sales in India are expected to rise **66 per cent** in 2024. This policy can give big boost to EV manufacturing in India.

Government Initiatives to Promote the EV Industry

- **Faster Adoption and Manufacturing of (Hybrid and) Electric Vehicles (FAME) – I and II:** FAME, or Faster Adoption and Manufacturing of (Hybrid and) Electric vehicles, is currently India's flagship scheme for promoting electric mobility.
- **Phased Manufacturing Programme (PMP):** To boost electric mobility and promote development of electric vehicles, a phased manufacturing roadmap has been developed, taking into account the current state of the manufacturing ecosystem in the country.
- **National Mission on Transformative Mobility and Storage:** The aim of the mission is to drive strategies for transformative mobility and Phased Manufacturing Programmes for electric vehicles, electric vehicle Components and Batteries.
- **Production Linked Incentive (PLI) Scheme for the automotive sector 2021:** It aims to boost domestic production of advanced automotive technology (AAT) products.



Way Forward

- **Achieving Scale of Production** - With the assistance from the New EV Policy once manufacturers reach scale of production, they can introduce EVs at affordable prices.
- **Promote Awareness** - Awareness campaigns and educational initiatives could play a vital role in addressing this barrier.
- **Subsidies and Schemes for creation of charging infrastructure** - Presence of Charging Stations at regular intervals will help improve the adoption of EVs.
- **Building a robust battery manufacturing ecosystem** - This will reduce our dependence on foreign manufacturers.

4.6 COORDINATED LUNAR TIME (LTC)

Recently the US White House officially directed the National Aeronautics and Space Administration (NASA) to create a time standard for the Moon.

About Coordinated Lunar Time (LTC)

- LTC is being designed as the **new time standard to accurately track time on the moon**.
- **Need of LTC-**
 - **Time on the moon passes differently compared to Earth** - This is a consequence of Einstein's Theory of General Relativity (Time Dilation), which tells us that gravity bends space and time.

- For someone on the Moon, an **Earth-based clock will appear to lose on average 58.7 microseconds per Earth Day.**
- **Advantages of LTC**
 - **Better Coordination**-Different international bodies and private companies can use LTC to coordinate their activities on the lunar surface.
 - **Improved Mission Control**- LTC will allow better communication between spacecraft, data transfers, landing, docking and navigation.
 - **Enhanced Accuracy**- Incorporating the effect of gravity on time will allow for corrections and improvement in mission planning.
 - **Standardization of Local Standards**- Currently, handlers of each lunar mission use their own timescale that is linked to UTC. This leads to a barrier when interacting with lunar missions of other nations.
- **How will LTC be set up**- Just like UTC on the Earth, atomic clocks can be deployed on the lunar surface to set a time standard.
 - These clocks have to be placed on the **Moon at different locations since the Moon's rotation** and even local lumps of mass beneath the crust of the Moon affect the flow of time ever so slightly.

Coordinated Universal Time (UTC)

- UTC is essentially **an internationally agreed upon standard** for world time.
- Most of the clocks and time zones of the world are based on Coordinated Universal Time (UTC).
 - **Time zone**- A geographical region which uses the same standard time.
- Set by- **The International Bureau of Weights and Measures in Paris, France.**
- It is tracked by a weighted average of more than **400 atomic clocks placed in different parts of the globe.**
 - Atomic clocks measure time in terms of the **resonant frequencies** (the natural frequency of an object where it tends to vibrate at a higher amplitude) of atoms such as cesium-133.

4.7 WIGNER CRYSTAL

Physicists at Princeton University have for the first time found direct evidence of the existence of Wigner crystal.

About Wigner Crystal

- It is a strange kind of matter (crystal) that is made **entirely of electrons.**
- Theory proposed by- **Eugene Wigner** in the 1930s.
 - He is the winner of the 1963 **Nobel Prize** for his work in quantum symmetry principles.
- **Conditions for formation**- Low densities and extremely cold temperatures.
- **Structure**- Electrons are closely packed in a crystal-like configuration, or lattice.
- **Difference from Normal matter**
 - Crystals are formed due to an attraction between atoms as a stabilizing force, but this crystal forms purely because of the **repulsion between electrons.**
 - In a matter, the electrons are present on the outer periphery of the atoms, however in a Wigner Crystal the **electrons accumulate together.**
 - Wigner crystal **does not follow the laws of normal physics**, instead it follows the laws of Quantum Physics.
- **Applications**
 - **Quantum Computing**- Understanding the Wigner crystals has vast implications in fields like quantum computing.
 - **Superconductors**- Wigner crystals will lead to advancement in the field of semiconductor technologies and creation of superconductors.

4.8 MANGE DISEASE

Mange outbreak reported among Asiatic wild dogs in Mudumalai.

About Mange

- It is a type of **skin disease of animals caused by mite infestations**, characterized by inflammation, itching, thickening of the skin, and hair loss.
 - The most severe form of mange is caused by varieties of the **mite *Sarcoptes scabiei***, which also causes human scabies.
- Transmission:** transmitted between animals by direct contact and by objects that have been in contact with infected animals.
- Measures:** Need to remove **free-ranging feral dogs** from high interface areas shared by humans and wildlife.
 - Apart from being predators, they also spread multiple diseases among other **wild canids, such as mange, canine distemper and even rabies.**

4.9 GPT-4 VISION

GPT-4 Vision has been considered OpenAI's step forward towards making its chatbot multimodal, an AI model with a combination of image, text, and audio as inputs.

- GPT-4 Vision, is a **Large Multimodal Model or LMM**, which is essentially capable of taking information in multiple modalities like text and images or text and audio and generating responses based on it.
- It allows **users to upload an image as input** and ask a question about it. This task is known as visual question answering (VQA).
- It can also **interpret handwritten and printed text contained** within images.
- It is designed and **developed by Open AI.**
- There are many others such as **CogVLM, LLaVA, Kosmos-2, etc.**
- It is not the first and only LMM.** There are many others such as CogVLM, LLaVA, Kosmos-2, etc.

Uses

- Can help in academic **research, especially in interpreting historical documents** and manuscripts.
- GPT-4 Vision can now write code for a website** simply from a visual image of the design, which could even be a sketch.
- Capable of taking from a design on paper** and creating code for a website.
- Data interpretation**
- The combination of GPT-4 Vision and DALL-E 3** (text-to-image models developed by OpenAI) can be beneficial for content creators to put together creative posts for social media.

limitations of GPT-4 Vision:

- OpenAI has acknowledged that while GPT-4 is a significant leap in accuracy and reliability, **it is not always perfect.**
- It also continues to reinforce **social bias and worldviews.**
- OpenAI has advised against its use for tasks that require precise scientific, medical, or sensitive content analysis **due to its limitations and inconsistencies.**

4.10 LEAP SECOND

A recent study highlighted that due to factors like climate change and geological shifts, Earth's changing rotation may prompt clocks to skip a second, potentially necessitating a "negative leap second" around 2029.

About Leap Second

- It is used as a measure **to combat the long-term slowdown in the Earth's rotation** which is caused by the constant melting and refreezing of ice caps.

- It is added every now and then to **Coordinated Universal Time (UTC)** in order to synchronize a clock worldwide with the Earth's ever slowing rotation.
- The system of leap seconds was introduced in the **early 1970s**. So far, **27 positive leap seconds have been added**.

About Coordinated Universal Time (UTC)

- UTC consists of a time scale that **combines the output of more than 300 highly precise Atomic clocks** worldwide.
- Atomic clocks are very accurate and **are stable within 1 second over a period of millions of years**.
- On the other hand, the Astronomical Time known as Universal Time (UT1) refers to the Earth's rotation around its own axis and determines the length of a day.

Reason for addition

- The Earth's rotation around its own axis is not regular, as sometimes it speeds up and sometimes it slows down, due to various factors including the **moon's gravitational Earth-braking forces** that often results in ocean tides.

Negative Leap second

- It is a second that is **subtracted from our clocks** to keep them in sync with the Earth's rotation.
- Till date **no negative leap second** was introduced because, in the last few decades the Earth's rotation has generally been a bit slow
- The **International Earth Rotation and Reference Systems Service (IERS)** monitors the Earth's rotation and takes decisions on when to add or subtract a leap second.

4.11 LUMPY SKIN DISEASE

Recently, Scientists have made strides in understanding the genetic makeup of the lumpy skin disease virus (LSDV) in India.

About Lumpy skin Disease

- Lumpy Skin Disease (LSD) is a **contagious viral illness** affecting **cattle**.
- It is **caused by the lumpy skin disease virus (LSDV)**, belonging to the Capri poxvirus genus within the poxviridae family, which also includes viruses like smallpox and monkeypox.
- It is **not transmissible to humans**.

Spread

- Through blood-feeding insects such as flies, mosquitoes, and ticks; infected animals shed the virus through oral and nasal secretions, contaminating shared feeding and watering areas.

Symptoms

- High fever, reduced milk yield, nasal and ocular discharge, salivation, appetite loss, depression, damaged hides, and weight loss.
- Enlarged lymph nodes, forming lumps on the skin (on head, neck, limbs, udder, and genitalia of cattle).
- **High Mortality Rate** in previously unexposed or immunocompromised animals.

Treatment and Prevention

- There is no direct antiviral treatment.
- Supportive care like administering antibiotics, pain relievers, and wound care can help.
- Vaccines play a crucial role in controlling disease transmission.

Geographical Spread

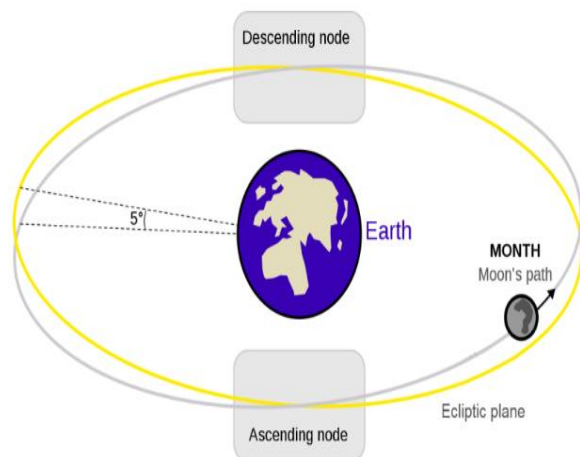
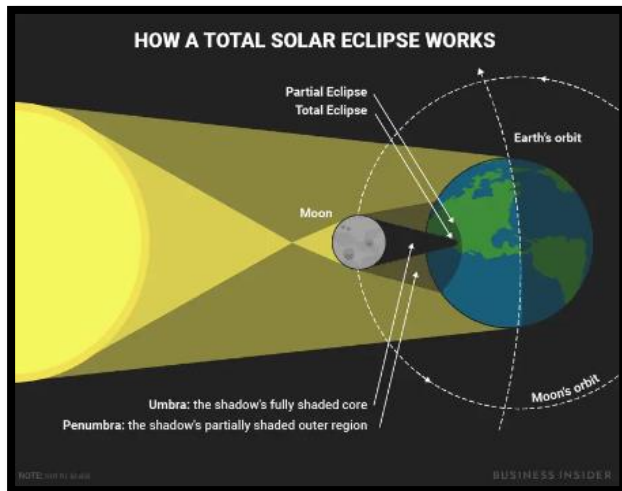
- **LSDV is endemic in various** regions including Africa, parts of the Middle East, and Turkey.
- **Since 2015, LSD outbreaks have been observed in Balkan countries**, the Caucasus, and the Russian Federation.
- From 2019 onwards, **LSD incidents have been reported in several Asian countries**, including Bangladesh, India, China, Vietnam, and Sri Lanka.

4.12 SOLAR ECLIPSE

On 8th April, a total solar eclipse crossed North America, passing over Mexico, the United States, and Canada.

About Solar Eclipse

- It takes place when the Moon moves in the **middle of Earth and the Sun** and blocks the light of the Sun (fully or partially), which casts a huge shadow on some parts of the world.
- A solar eclipse is witnessed only during the **new moon (occurs about 29.5 days)** - when the Moon and Sun are aligned on the same side of Earth.
- Solar Eclipse **does not occur on every month**. It is because the Moon does not orbit Earth in the same plane as the Earth orbits the Sun.



- However, there will be two points/nodes (on the Moon's orbit) at which the intersection occurs and whenever the new moon crosses one of these nodes, there is a chance for solar eclipses.
- There are **four different types** of solar eclipses, including **total** (Moon blocks the Sun entirely), **annular** (periphery of the Sun is visible), **partial** (crescent shaped sun) and **hybrid** (some parts see a total, while others see an annular solar eclipse) solar eclipses.
- While there can be between two and five solar eclipses every year, total eclipses only happen about once every **18 months or so**.
- A particular spot-on Earth witnesses a total solar eclipse only once in **400 years**, because a total eclipse is only visible if one is standing in the umbra shadow, which will only cover less than 1% of the globe.
- Hence, only very few people will get to see a **total eclipse at a time**.

4.13 TASL SATELLITE

Tata Advanced Systems Limited (TASL) recently announced the successful deployment in space of its sub-metre resolution optical satellite, TSAT-1A, by SpaceX's Falcon 9 rocket.

About TSAT-1A

- It is an optical sub-meter-resolution **Earth observation satellite**.
- It was built by **Tata Advanced Systems Limited (TASL)** in collaboration with Latin American company **Satellogic Inc**, following a collaboration agreement between the two companies in late 2023.
- TSAT-1A was assembled in TASL's Assembly, Integration, and Testing (AIT) plant at its Vemagal facility in **Karnataka**.
- It was launched by **SpaceX's Falcon 9 rocket** from the Kennedy Space Center, Florida, in the US.

Features

- **TSAT-1A's core strength lies in its ability to capture military grade** imagery of Earth's surface with sub-meter resolution.
- It is equipped with both **multispectral and hyperspectral imaging capabilities**.
- **This technology allows TSAT-1A to collect data across** a wide range of wavelengths within the electromagnetic spectrum, providing a deeper and more nuanced understanding of land, water, and various natural resources.
- TSAT-1A boasts greater collection capacity, a wider dynamic range (the ability to capture detail in both very bright and very dark areas), and low-latency delivery of data.

Significance

- This satellite will be used by Indian defense forces to gather **discreet information**, and this information will be shared with friendly nations.
- It can enable defence forces to **enhance their preparedness, response capabilities, and strategic decision-making**.

4.14 OZONE ON JUPITER'S MOON CALLISTO

Team led by PRL Ahmedabad finds ozone on Jupiter's moon Calisto.

News Detail:

- An international team of scientists, including from India, has discovered strong evidence indicating the **presence of ozone on Jupiter's moon Callisto**, shedding light on the complex chemical processes taking **place on icy celestial bodies** in the Solar System.
- The study was published in the **March 2024 issue of the journal Icarus**.

About Ozone

- **Composition:** The ozone molecule is composed of **three oxygen atoms** bonded together.
- **Found at:** lower part of the **earth's stratosphere**, around **15-35 km above ground**, serves as a **shield**.
- **Function:** Completely **absorbs ultraviolet-B and ultraviolet-C radiation**.
 - Ultraviolet radiation (UR) is **harmful to many species** (but also useful to some)
 - Ultraviolet-B and ultraviolet-C (of wavelengths **290-320 nanometres** and **100-280 nanometres respectively**) can damage DNA, trigger mutations, and increase the risk of skin cancer and cataracts in humans.
 - Also **inhibit plant growth** and have **detrimental effects** on various organisms.
- **Act as a pollutant** near the earth surface and carry health risks.
- **Uses:** Ozone is a powerful disinfectant and bleach. Also, kills bacteria, Mold, and fungi on food.

About Callisto

- It is one of **Jupiter's largest moons and the third-largest moon in the Solar System** after Ganymede and Titan.
- **Composition:** Primarily composed of water, ice, rocky materials, sulphur dioxide, and some organic compounds.
 - These substances make the moon a potential candidate for supporting life.
- **Cratered Surface:** Callisto's surface is **heavily cratered**, indicating a long history of being struck by asteroids and comets.
- **Lacks the extensive seismic activity:** It is **contrary to** some of Jupiter's other moons, such as **Io and Europa**.
- **Few Geological features:** this suggests **Callisto's surface is geologically inactive**.
 - Its surface has likely been **relatively stable for a long time**.

Ozone and potential habitability

- **Presence of Oxygen:** The discovery of ozone on Callisto suggests the presence of oxygen, which in turn is a **fundamental ingredient** required for the formation of complex molecules required for life, such as **amino acids**.

4.15 INFLAMMATORY BOWEL DISEASE

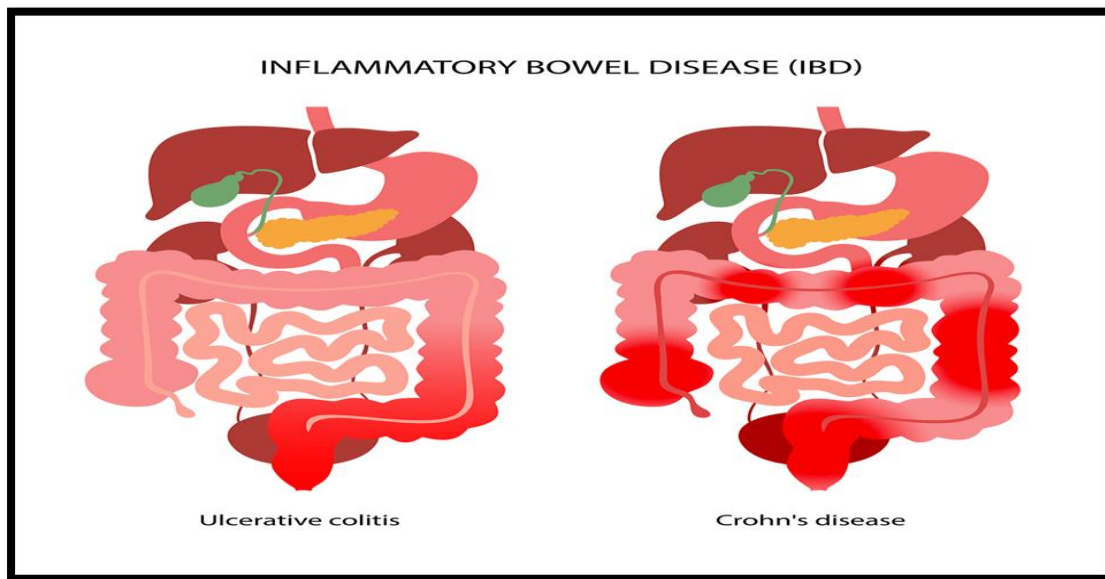
As a part of an international webinar series in gastroenterology, two scientific programmes on Inflammatory Bowel Disease (IBD) were held recently in Chennai.

About IBD

- Inflammatory bowel disease (IBD) is a term for two conditions (**Crohn's disease and ulcerative colitis**) that are characterized by chronic inflammation of the **gastrointestinal (GI) tract**.
 - **Crohn's disease** can affect any part of gastrointestinal tract from the mouth to anus.

Causes

- The **immune system responds incorrectly** to environmental triggers, such as a virus or bacteria, which causes inflammation of the gastrointestinal tract.
- Someone with a **family history of IBD** is more likely to develop this inappropriate immune response.



- **Ulcerative colitis** can affect any part of the large intestine.
- **Common symptoms of IBD** - Persistent diarrhea, Abdominal pain, Rectal bleeding/bloody stools, Weight loss, Fatigue.

Treatment

- **Medicines** - 5-aminosalicylic acids, Immunomodulators, Corticosteroids, Biologics
- **Surgeries** to remove damaged portions of the gastrointestinal tract.

4.16 NEPHROTIC SYNDROME

Researchers from Kerala have reported a series of cases from Malappuram district where the regular use of fairness creams has been linked to nephrotic syndrome.

- In a study published in the latest issue of Kidney International doctors describe a series of 15 **cases of membranous nephropathy linked to skin fairness cream use**.
 - **Membranous nephropathy (MN)** is an autoimmune disease resulting in nephrotic syndrome, a condition when too much protein is **released into the urine (proteinuria)**, ultimately resulting in renal failure.
- Heavy metal screening of the blood and urine samples of these patients revealed high levels of mercury (10,000 times above the permissible limit of 1 ppm).
- All patients had **non-specific symptoms like fatigue**, mild edema and frothy urine but high levels of proteinuria, in the range of 6.5-22.2 g/day.

About Nephrotic syndrome

- It is a **kidney disorder** that causes body to pass too much protein in urine.
- It **damages the clusters of small blood vessels** in kidneys that filter waste and excess water from your blood.

Process of Nephrotic syndrome

- The kidneys remove waste and excess fluid from your blood through filtering units called nephrons.
- Each nephron contains a filter (glomerulus) that has a network of tiny blood vessels called capillaries.
- When blood flows into a glomerulus, tiny molecules — water, essential minerals and nutrients, and wastes — pass through the capillary walls. Large molecules, such as proteins and red blood cells, do not.
- Nephrotic syndrome usually happens when the glomeruli are inflamed, allowing too much protein to leak from blood into urine.

Possible causes

- **Membranous nephropathy:** This kidney disorder is the result of thickening membranes within the glomeruli.
- **Amyloidosis:** This disorder occurs when amyloid proteins accumulate in your organs. **Amyloid buildup often damages the kidneys' filtering system.**
- **Other diseases** that cause nephrotic syndrome, like **diabetes and lupus**

Signs and symptoms

- **Severe swelling (edema)**, particularly around your eyes and in your ankles and feet
- Foamy urine, a result of excess protein in your urine
- Weight gain due to fluid retention, Fatigue, Loss of appetite

4.17 GAGANYAAN

The Indian Space Research Organisation (ISRO) plans to conduct an Integrated Air Drop Test (IADT) as part of the Gaganyaan mission check the parachute system of the crew.

About Integrated Air Drop Test (IADT)

- The test involves a **Chinook helicopter** dropping the crew module from a height of 4-5 km.
- The primary objective of the IADT is to evaluate the parachute system of the crew module.
- The first test will simulate nominal conditions, where both parachutes open in a timely manner during splashdown.

About Gaganyaan Mission

- It is **India's first human spaceflight programme**, aiming to send a crew of three humans into a 400 km orbit around Earth for a three-day mission and safely return them to Earth.
- **Launch:** It is aimed for launch in 2024-2025.
- **Launch vehicle:** The GSLV Mk III, also referred to as LVM-3.
- **The programme will make India the 4th nation** in the world to launch a Human Spaceflight Mission.

Current status of the mission

- Recently, final tests were conducted on the cryogenic engine, **named CE20 of the GSLV Mk III rocket**. The engine passed the test and was approved for missions carrying humans into space.
- The special flight engine which ignites during rocket liftoff, has passed acceptance tests. These **tests ensure that the hardware performs as needed for the mission**. Once certified, the technology is used in the final mission.
- **The Vikas engine intended** for the liquid stage have already been certified for the missions.

4.18 ADVANCED COMPOSITE SOLAR SAIL SYSTEM

Recently, NASA successfully launched its Advanced Composite Solar Sail System spacecraft from New Zealand.

About Advanced Composite Solar Sail System (ACS3)

- It is a NASA technology demonstration mission aimed at characterizing solar sail structures for future small spacecraft engaged in deep space missions requiring long-duration, low-thrust propulsion.

Mission Details

- **Launch Date:** ACS3 was launched on April 23, 2024.
- **Spacecraft Type:** It is a CubeSat, a small satellite built to standardized dimensions.
- **Sail Deployment:** ACS3 will deploy a sail approximately the size of a small apartment from a toaster oven-size spacecraft.
- **Booms:** The spacecraft features four 7-meter-long deployable composite booms.
- **Propulsion Method:** Similar to a sailboat powered by wind, solar sails utilize the pressure of sunlight for propulsion, eliminating the need for conventional rocket propellant.

Concept of Solar Sailing

- **Principle:** Solar sailing utilizes the momentum of photons in sunlight to propel spacecraft.
- **Mechanism:** When sunlight reflects off a shiny solar sail, some of its momentum is transferred to the sail, providing a small but continuous push.
- **Continuous Thrust:** Over time, this continuous push from sunlight can generate more thrust for a spacecraft than traditional chemical rockets.
- **Unique Destinations:** Solar sails enable access to destinations that are difficult or impossible to reach with other propulsion systems.
- **Interstellar Travel:** Solar sails may offer the best option for interstellar travel due to their continuous propulsion capability.

Significance of Solar Sailing

- **Orbit Maneuvering:** Solar sail technology allows small spacecraft to change their orbits, expanding their potential applications.
- **Future Missions:** Larger sails and lighter materials will enhance the performance of future solar sail missions.
- **Lightweight Materials:** ACS3 uses lightweight carbon fiber sail booms instead of traditional metal booms, marking the first test of this technology in space.

4.19 DEFINITION OF PATHOGENS

World Health Organization (WHO) recently published a global technical consultation report introducing updated terminology for pathogens that transmit through the air.

Infectious Respiratory Particles (IRPs)

- **IRPs-** Pathogens that transmit through the air will now be described by the term 'infectious respiratory particles' or IRPs.
- **Scope of the New Definition** - The pathogens covered include those that cause respiratory infections, e.g. COVID-19, influenza, measles, Middle East respiratory syndrome (MERS), severe acute respiratory syndrome (SARS), and tuberculosis, among others.
- **Why was the New Definition Needed** - Varying terminologies highlighted gaps in common understanding and contributed to challenges in public communication and efforts to curb the transmission of the pathogen' during the **COVID-19** pandemic.
- **How was the New Definition arrived at** - It is the result of an extensive, multi-year, collaborative effort and reflects shared agreement on terminology between **WHO**, experts and four major public health agencies -
 - Africa Centre for Disease Control and Prevention
 - Chinese Center for Disease Control and Prevention
 - European Centre for Disease Prevention and Control
 - United States Centers for Disease Control and Prevention.

4.20 HUMAN CASES OF BIRD FLU

Human cases of bird flu 'an enormous concern': WHO

More on News:

- **The World Health Organization** voiced alarm at the growing spread of H5N1 bird flu to new species, including humans, who face an **"extraordinarily high" mortality rate**.
- The A (H5N1) strain has become "a global zoonotic animal pandemic".
- Infecting **ducks and chickens** and then increasingly mammals, that virus now evolves and develops.

What is Bird Flu?

- **It also known as avian flu**, refers to an infectious viral illness that mainly infects and spreads among poultry and some wild birds.
- **Origin and spread:** It has "descended from a virus that caused an outbreak on a goose farm in **Guangdong, China, in 1996**.
 - The new version of H5N1 first emerged in Europe in 2020 and then rapidly reached Europe, Africa, and Asia
- **Factors Behind spread of disease:** The exact factors behind the large outbreaks of the bird flu are still largely unknown.
 - **Higher sea surface temperatures** might also be at play. For example, warmer sea temperatures **near northern Chile have led to a fall in the forage fish population** and that has made sea lions weaker and more susceptible to disease.

About H5N1

- **H5N1 is a type of influenza virus that causes a highly infectious**, severe respiratory disease in birds called avian influenza (or "bird flu").
 - When people do become infected, the **mortality rate is about 60%**.
- **Cause of concern:** Influenza viruses constantly **undergo genetic changes**. It would be a cause for concern; it may acquire the ability to infect humans and then critically the ability to go from human to human.
- **The symptoms:** H5N1 infection may **include fever (often high fever, > 38°C)** and malaise, cough, sore throat, and muscle aches.
 - The infection may progress quickly to **severe respiratory illness** (for example, difficulty breathing or shortness of breath, pneumonia, acute respiratory distress syndrome) and neurologic changes (altered mental status or seizures).
- **Prevention and Treatment:** Preventive measures include **avoiding contact with sick birds**, practicing good hygiene, and monitoring outbreaks.
 - **Treatment involves antiviral medications**, but a specific vaccine for H5N1 in humans is not widely available.
- **Global preventive measures:** WHO continuously monitors avian and other zoonotic influenza viruses closely through its **Global Influenza Surveillance and Response System (GISRS)**.

4.21 ELECTRIC AIR TAXI

Indigo's parent firm Interglobal Enterprises and US-based Archer Aviation will be launching an all-electric air taxi service in India in 2026.

About Air Taxis

- **Electric vertical takeoff and landing aircraft (eVTOL)**, also known as flying taxis are aircrafts that function just like a **helicopter** with much less noise and better safety measures.
- **Capacity** - A single aircraft can carry four passengers besides the pilot.

- The low-altitude aircraft would travel between cities and airports avoiding traffic.

Challenges

- **Pilots** - A large number of pilots need to be trained in order to compete with other modes of transportation.

- **Costly** - For a trip costing \$12-\$18 in a regular taxi, a seat in the air taxi will cost \$36-\$48.



- **Safety** - Taking off and landing in an urban setting can have large safety implications.

- **Traffic Control** - Air taxis will require the authorities to rework traffic control systems from the ground up.

Benefits

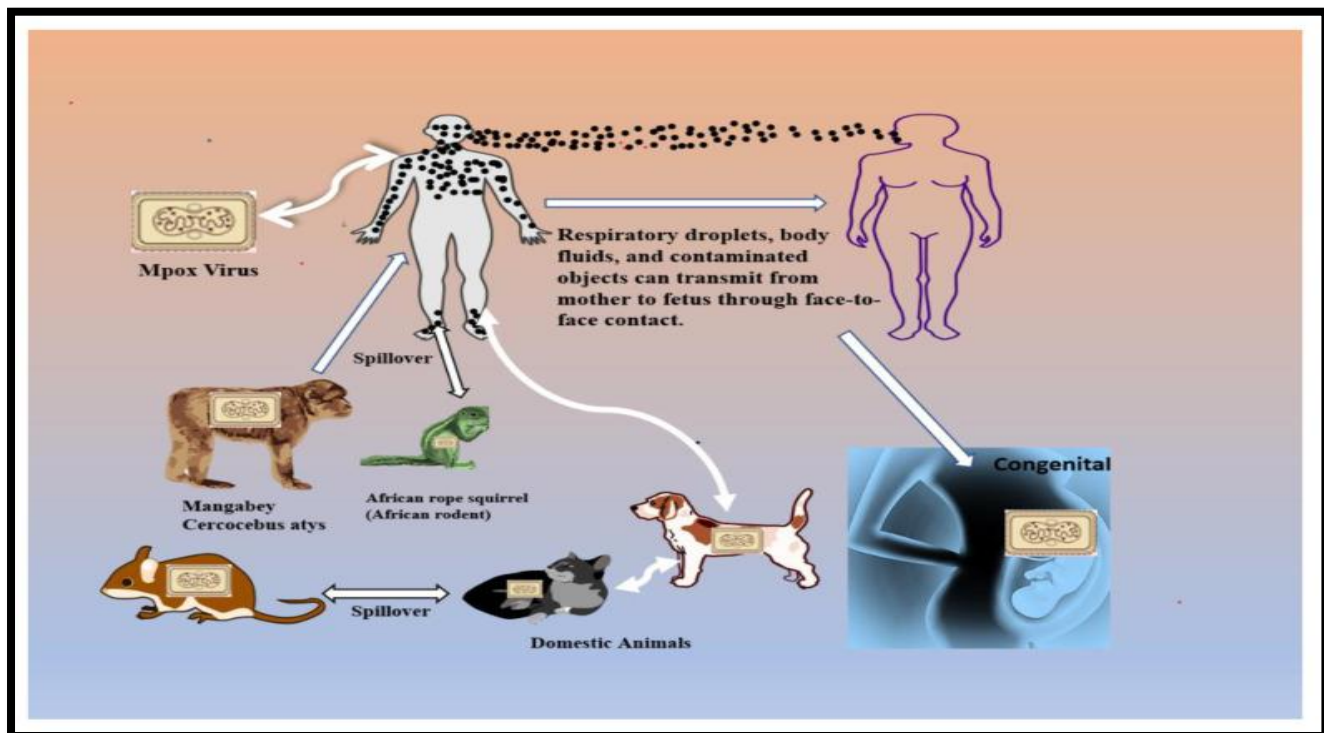
- **Time saving** - An air taxi will cover 161 kilometers in 7 minutes, the same distance that would take 60-90 minutes in a car.
- **Non - polluting** - Air taxis will be electric.
- **Emergency Services** - They can be used to airlift and rescue accident victims or medical patients in case of emergencies.
- **Reduce Congestion** - Air - taxis will provide an alternative to an already congested urban transportation.

4.22 MPOX (MONKEYPOX)

Scientists reported a section of the mpox genome believed to be 'less important' is responsible for giving the virus a peculiar evolutionary ability.

About Mpox

- Mpox is a **zoonosis**, a disease that is transmitted from animals to humans **caused by the monkeypox virus** (commonly abbreviated as MPXV).
 - **Two different clades exist:** clade I and clade II (strains of the virus descended from a common ancestor)
 - Virus is an **enveloped double-stranded DNA virus** of the Orthopoxvirus genus in the Poxviridae family, which includes variola, cowpox, vaccinia and other viruses.
- The monkeypox virus was discovered in Denmark (1958) in monkeys.



- **Common symptoms:** Skin rash or mucosal lesions which can last 2–4 weeks accompanied by fever, headache, muscle aches, back pain, low energy, and swollen lymph nodes.

- **Transmission:** It can be transmitted to **humans through physical contact** with someone who is infectious, with contaminated materials, through sexual route, or with infected animals.
- **Laboratory confirmation:** Detection of **viral DNA by polymerase chain reaction (PCR)** is the preferred laboratory test for mpox.
- **Treatment:** It is treated with **supportive care**. Vaccines and therapeutics developed for smallpox and approved for use in some countries can be **used for mpox in some circumstances**.
- **Prevention:** Mpox can be prevented by avoiding physical contact with someone who has mpox. Vaccination can help prevent infection for people at risk.
- **WHO response:** The global outbreak of mpox was declared a public health emergency of international concern (PHEIC) on 23 of July 2022.
 - In 2022–2023 a **global outbreak of mpox** was caused by a strain known as **clade IIb**.

4.23 DARK MATTER AND GOD PARTICLE

Dark Matter

- Dark matter refers to that matter in space which is **completely invisible**.
- It **emits no light or energy** and thus cannot be detected by conventional sensors and detectors.
- Dark matter makes up about **27%** of the universe.
- Dark matter can only be observed because of its **gravitational** pull-on visible matter in space.
- **Dark Energy-** It is the energy responsible for accelerating the **expansion of the universe**.
 - Dark energy makes up 68% of the universe.
- Together dark matter and dark energy form almost **95%** of our entire universe.

Satyendra Nath Bose

- Bose is called the '**Father of the God Particle**.'
- His work on the **quantum theory of light provided the foundation for Bose-Einstein Condensates**.
 - **Bose-Einstein Condensates-** a new state of matter in which thousands of atoms condense into a single giant atom that behaves like a wave.
- **Albert Einstein's generalization of Bose's work** led to the system of statistical quantum mechanics, now known as **Bose-Einstein statistics**.

God Particle- Higgs Boson

- The Higgs boson is the fundamental **force-carrying particle** of the Higgs field which is responsible for **granting other particles their mass**.
- **Proposed by-** This field was first proposed in the mid-sixties by Peter Higgs.
- **Discovered-** 2012 by **Large Hadron Collider** Experiment.
 - **Large Hadron Collider (LHC)-** A long tube particle accelerator.
 - **Location-** European particle physics laboratory (**CERN**), Switzerland.
- **Properties-**
 - The Higgs boson has a mass of 125 billion electron volts — meaning it is 130 times more massive than a proton.
 - It is **chargeless**.
 - The Higgs Boson is the only elementary particle with **no spin**.

4.24 WHITE RABBIT COLLABORATION

- White Rabbit Collaboration is a group formed by **CERN, other organizations, and companies** which is dedicated to working together on a **technology called White Rabbit**.

What is White Rabbit Technology?

- White Rabbit technology **helps synchronize devices very precisely**, down to tiny fractions of a second.
- Initially developed for physics experiments at CERN but now used in various fields like finance.

Key Features of White Rabbit Technology:

- **Open source:** Anyone can use and modify it to fit their needs.
- **Precise synchronization:** Ensures devices operate in perfect time alignment.
- **Flexible:** Can be adapted for different applications and industries.

Current Applications and Future Potential:

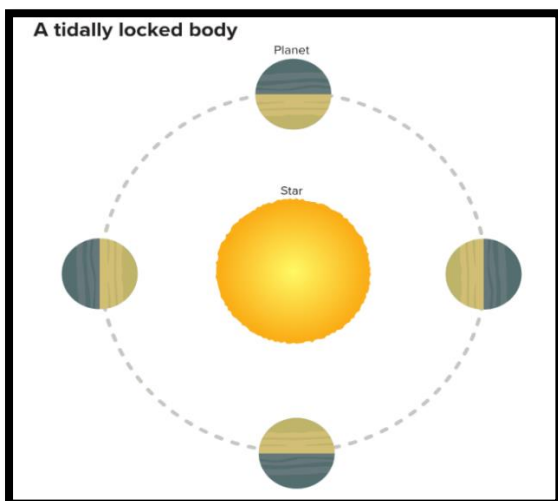
- Used in finance, research infrastructures, and being evaluated for future quantum internet and also being tested in telecom and power grid networks for time synchronization.
- Potential to revolutionize global time dissemination technologies, offering alternatives to satellite-based systems.

Goals of White Rabbit Collaboration:

- Help companies and organizations understand how to integrate White Rabbit into their products and systems.
- Improve and adapt White Rabbit to meet the needs of different users and industries.

4.25 TIDALLY LOCKED PLANET

- An international team of astronomers and astrophysicists has confirmed the **first known** observance of a **tidally locked** super-Earth exoplanet **LHS 3844b** using **Spitzer Space Telescope**.
 - **Exoplanet:** it is any planet beyond our solar system.
- Tidally locked planets have **one hemisphere permanently facing their host star, while the other remains in permanent darkness**.
- Tidal locking occurs **due to gravitational forces between a planet and its star**, causing the planet's rotation period to synchronize with its orbital period.
- As a result, one side of the planet always faces the star, **experiencing permanent day, while the opposite side remains in permanent night**.
- This creates extreme temperature differences and unique atmospheric conditions.



Spitzer Space Telescope

- **Launched by:** Spitzer was the final mission launched in NASA's Great Observatories Program – a family of four space-based observatories.
 - **Other missions:** Hubble Space Telescope, the Compton Gamma-Ray Observatory, and the Chandra X-Ray Observatory
- **Launched In: 2003**
- **Infrared Telescope:** Spitzer was designed to detect infrared radiation.
- **Function:** To detect light from an exoplanet, or a planet outside our solar system.

4.26 INTERACT

- **International Network for Terrestrial Research and Monitoring in the Arctic (INTERACT)** is an infrastructure project funded by the EU.
- **Aim** – To create terrestrial research **infrastructure throughout the Arctic and adjoining forest** and alpine regions to identify environmental change, to facilitate understanding and prediction of future change and to inform decision makers about societally relevant impacts.
 - Also aim is to **apply the Zero Emissions** approach and philosophy to reduce the environmental impact of Arctic Stations.
- It falls under the **SCANNET umbrella**, a circumpolar **Arctic network** of more than 80 terrestrial field stations across northern Europe, Russia, US, Canada, Greenland, Iceland, the Faroe Islands, Scotland, and some northern alpine areas.
- **Princess Elisabeth Antarctica**
 - **World's first zero emission station**
 - Located on **Utsteinen Nunatak in Queen Maud Land, Antarctica**.
 - A project of the Belgian state in collaboration with the International Polar Foundation.
 - It is the only Antarctic station participating in INTERACT.
 - It is sharing expertise, experiences, and best practices with INTERACT Arctic Station Managers for reducing the environmental impact of Arctic research station.

4.27 STATINS

About Statins

- Statins are drugs prescribed to **people with a high risk of cardiovascular disease**.
- It finds a place on **the list of essential medicines of WHO**.

How Statins work?

- Statins are drugs that can lower cholesterol. They work by blocking a **substance that body needs to make cholesterol**.
- They work by blocking the activity of an enzyme involved in the **metabolic pathway that produces LDL, or "bad", cholesterol**.

Impact of Statins

- It can induce **glucose intolerance and even frank diabetes**.
- It is reported that the feces of those taking atorvastatin (a drug containing Statins) had a reduced abundance of **bacteria of the genus Clostridium** and that these individuals had "altered serum and fecal bile acid profiles" as well.

4.28 PINK HYDROGEN

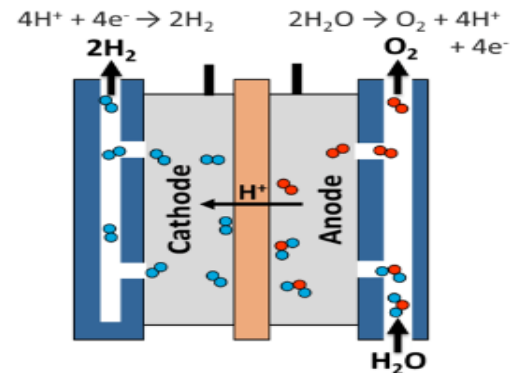
- Pink hydrogen is **generated through electrolysis powered by nuclear energy**.
- It can achieve a **high-capacity factor** due to the steady base load profile of nuclear power (involving both stability and density), relative to the intermittent supply from renewable sources.
- It is also **referred to as purple hydrogen or red hydrogen**.
- A pink plant may produce far more hydrogen than a green plant, even though it's expensive.

Constraints in the production of pink hydrogen:

- The **Atomic Energy Act, 1962**, restricts private ownership of nuclear plants.
- The central government holds** the power to produce, develop, use and dispose of 'atomic energy'.
- This **restricts the capacity of the production of the fuel**.

Electrolysis

- It is the process of using electricity to split water into hydrogen and oxygen.
- This reaction takes place in a unit called an electrolyzer.



4.29 ZERO SHADOW DAY

- Zero Shadow Day (ZSD)** occurs when the sun aligns perfectly overhead, causing vertical objects to cast no shadows.
- During ZSD the sun reaches its zenith (the highest point in the sky)** in the sky its rays will be hitting a particular point exactly perpendicular to the surface.
- Occurrence:** It occurs twice a year in regions situated between the Tropic of Cancer and the Tropic of Capricorn.
- The zero shadow days are different for different places on the earth.

4.30 LLAMA 3

- Meta introduced its most capable Large Language Model (LLM), the Meta Llama 3.**
- Llama or Large Language Model Meta AI is a family of **LLMs introduced by Meta AI in February 2023**.
- It is claimed to be the most sophisticated model with significant progress in terms of performance and AI capabilities.
- It is based on the Llama 2 architecture, has been released in two sizes, 8B and 70B parameters based on open-source models.

5 ENVIRONMENT AND GEOGRAPHY

5.1 PLASTIC POLLUTION AND GLOBAL PLASTIC TREATY

An Ambitious Global Plastic Treaty could halve emissions from plastic production, an environmental impact assessment finds.

About Plastic Pollution:

- Plastic pollution refers to the accumulation of synthetic plastic products in the environment to the point that they **create problems for wildlife and their habitats** as well as for **human populations**.
- In 1907, the **invention of Bakelite brought about a revolution in materials** by introducing truly synthetic plastic resins into world commerce.
- By the end of the 20th century, plastics had been **found to be persistent pollutants of many environmental niches**, from **Mount Everest to the bottom of the sea**.
- Utility and affordability:** Affordable, durable, and flexible, plastic pervades modern life, appearing in everything from packaging to clothes to beauty products.

Types of Plastics:

Type	Abbreviation	Common Uses	Characteristics
Polyethylene Terephthalate	PET	Bottles, packaging	Lightweight, clear, strong
High-Density Polyethylene	HDPE	Containers, bottles, bags	Sturdy, resistant, opaque
Polyvinyl Chloride	PVC	Pipes, toys, medical devices, wire jackets	Flexible, durable, can be clear or colored
Low-Density Polyethylene	LDPE	Plastic bags, cling films	Soft, flexible, translucent
Polypropylene	PP	Containers, cups, baby bottles, car parts	Tough, heat-resistant, semi-rigid
Polystyrene	PS	Disposable cutlery, CD cases, insulation	Lightweight, insulating, brittle

Sources of Plastic Pollution:

- Packaging Sector:** The primary contributor to single-use plastic waste globally.
- Agriculture:** Utilizes plastics in products like seed coatings and mulch films.
- Fishing Industry:** Industrial fishing gear alone is responsible for over 100 million pounds of plastic entering the oceans annually.
- Fashion Industry:** Approximately 60% of clothing materials are plastics, such as polyester, acrylic, and nylon.
- Micro plastics:** These small plastic fragments, up to 5 mm in size, originate from various sources including tyres, beauty products with microbeads, and synthetic fabrics.

Extent of Plastic Pollution:

- Each day, an amount equivalent to 2,000 garbage **trucks full of plastic is dumped into the world's oceans**, rivers, and lakes.
- Annually, humanity produces over **430 million tonnes of plastic, two-thirds of which are short-lived products** that rapidly become waste. This waste accumulates in the oceans and frequently enters the human food chain.
- Of the total plastic waste generated, 46 percent is sent to landfills, and 22 percent is mismanaged, resulting in litter.

- The production of plastic is on an exponential growth trajectory. It is projected that **in 25 years, we will produce 17.7 billion tonnes of plastic, resulting in 15 billion tonnes of waste**. This is the alarming direction in which we are currently headed.



Global Plastic Treaty

- The **UN Environment Assembly (UNEA)** had passed the resolution **5/14** in **March 2022** to formulate an international legally binding treaty. The Intergovernmental Negotiating Committee (INC) was established to negotiate the treaty.
 - Its first meeting was held from November 28, 2022, to December 02, 2022, in Punta Del Este, Uruguay. Recognized that plastic pollution includes microplastics.
 - The INC began its work during the second half of 2022, with the ambition to complete the negotiations by the end of 2024.
 - Second session (INC-2) was held from 29 May to 2 June 2023 in Paris, France, and a third session (INC-3) from 13 to 19 November 2023 in Nairobi, Kenya.
 - The fourth session (INC-4) is scheduled for 23 to 29 April 2024 in Ottawa, Canada, and the fifth session (INC-5) on 25 November to 1 December 2024 in Busan, Republic of Korea.

UNEA Resolution 5/14 Entitled “End plastic pollution: Recognized the following Principles:

- Recognizing that **plastic pollution includes microplastics**.
- Noting that plastic pollution, in marine and other environments, can be of a transboundary nature and needs to be tackled, together with its impacts, through a **full-life-cycle approach, taking into account national circumstances and capabilities**.

- Reaffirming General Assembly resolution 70/1 of 25 September 2015, by which the General Assembly adopted the 2030 Agenda for Sustainable Development.
- **Also reaffirming the principles of the Rio Declaration** on Environment and Development, adopted in Rio de Janeiro, Brazil, in 1992, Stressing the urgent need to strengthen the science-policy interface at all levels,
- **Improve understanding of the global impact** of plastic pollution on the environment, and promote effective and progressive action at the local, regional, and global levels, recognizing the important role played by plastics in society.

Way Forward

- **Enhancing Regulatory Frameworks:** Strengthening international agreements and national regulations to limit plastic production and encourage recycling. Implementing stringent standards and enforcement mechanisms can drive substantial reductions in plastic waste.
- **Promoting Circular Economy Principles:** Encouraging industries to adopt circular economy models by offering incentives for recycling and the use of recycled materials. Policies should aim to make recycled plastics more economically viable than virgin plastics.
- **Investment in Recycling Technologies:** Increasing funding and support for technological innovations in plastic recycling to improve efficiency and cost-effectiveness. This includes enhancing mechanical recycling processes and developing advanced recycling techniques.
- **Development of Bioplastics:** Supporting research and development in bioplastics to improve their sustainability profiles and commercial viability. Policies should facilitate market entry for bioplastics through subsidies or tax incentives.
- **Consumer Awareness and Behavior Change:** Launching educational campaigns to raise awareness about the impacts of plastic pollution and the benefits of alternatives such as bioplastics and recycled materials.
- **Corporate Responsibility:** Encouraging corporate responsibility through **extended producer responsibility (EPR) schemes**, where producers are held accountable for the entire lifecycle of their plastic products, including end-of-life management.
- **Global Collaboration and Partnerships:** Fostering international collaborations to tackle plastic pollution on a global scale. This includes sharing best practices, technologies, and innovations across borders to harmonise efforts in reducing plastic waste.

Plastic Waste Management (Amendment) Rules 2021

Aspect	Details
• Single-Use Plastics Ban	• Elimination of specific single-use plastic items by 2022 due to high environmental impact.
• Extended Producer Responsibility (EPR)	• Producers, importers, and brand owners must manage the collection and recycling of plastic waste proportional to their production.
• Registration and Reporting	• Mandatory registration with the CPCB and regular reporting on plastic use and waste management.
• Biodegradable Plastics	• Encouragement of development and use of biodegradable alternatives.
• Plastic Waste Processing	• Directives for local bodies to establish systems for segregation, collection, recycling, and disposal of plastic waste.
• Ban on Import of Plastic Waste	• Import of plastic waste prohibited, except as raw material in special zones.
• Enforcement	• SPCBs and PCCs monitor and enforce compliance, with penalties including fines and license cancellations.

5.2 TAIWAN EARTHQUAKE

Taiwan's biggest earthquake in at least 25 years killed nine people and injured more than 900.

About Earthquake

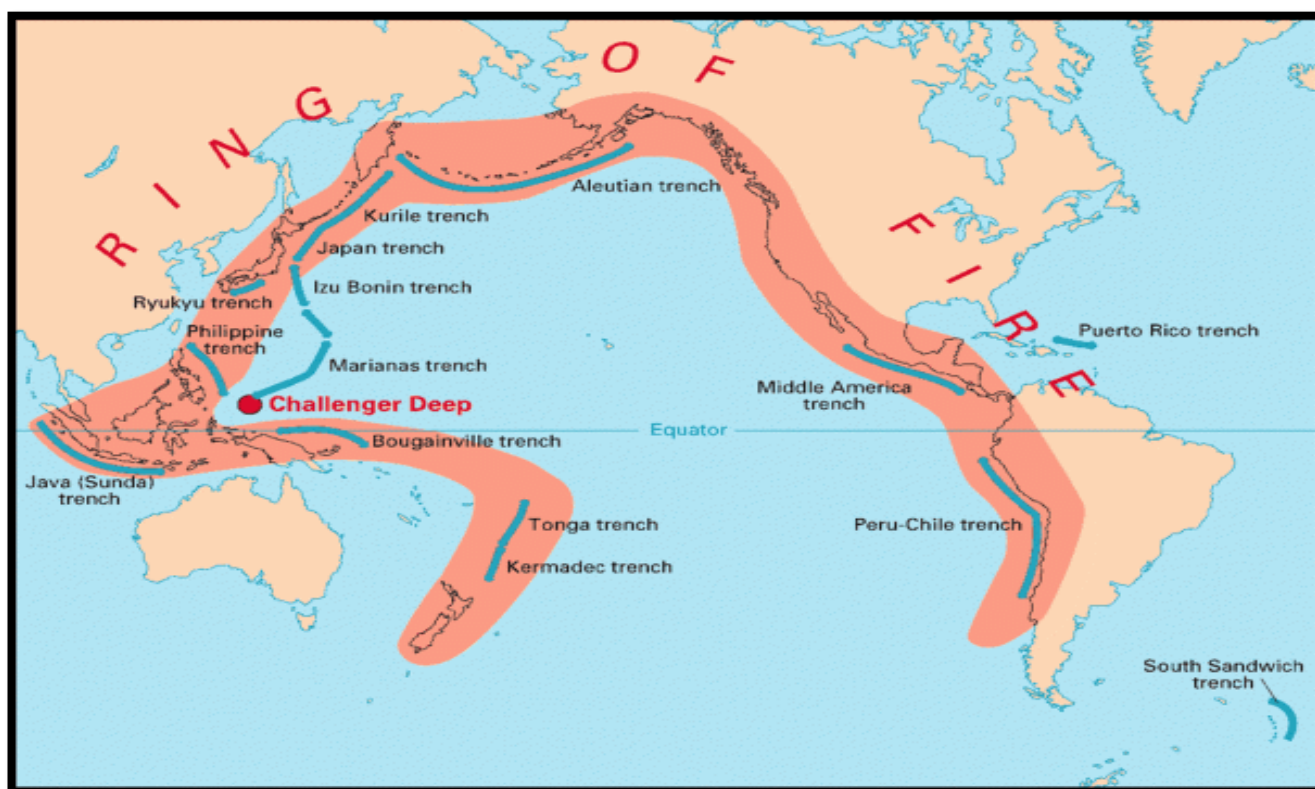
- An earthquake is an **intense shaking of Earth's surface**. The shaking is caused by movements in Earth's outermost layer.

Why Taiwan prone to frequent earthquake?

- Location:** Taiwan lies along the **Pacific Ring of Fire**, the line of seismic faults encircling the Pacific Ocean, where 90% of the world's earthquakes take place.
- Active plate margins:** The Ring of Fire witnesses so many earthquakes due to constant sliding past, colliding into, or moving above or below each other of the **tectonic plates**.
 - Taiwan experiences earthquakes due to the interactions of two tectonic plates, the **Philippine Sea Plate and the Eurasian Plate**.
- The region's mountainous landscape** can magnify the ground shaking, leading to landslides.

What is the Ring of Fire?

- Shape:** It is a **semicircle or horseshoe** in shape and stretches nearly 40,250 kilometres.
- Convergent plate boundary:** The Ring of Fire traces the **meeting points of numerous tectonic plates**, including the Eurasian, North American, Juan de Fuca, Cocos, Caribbean, Nazca, Antarctic, Indian, Australian, Philippine, and other smaller plates, which **all encircle the large Pacific Plate**.



5.3 BRIDGE FUEL AND NATURAL GAS

Natural gas has been called a 'bridge fuel' for countries looking to transition away from coal and oil dependency, as they pursue a pathway towards renewables and electrification.

What is bridge fuel?

- The term bridge fuel refers to the **use of natural gas to supplement or replace fossil fuels** like *coal and oil* while renewable energy technologies are developed or refined.

About the Natural Gas

- **Formation:** Forms organically over millions of years from decomposing plant and animal matter that is buried in sedimentary rock layers.
- **Component:** Methane (CH₄) is the primary component of natural gas, comprising 70-90 per cent of its composition.
- **Other components:** When it is found in nature, raw natural gas may also contain some mixture of butane, propane, and pentane gasses, as well as some nitrogen, carbon dioxide, and water vapor.

Sources of Natural gas

- **Conventional**
 - These are the **simplest formations, or geological traps**, of natural gas, which result from the gas migrating through the **pores in permeable rock**, until it reaches an impermeable rock cap and becomes trapped.
- **Unconventional**
 - **Tight Sands Gas** is trapped in sandstone and carbonate, which has very low permeability, thus restricting its ability to flow to the surface.
 - **Coalbed Methane** is absorbed by the solid coal particles in coal and extracted from coal mines usually by removing water from the reservoir.
 - **Shale Gas** is formed in low permeability shale rock and trapped in clay particles or in small pores and micro fractures in the rock.
 - **Methane Hydrates** refers to a form of porous ice that traps methane molecules, the chief constituent of natural gas. Hydrate deposits generally occur deep under Arctic permafrost, and beneath the ocean floor. 1 m³ of gas hydrate releases 164 m³ of natural gas when extracted.

Benefits

- **Clean Fuel:** It is a cleaner energy source than other fossil fuels, especially coal.
- **Lesser carbon footprint:** Natural gas has a lesser climate impact than coal because it emits **50 percent less CO₂ into the atmosphere**.

Issues

- **Methane emission from natural gas:** While possessing a short atmospheric lifetime (12-15 years, compared to 150-200 years of CO₂), methane has a high global warming potential (**GWP**) which is **28 times that of CO₂ over 100 years**.

5.4 GENETIC PROFILING OF CAPTIVE ELEPHANTS

Genetic profiling of captive elephants of Kerala to begin shortly.

About Genetic profiling

- **DNA profiling:** DNA profiling is a method to differentiate between **individuals of the same species** using samples of their Deoxyribonucleic acid (DNA).
- **Implementing Agency: The Wildlife Institute of India (WII)** is carrying out the profiling of elephants to a national database.
 - It entrusted assistant conservators (social forestry) in the districts with the responsibility of collecting **blood and dung samples of the animals**.
- **Central data repository: Gaja Suchna App** has been developed by the Ministry of Environment, Forest, and Climate Change (**MoEFCC**) in collaboration with **WII**, to record the details of captive elephants across India.
 - The centralized database will **include physical and genetic information** of every captive elephant.
 - It is estimated that there are around **3,000 captive elephants in the country**.

Use of Genetic Profiling

- **Transfer of captive elephants:** It helps in implementing Captive Elephant (Transfer or Transport) Rules, 2024.
 - The profiling is carried out to keep track of the **transfer of captive elephants** within and between the States.
- **Data Access:** The officials of all the State Forest departments in the country can access the data of **Gaja Suchana app**.

Wildlife Institute of India:

- **Established:** It was established in 1982 under the Ministry of Environment Forest and Climate change, Government of India.
- The Institute engaged in **research on biodiversity related issues**.
- **Headquarter:** Dehradun Uttarakhand.

About Elephant Population in India

- India has the largest and the most stable population of Asian elephants, where more than **60% of wild Asian elephants** are in India. India has 29,964 elephants as recorded in the last elephant census conducted in **2017**.
- As per the Elephant Census (2017), **Karnataka** has the highest number of elephants (6,049), followed by **Assam** (5,719) and **Kerala** (3,054).

5.5 INDIAN LAUREL TREE

Forest department authorities in Andhra Pradesh's Alluri Sitharama Raju district cut the bark of an Indian laurel tree, with water gushing out.

About Laurel Tree

- **Scientific Name:** Terminalia tomentosa.
- **Type:** It is a **tropical or subtropical** tree found primarily in several **parts of Asia, Western Pacific Islands and Australia**.
- **Specific features:** Ornamental tree, has dense canopy, smooth light-gray bark, and shiny green lanceolate leaves.
 - Its thick foliage creates excellent habitat for **various bird species**, and its small round **figs serve** as food for birds.
- **Utility:** Known as **Indian Silver Oak** (Leaves Use for silkworm rearing), the timber of the Indian laurel **has great commercial value**.
- **Knowledge shared by:** **Konda Reddi tribe**, known for indigenous tree knowledge and **eco-friendly practices**.

Konda Reddi Tribe:

- It is a Scheduled Tribe classified as a Particularly Vulnerable Tribal Group (**PVTG**) in **Andhra Pradesh and Telangana**.
- **Adapted many changes:** From being **hunter-gatherers to farmers of 'commercial crops'** along the stretch of Godavari.
- Tribe once lived on the **upper fringe of the Bison Hill Range** (locally known as Papi Hill range).
- **Livelihood:** by shifting cultivation (**Podu sagu**), making bamboo products, they collect forest produce like honey, acacia gum and gooseberries and sell them.

5.6 HEAT WAVE

IMD warns of heatwave spells lasting 10-20 days in April-June.

News Details

- According to IMD, Rajasthan, Gujarat, Maharashtra, Odisha, north Karnataka, Andhra Pradesh, and Telangana to experience **increased number of intense heat waves**.
- The maximum temperatures recorded during the **past week reached 42.6 degrees Celsius** in pockets of **Akola in Maharashtra and Phalodi in Rajasthan**.

About heat wave

- **Qualitatively**, a heat wave is a condition of **air temperature which becomes fatal** to the human body when exposed.
- **Quantitatively**, it is defined based on the temperature thresholds over a region in terms of **actual temperature or its departure from normal**.
- Heat waves generally occur over plains of northwest India, Central, East & north Peninsular India **during March to June**.

Criterion for Declaring Heat wave as per IMD

- **Heat wave is considered when** the maximum temperature of a station reaches **at least 40°C** or more for **Plains** and **at least 30°C** or more for **Hilly** regions.
- **Based on Departure from Normal**
 - **Heat Wave:** Departure from normal is 4.5°C to 6.4°C.
 - **Severe Heat Wave:** Departure from normal is >6.4°C.
- **Based on Actual Maximum Temperature**
 - **Heat Wave:** When actual maximum temperature $\geq 45^{\circ}\text{C}$.
 - **Severe Heat Wave:** When actual maximum temperature $\geq 47^{\circ}\text{C}$.
- **For coastal stations** - When maximum temperature departure is 4.5°C or more from normal, Heat Wave may be described provided the actual maximum temperature is 37°C or more.

Favourable conditions for Heat wave

- There should be a **region of warm dry air and appropriate flow pattern** for transporting hot air over the region.
- **Absence of moisture** in the upper atmosphere, as the presence of moisture restricts the temperature rise.
 - Pre-monsoon rainfall is expected to be **below normal over most regions**; aridity and shortage of water will add to the overall increased heating forecast during the summer season this year.
- **Practically cloudless sky** to allow maximum insulation over the region.
- **Large amplitude anticyclonic flow** over the area.
- Heat waves generally **develop over Northwest India and spread gradually eastwards & southwards but not westwards**.
 - **As the prevailing winds during the season are westerly to north westerly.**
- **The El Nino conditions:** the abnormal warming of the sea surface recorded along the equatorial Pacific Ocean, suppress rainfall over India and increase temperatures, globally.
- **On some occasions, heat waves** may also develop over any region in situ under the favourable conditions.
- However, **we cannot attribute a single phenomenon for the prolonged heat wave spells**.

Health Impacts

- The health impacts of Heat Waves typically involve dehydration, heat cramps, heat exhaustion and/or heat stroke.

India Meteorological Department (IMD)

- Established in 1875.
- It is the National Meteorological Service of the country and the principal government agency in all matters relating to **meteorology and allied subjects**.

- **Headquarter:** New Delhi.
- **Nodal Ministry:** Ministry of Earth Science.

5.7 STUDY BY INDIAN NATIONAL CENTRE FOR OCEAN INFORMATION SERVICES (INCOIS)

Scientists from INCOIS have conducted a study emphasizing the impact of the Andaman and Nicobar Islands and the Maldives on the currents of the Indian Ocean.

Key Highlights of the Study

- **Impact of Andaman and Nicobar Islands and the Maldives:** The study highlighted the significant influence of these islands on the direction and speed of Indian Ocean currents.
- **Discovery of a Boundary Current:** Researchers discovered a significant boundary current running along the Andaman and Nicobar coast at a depth of 2,000 meters. This finding highlights previously unrecognized deep-sea dynamics.
- **Revised Understanding of the East India Coastal Current (EICC):** Contrary to previous models, the EICC is now understood to flow at depths of 1,000 and 2,000 meters, in a **direction opposite to surface currents**.
- **Influence on the Equatorial Undercurrent (EUC):** The Maldives Islands play a crucial role in extending the EUC, a strong and narrow eastward-flowing current located in the upper thermocline and centered on the equator.
- **Seasonal Variations of the EUC:** The study observed that the EUC exhibits a more defined structure during the fall months in the eastern Equatorial Indian Ocean, with depths ranging between 50 and 100 meters. In the spring, the current is found deeper, around 100 to 150 meters.
- **Advancements in Ocean Modeling:** Enhanced bathymetry studies have now improved the modeling of upper ocean characteristics such as salinity, temperature, and currents along India's coast.

Equatorial Undercurrent (EUC)

- EUC is a strong, narrow, eastward-flowing current that's located in the upper thermocline, centered on the equator.
- It's a permanent feature of the Atlantic and Pacific oceans and is also present in the Indian Ocean during the northeast monsoon in the spring and winter.

Indian National Centre for Ocean Information Services (INCOIS)

- It provides ocean information and advisory services to the scientific community, industry, government agencies, and society.
- INCOIS is a unit of the **Earth System Science Organization (ESSO)** and was established in 1999 under the **Ministry of Earth Sciences (MoES)**.
- It is located in **Hyderabad**.

5.8 PILOT WHALE

More than 100 pilot whales stranded at Toby Inlet in Geographer Bay in Australia.

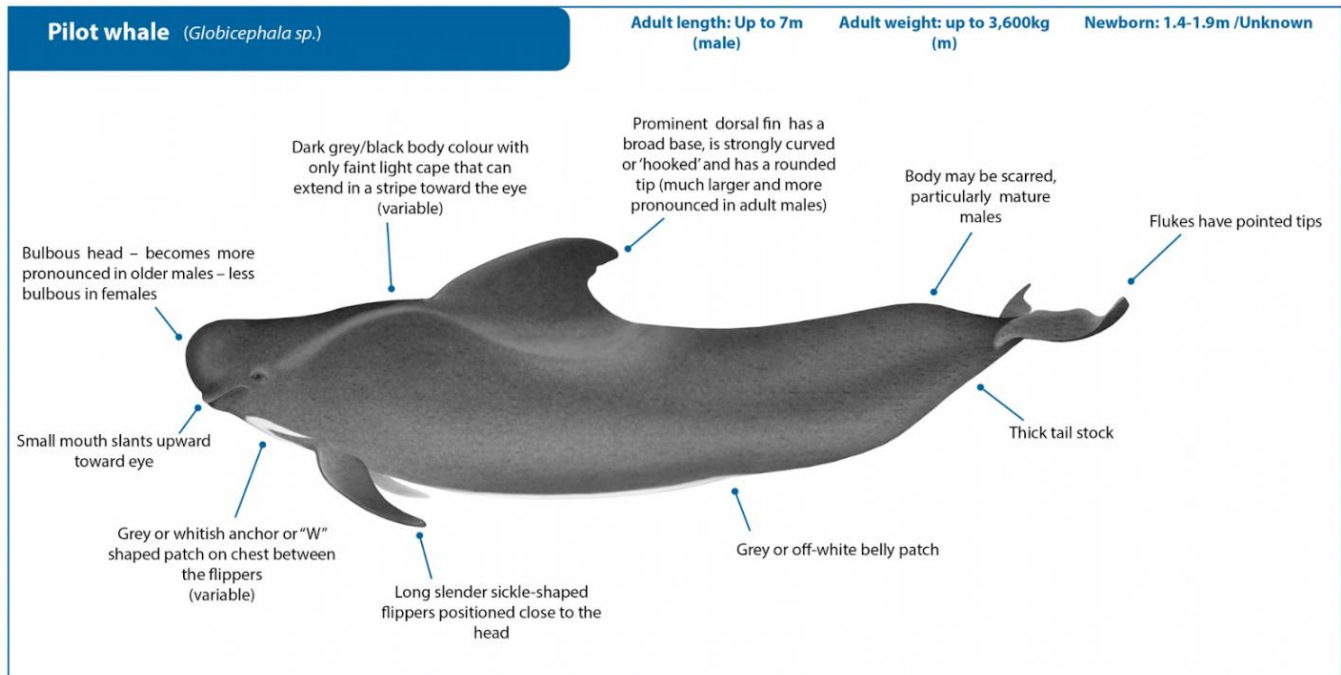
News Details

- The area is near the **town of Dunsborough** in a region and about 236 km (146 miles) south of state **capital Perth**.
- Pilot whales are known for **their tight-knit social bonds**, so when one gets into difficulty and strands, the **rest often follow**.

About the Pilot whale:

- It was named because it was once believed that each observed group was navigated by a **pilot or leader**.
- **Scientific name:** Pilot whale, (**genus Globicephala**).

- **Two species of pilot whales:** Short finned pilot whales (***Globicephala macrorhynchus***), which are mainly found in tropical and warm-temperate regions, and long-finned pilot whales (*G. melas*), which inhabit colder waters.
- **Physical Features:** Round bulging forehead, a short beaklike snout, and slender pointed flippers.



Distribution:

- **Short-finned pilot whales:** Mostly tropical and warm-temperate distribution which includes both nearshore and open-ocean waters.
- **Long-finned pilot whales:** Found in **cool-temperate and subpolar waters** of the Southern Hemisphere but only the North Atlantic and Mediterranean in the Northern Hemisphere.

Specific characteristics:

- **Generally nomadic**, but a few resident populations have been identified, it forms stable family and social groups of 20-100 individuals.
- **Matrilineal:** Meaning that **calves stay with their mothers through adulthood**.
- Sexual maturity: Female at the age of 8-9 years, while males are a bit later at 12-17 years.
- **Gestation:** It is 12 months for long-finned and 15-16 months for short-finned pilot whales.
- **Reproduce:** female up to the age of 40.
- **Males have shorter lifespans**, usually living only 35-45 years.

Threats:

- **Mass stranding:** Species most often involved in mass stranding.
- **Various theories about the cause of mass strandings:** Like accidents in navigation that lead animals to unexpectedly shallow waters, anomalies in the earth's geomagnetic fields caused by solar storms, or impaired navigation in diseased individuals that lead the rest of the group astray.
- **Bioaccumulation:** Contaminants such as **heavy metals and organochlorine contaminants** in their tissue

Human-induced threats:

- **Entanglement and bycatch in fishing gear**, and bycatch in pelagic drift gill nets, **pelagic long lines**, and some trawl fishery.
- **Hunting:** hunted for meat and oil.

Conservation status

- Both species are designated as **Least Concern on the IUCN Red List of Threatened Species**.
- **Long-finned pilot whales are listed under Appendix II** of the Convention on Migratory Species (CMS).

5.9 NILGIRI TAHR

Forest departments of Tamil Nadu and Kerala will jointly count the population of Nilgiri tahrs in a synchronized survey.

Nilgiri Tahr

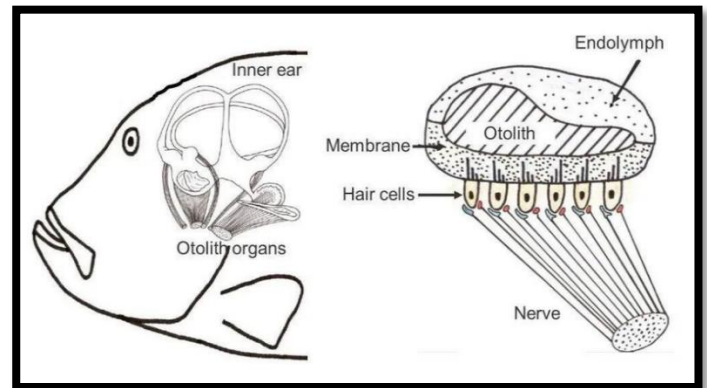
- **Scientific Name** - Nilgiritragus hylocrius (former name is Hemitragus hylocrius).
- It is the state animal of **Tamil Nadu**.
- It is the only mountain ungulate in southern India amongst the 12 species present in India.
- **Habitat** - Inhabits the open montane grassland habitats at elevations from 1200 to 2600 m of the Southwestern Ghats.
 - Currently, the distribution is along a narrow stretch of 400 km in the Western Ghats between Nilgiris in the north and Kanyakumari hills in the south of the region.
- **The Eravikulam National Park** in Anamalai hills, **Kerala**, is home to the largest population of the Nilgiri tahr, with more than 700 individuals.
- **Estimated Population** - **3,122** individuals in the wild.
- **Conservation Status** -
 - **IUCN Status** – Endangered.
 - **Wildlife (Protection) Act of India, 1972** - Schedule I.
- **Threats** - Habitat loss due to rampant deforestation, competition with domestic livestock, hydroelectric projects in Nilgiri tahr habitat, and monoculture plantations.
 - Occasional hunting for its meat and skin.

Nilgiri Tahr Conservation Project

- **Launched by** - Tamil Nadu.
- **Duration** - 2022 to 2027.
- **Objective** - As part of the Nilgiri Tahr project, the Tamil Nadu government aims to enhance its understanding of the Nilgiri Tahr population.
- **Activities Involved** -
 - Conducting surveys and radio telemetry studies.
 - Reintroducing the Tahrs to their historical habitat.
 - Addressing immediate threats.
 - Raising public awareness of the species.

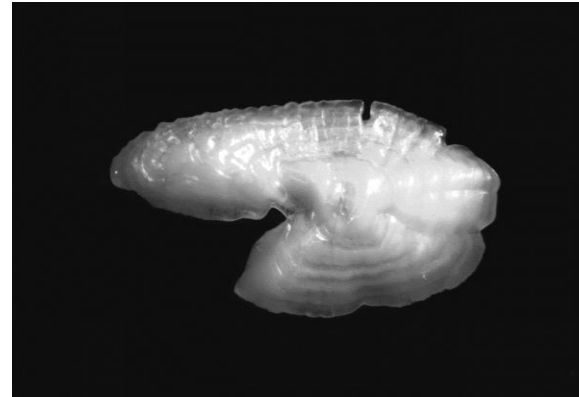
5.10 GOLDEN TREVALLY FISH

- The researchers of the **ICAR-Central Marine Fisheries Research Institute (CMFRI)** have succeeded in captive breeding of golden trevally.
- **Scientific name: Gnathanodon speciosus**, a high value marine fish.
- **It is a reef-associated fish and lives in the company of larger fishes** like skates, sharks, groupers etc.
 - Juveniles of this species act as **pilots for sharks**.
- **Physical features:** It is a **silver-grey fish with yellowish colouration** on the belly, with scattered black patches and all fins coloured yellow and a black tail.
- **Objective:** The development of a new avenue for **sustainable seafood production** and boost India's mariculture activities, **including sea cage farming**.
- **Significance:** It is an ideal species for mariculture (marine aquaculture) due to its faster growth rates, good meat quality, and huge market demand.



ICAR-Central Marine Fisheries Research Institute (CMFRI)

- The ICAR-Central Marine Fisheries Research Institute was established by the **Government of India in February 1947**.
- **Nodal ministry:** Ministry of Agriculture and Farmers Welfare.
- **It joined the ICAR family in 1967.**
- **Function of CMFRI**
 - **Monitor and assess** the marine fisheries resources of the Exclusive Economic Zone (EEZ) including the impact of climate and anthropogenic activity.
 - **Basic and strategic research** in mariculture to enhance production.
 - **Repository of geo-spatial information** on marine fishery resources and habitats.
- **HQ:** Kochi, Kerala.



- There are **three types of otoliths**.
 - **Sagitta:** The largest of the 3 pairs of otoliths, it is **involved in the detection of sound and the process of hearing** or converting sound waves into electrical signals.
 - **Asteriscus:** Involved in the **detection of sound and the process of hearing**.
 - **Lapillus:** Involved in the **detection of gravitational force and sound**.
- **Different species have otoliths of different shapes and sizes;** and cartilaginous fishes, such as sharks, skates, and rays, have none.

5.11 FISH OTOLITH

- **Fish otolith ornaments crafted by fisher women of Vizhinjam** and trained by scientists from Central Marine Fisheries Research Institute (CMFRI) named 'Sea gems', make their market debut.
- **Otoliths, commonly known as "earstones,"** are hard, calcium carbonate structures located directly behind the brain of bony fishes.
- **Use**
 - It helps fish in **hearing and balancing while swimming**.
 - It can be **used to identify the species, size, age, growth rate, and season of death of an individual fish**.
 - Analysis of the oxygen isotope values of fish otoliths can provide information on the **temperature of the water in which the fish lived**.

ICAR-Central Marine Fisheries Research Institute (CMFRI)

- **Established:** 1947
- **Affiliation:** Indian Council of Agricultural Research
- **Headquarters:** Kochi, Kerala
- **Role:** Tropical marine fisheries research

5.12 CARACAL

- **Scientific Name:** Caracal Caracal Schmitzi
- **Origin of name:** Caracal comes from the **Turkish karakulak**, meaning black ears.
 - In India, it is **called siya gosh** (a Persian name)

- In Sanskrit it refers to **deergha-karn** or 'long-eared'.
- **Physical features:** It has long legs, a short face, long canine teeth, and distinctive ears (long and pointy), with tufts of black hair at their tips.



- **Behaviour:** Primarily **nocturnal** animal, and sightings are not common.
- **Special ability:** Traditionally been valued for its **litheness** and extraordinary ability to **catch birds** in flight.

Habitat:

- It occurs in **semi-deserts, steppes, savannah, scrubland**, dry forest, and moist woodland.
 - It prefers open terrain and **drier, scrubby, arid habitats** and needs cover.

Distribution:

- The caracal could be earlier found in **arid and semi-arid scrub forest and Chambal ravines** in India.
 - Today, its presence is restricted to **Rajasthan, Kutch, and parts of MP**.
- Also, the Caracal is widely distributed **across Africa, Central Asia**, and south-west Asia.

Population estimates in India:

- In India, it is **estimated that less than 10-15** animals survive in the **Kutch region, Gujarat**, and less than 50 individuals in **Rajasthan**.

Threats:

- **Infrastructure projects** such as the building of **roads** lead to the fragmentation of habitat, leading to **disruption of movement**.
- **Other:** Large-scale **hunting**, illegal trading, and **loss of natural habitats**

Conservation Status:

- **IUCN Status:** Least Concern.

- **The Wildlife (Protection) Act, 1972: Schedule I.**
- **CITES:** Appendix I (only the population of Asia; all other populations are included in Appendix II.)

Conservation efforts:

- The **National Board for Wildlife** has included the caracal in the list of critically endangered species.
- Caracal has been added to the list of **Species Recovery Plan for 22 species in India**.

Historical significance:

- **The earliest evidence:** comes from a fossil dating back to the civilisation of the Indus Valley c. 3000-2000 BC.
- **Firuz Shah Tughlaq (1351-88)** had **siyah-goshdar khana**, stables that housed large numbers of coursing caracal.
- Caracal is mentioned in **Abul Fazl's Akbarnama**, as a hunting animal in the time of **Akbar (1556-1605)**.
- Descriptions and illustrations of the caracal can be found in medieval texts such as the **Anvar-i-Suhayli, Tutinama, Khamsa-e-Nizami, and Shahnameh**.
- The East India **Company's Robert Clive** is said to have been presented with a caracal after he defeated Siraj-ud-daullah in the **Battle of Plassey (1757)**.

5.13 NEPTIS PHILYRA

- **Neptis philyra Ménétriés**, a member of the family **Nymphalidae**, was recently documented for the first time in India.
- It is **rare butterfly species**, commonly known as **long-streak sailor**.
- **Discovered at:** **Tale Valley Wildlife Sanctuary** in Lower Subansiri district of Arunachal Pradesh.
- **Physical features:** The butterfly has **serrated wings with rich brownish black** on the upper side and yellow brown on the underside and fore wing white cell streak forming **"hockey stick" markings with spots in space**.



- **Geographical distribution:** Found across various regions of **East Asia**, including eastern Siberia, Korea, Japan, central and southwest China.
- **Habitat preference:** Prefers evergreen forests, riverine vegetation, and rocky streams.
- **In Greek mythology**, Philyra was a nymph who was the daughter of **Oceanus and Tethys**.

Tale Valley Wildlife Sanctuary

- **About:** Derived its name from "Tale", a variety of wild onion (*Allium hookeri*) which is abundant at Tale Valley.
- **Location:** Lower Subansiri District of Arunachal Pradesh.
- **Rivers:** *Subansiri, Sipu and Pange rivers* flow through this sanctuary.
- **Flora:** Diverse range of primary vegetation, encompassing temperate conifers, and temperate and subtropical broadleaved forests.
 - E.g. Oak, rhododendron species, silver fir trees, ferns, orchids and complemented by bamboo.
- **Fauna:** Indian elephant, Flying squirrel, Giant squirrel, Himalayan black bear, Indian porcupine, Indian pangolin, Jungle cat and Gaur among others.

- It is a long lived, deciduous tree, **usually squat cylindrical trunk and thick tapering branches** resembling a **root-system**, which is why it has often been referred to as the upside-down tree.
- Fruit is a **large, egg-shaped capsule, covered with yellowish brown hairs**.
- **Habitat:** Tree is found in areas of **South Africa, Botswana, Namibia, Mozambique, and other**



tropical African countries where suitable habitat occurs.

- **Natural pollinator:** Bats, lemurs etc, pollinate the flowers, feeding on their nectar.
- **Ecological significance:**
 - **Tree of Life and Keystone species:** Their massive trunks and extensive root systems are **vital for storing water in arid environments**, providing a critical resource for both the trees and the surrounding ecosystem during **drought periods**.
 - **Medicinal use:** Baobab fruits are highly nutritious, **rich in tartaric acid vitamin C**, and have a **variety of uses in food and medicinal products**.
- **Cultural significance:** baobabs are deeply woven into the **Malagasy way of life**; baobabs are iconic symbols of Madagascar's extraordinary natural heritage.
- **Threats:** Climate change, alteration of rainfall patterns and increased dryness exacerbates forest fragmentation and forest fire, **reduction in animal dispersers like lemurs**.

5.14 BAOBAB TREE

- **Global Society** for the Preservation of Baobabs and Mangroves (GSPBM) has initiated a mission to rejuvenate the iconic baobab trees.
- **Taxonomy:** Genus: *Adansonia*, Species: *digitata*
- **Description:**

6 SOCIETY AND SOCIAL JUSTICE

6.1 NATIONAL PHARMACEUTICAL PRICING AUTHORITY (NPPA)

National Pharmaceutical Pricing Authority (NPPA) enforced an increase in the Maximum Retail Price (MRP) this year of 0.00551 percent for scheduled formulations (of drugs) from the beginning of the fiscal year 2024–25.

About NPPA

- **Constituted:** constituted vide Government of India Resolution dated 29th August 1997.
- It as an attached office of the **Department of Pharmaceuticals (DoP)**.
- **Nodal Ministry:** Ministry of Chemicals & Fertilizers.
- **Function:** Independent Regulator for pricing of drugs and to ensure availability and accessibility of medicines at affordable prices.
- The authority is allowed to direct a price hike of over 10% for the drugs and devices listed on **the National List of Essential Medicines (NLEM)**.
- **Currently, India has approximately 400 molecules and 960 formulations** covered under the National List of Essential Medicines.
- **NPPA follows Drugs Price Control Order 2013 (DPCO)**, which allows for price hikes in line with the changes in the **WPI index**.

India's Pharmacy - Stats

- India's pharmaceutical industry is **the 3rd largest in the world in volume terms and the 13th largest in value**.
- **The largest export destination:** The USA followed by Brazil, Bangladesh, Turkey, China.
- **India is among the top five suppliers of bulk drugs to** many developing countries, like, Bangladesh, Nigeria, Vietnam, Egypt, Iran, and Pakistan.

6.2 QS WORLD UNIVERSITY RANKING

- *The QS World University Rankings for 2024 reveal significant progress and achievement for Indian universities.*

About QS World University Rankings

- It is a portfolio of **comparative college and university rankings** compiled and published annually by **Quacquarelli Symonds**, a higher education analytics firm.
- It includes ranking based on specific domains such as **subject, region, student city, business school, and sustainability**.

Performance of the Indian Universities

- Indian universities showed a **significant rise in representation, with 69 universities securing 424 entries**, marking a 19.4% increase from the previous year.
- 72% of Indian entries are either new, improved, or maintained their positions implying substantial progress in quality and performance.
- **12 Institutes of Eminence (IoE) contributed 40% of India's total entries**, with 180 entries in the rankings.

Top Performer

- **JNU for Development Studies:** Jawaharlal Nehru University (JNU) has been ranked 69th among the top 500 universities.
- **IIM Ahmedabad** debuted strongly at the 22nd position for Business and Management Studies.
- **Saveetha Institute of Medical and Technical Sciences** achieved the 24th spot globally in Dentistry.

6.3 RASHTRIYA AROGYA NIDHI SCHEME

- **The Scheme provides for financial assistance to patients**, living below poverty line and who is suffering from major life-threatening diseases, to receive medical treatment at any of the super specialty Government hospitals / institutes.
- **Launched by:** The Ministry of Health and Family Welfare.

RAN has three components:

- **Rashtriya Arogya Nidhi (RAN):** to provide financial assistance to patients suffering from life threatening diseases **other than Cancer**.
 - Scheme for financial assistance up to Rs. 20 Lakh for patients suffering from **specified rare diseases**.
- **Health Minister's Cancer Patients Fund (HMCPPF):** to provide financial assistance to patients suffering from Cancer.
- **Health Minister's Discretionary Grant (HMDG):** Under Health Minister's Discretionary Grant (HMDG), financial assistance **up to a maximum of Rs. 1.25 lakhs** is provided to the **poor indigent patients**.
 - Only those having annual family income up to Rs.1.25 lakhs and below are eligible.

General guideline:

- Patients will be provided financial assistance for their treatment **at Government hospitals having super specialty facilities**.
- Treatment in **private hospitals will not be eligible** for financial assistance.
- The financial assistance in the form of '**one-time grant**'.
- **Government servants** and their families will **not be eligible**.
- There will be **no reimbursement of expenditure already incurred**.
- **Families covered under Ayushman Bharat - Pradhan Mantri Jan Arogya Yojana (PMJAY)** will **not be eligible for financial assistance** under RAN and HMCPPF components.

6.4 MYCGHS APP

- The Union Government released **myCGHS (iOS version) app**.
- The app is designed to enhance **access to Electronic Health Records, information, and resources for Central Government Health Scheme (CGHS) beneficiaries**.
- It is developed by the **National Informatics Centre (NIC) Himachal Pradesh and NIC Health Team**.
- It offers a wide range of services like
 - Booking and cancellation of online appointments,
 - Downloading CGHS card and index card,
 - Accessing lab reports from CGHS labs,
 - Checking medicine history,
 - Checking medical reimbursement claim status,
 - Accessing referral details,
 - Locating nearby wellness centers,
 - Staying updated with news and highlights,
 - Locating nearby empaneled hospitals, labs, and dental units and
 - Accessing contact details of wellness centers and offices.
- The app features **2-factor authentication security features** and functionality of mPIN ensuring the confidentiality and integrity of users.
- **MyCGHS app will now be available for download on both iOS and Android platforms, free of charge.**

Central Government Health Scheme (CGHS)

- Central Government Health Scheme provides comprehensive medical care to the Central Government employees and pensioners enrolled under the scheme for the last 6 decades.
- It is under Ministry of Health & Family Welfare.
- CGHS caters to the healthcare needs of eligible beneficiaries covering all four pillars of democratic set up in India namely Legislature, Judiciary, Executive and Press.

6.5 MADIGAS

- It is a Telugu caste.
- They primarily reside in the south Indian states of **Telangana, Andhra Pradesh, Karnataka**, and Tamil Nadu.
- Madigas constitute around **59 % of Scheduled Caste** population in **Telangana**.
- Madigas are historically associated with the work of **tannery, leatherwork, and small handicrafts**.
 - However, currently they are employed as **agricultural laborers**.

Madigas vs Malas

- **Malas constitute 28.11% of Scheduled Caste** population in Telangana.
- **Issue** - Madigas argue that the benefits of SC category reservations have primarily favoured the Mala community.
- **Demand** - The Madiga community has been advocating for the sub-categorization of the SC category.
- **Madiga Reservation Porata Samiti (MRPS)** has been leading this movement since 1994.

6.6 JENU KURUBA COMMUNITY

- **It is a traditional honey gathering tribe**, is among the original inhabitants of the forests of the Western Ghats Nilgiris particularly that stretch over three states – Karnataka, Kerala and Tamil Nadu.
- They reside in small settlements known as Hadi. Their lifestyle revolves around shifting cultivation, leading to a **semi-nomadic way of life**.
- **The community's social structure is not governed by external authorities** such as rulers or religious institutions but by internal discipline and diffuse power.
- Each settlement typically has a **headman (yajamana)** and a ritual head or shaman (gudda) to maintain order and conduct rituals.

Protests

- Starting in the 1970s, many Jenu Kurubas were evicted from their ancestral lands to make way for **tiger reserves like Nagarhole and Bandipur in the Nilgiris**, as part of wildlife conservation efforts.
- They repeatedly fought for their right to live within the reserved forests, invoking the **Forest Rights Act**.
- Their most recent efforts include **ongoing protests in 2020 and 2021** against the practices and policies of the forest department.

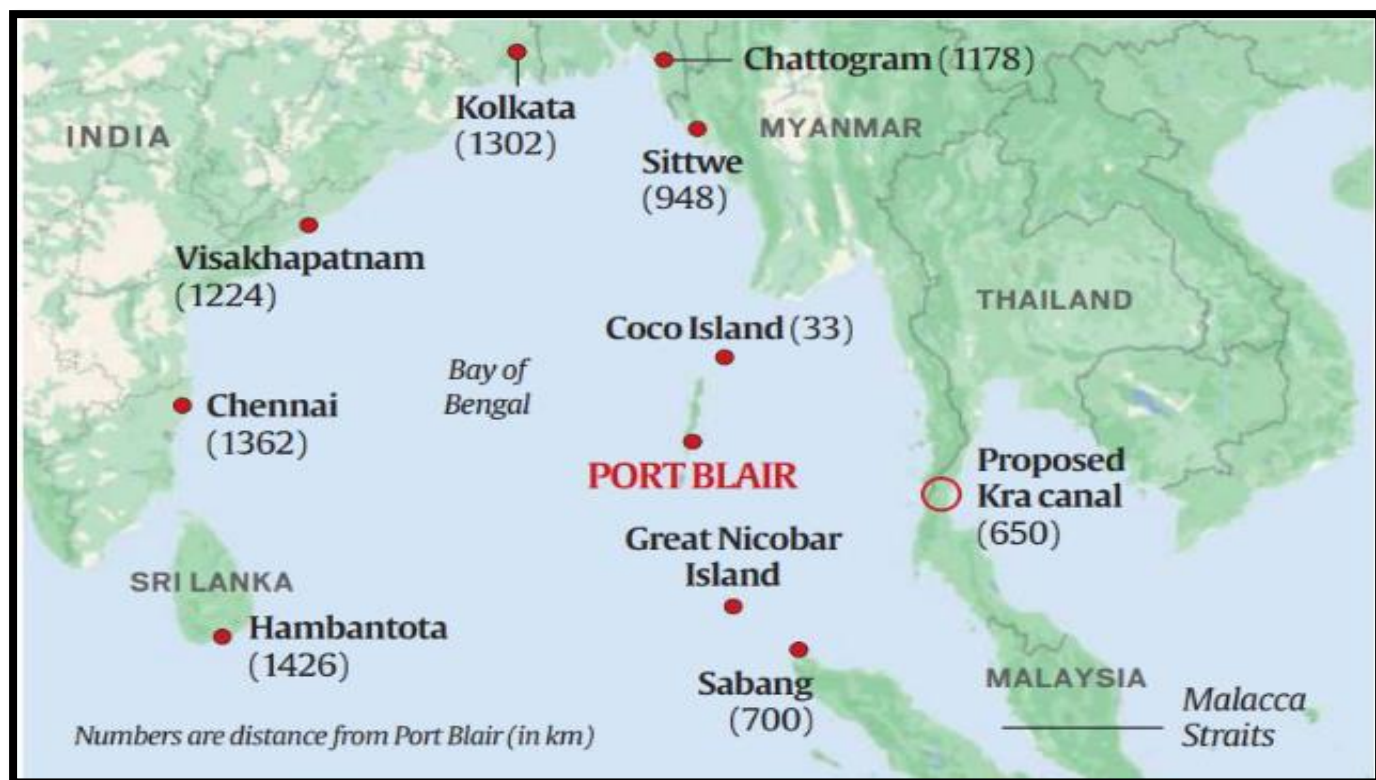
7 SECURITY

7.1 IMPORTANCE OF ANDAMAN AND NICOBAR ISLANDS

The buildup of Chinese People Liberation Army (PLA) Navy in the region has redefined the strategic importance of the archipelago.

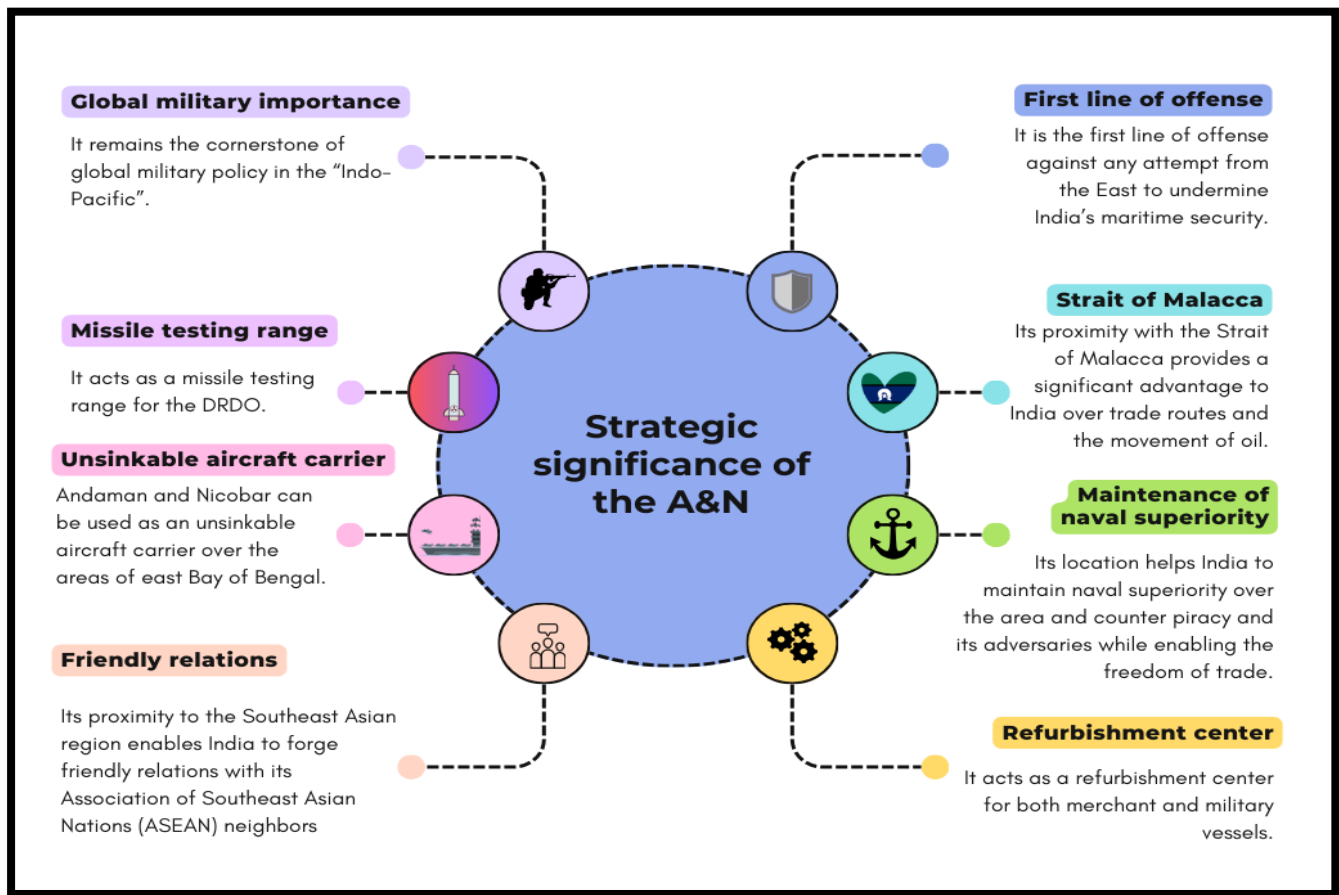
Strategic location of the Andaman and Nicobar Islands

- The islands are located 700 nautical miles (1,300 km) southeast of the Indian mainland.
- **The Malacca Strait, the main waterway that connects the Indian Ocean to the Pacific, is less than a day's steaming from Port Blair.**
- **Sabang in Indonesia** is 90 nautical miles southeast of Indira Point (on Great Nicobar Island).
- **Coco Island (Myanmar)** is barely 18 nautical miles from the northernmost tip of the Andaman.
- If Thailand builds the Kra Canal (connecting the Gulf of Thailand with the Andaman Sea), it would be about 350 nautical miles east of Port Blair.
- The islands share four of India's international maritime zone delimitations with **Myanmar, Thailand, Indonesia, and Bangladesh.**



Significance of the Andaman and Nicobar Islands

- **Economic Significance**
 - **Exclusive economic zone:** It expands India's exclusive economic zone (Around 30 per cent of India's exclusive economic zone falls in this vast region) under the United Nations Conference on the Laws of the Sea (UNCLOS).
 - It has the potential to boost the economy through tourism, fisheries, forests, etc.
 - It helps the Indian navy in protecting the freedom of trade in the area.
- **Natural Resources**
 - **Mineral deposits:** It has huge potential for undersea hydrocarbon and mineral deposits.
 - **Diversity:** Endowed with diverse flora and fauna.



Potential security threats

- **Military threats:** Military intervention in the Indian Ocean by extra-regional powers, especially China, remains a potential cause of concern.
- **Non-conventional threats:** These threats like poaching of marine and forest resources, illegal migration, arms smuggling, and natural disasters have been posing serious challenges to the internal security of the island chain.

Reason for Slow Pace of Developing in A&N Islands

- **Delayed action:** Political decision-makers delayed realization of the strategically critical location of the island for India's security.
- **Logistic constraints:** The distance from the mainland and difficulties of developing infrastructure have been used as an excuse to delay and stall various projects.
- **Complex regulations:** Complex procedures for obtaining environmental clearances even for small projects have been a dampener. Regulations on the conservation of forests and native tribes have complicated issues of land acquisition.
- **Coordination challenges:** The development of islands and strategic infrastructure is a multi-dimensional project involving several ministries, departments, and agencies that presents significant coordination challenges.
- **Political gain vis-a-vis strategic:** The conflict between a long-term strategic vision and immediate political gains has often tilted in favor of the latter.

Developmental Measures

- **NITI Aayog's Holistic Development Program** for the islands includes underwater fiber optics project, GPS motion sensors, automated weather stations, solar plants energy, tourism, military bases etc.
- **Japan has given a grant of \$3.42 billion (¥4.02 billion) to stabilize the electricity supply in strategically located Andaman and Nicobar Islands.**
- **The integrated urban development project to develop the Islands.**

- The execution of **Great Nicobar Development Plan** having plans including:
 - Galathea Bay International Container Transshipment Terminal
 - Great Nicobar International Airport (GNIA), a greenfield airport
 - Great Nicobar Gas and Solar Power Plant (Great Nicobar GSPP) with 450-MVA capacity, spread over 16,610 hectares.
 - **Two new greenfield coastal cities**

Way Forward

- **Maritime security:** The development steps should be taken according to the requirement of maritime security to keep the vast area around the islands under surveillance along with a strong element of deterrence ensured against any naval misadventure from the East.
- **Maritime economy:** Infrastructure that can bolster India's maritime economy must be built on the southern group of islands that is strategically located vis-à-vis the main shipping lane from the Indian Ocean to Southeast Asia.
- **Inter-Island connectivity:** Ensuring ease of travel to and between the islands is key. Without rapid movement of people and goods, the pace of development will remain slow.
- **Reduced dependence:** Dependence on mainland support, whether in respect of foodstuffs or relevant local industries that support maintenance, repair, and other services, must be reduced to the extent possible.
- **Prioritizing infrastructure projects like:**
 - Separate airfields with long runways that can operate Boeing 737-sized aircraft for transportation and surveillance.
 - Ports and fuel storages must be built in both the northern and southern groups of the islands for ships' operational turnaround without the need to return to Port Blair.
 - There is a need to ultimately base surveillance and fighter aircraft there, and frequent detachments must operate in the interim.
 - Road networks, high-speed inter-island ferry services, and a seaplane terminal must be developed.
 - Work on the Galathea Bay (Great Nicobar Island) transshipment port must be expedited.
 - Maritime services such as repair and logistics must be developed for international and Indian shipping.
 - Infrastructure that can withstand the weather and possible seismic shocks.
 - Forest and environmental clearances must be complimented with minimum red tape.

The Andaman and Nicobar Islands - facts

- It is a union territory of India consisting of 836 islands grouped into two island groups (the northern Andaman Islands and the southern Nicobar Islands) separated by a 150 km (93 mi) wide channel of which only 31 are inhabited.
- During the Second World War, the islands were **invaded by the Japanese Empire**.
- After Indian Independence in 1947, the region became a province and later a union territory.
- The islands host the **Andaman and Nicobar Command**, the only geographical command operated jointly by the three major wings of the forces.
- **Port Blair is the capital** and largest city of the territory.
- **Indira Point at the southern tip of Great Nicobar** is the southernmost point of India.
- The Calcutta High Court has judicial jurisdiction over the area.
- **Most of the population are speakers of immigrant languages** which include Bengali (28.5%), Tamil (15.2%), Telugu (13.2%), Hindi (12.9%), and Malayalam (7.2%). Sadri (5.5%), and Kurukh (4%).
- The Ten Degree Channel separates the Andaman Islands and Nicobar Islands
- Tribal population constitutes 8.27% of the total of A&N Islands population.

- Home to 5 Particularly Vulnerable Tribal Groups: Great Andamanese, Jarwas, Onges, Shompens and North Sentinelese.
- The Nicobarese tribe is the largest in terms of population among the tribes of the Andaman and Nicobar Islands.

The tribe-wise population of Scheduled Tribes in Andaman and Nicobar Islands as per Census 2011 is given below: -

Tribes	Population
Andamanese, Chariar, Chari, Kora, Tabo, Bo, Yere, Kede, Bea, Balawa, Bojigiyab, Juwai, Kol	44
Jarawas	380
Nicobarese	27168
Onges	101
Sentinelese	15
Shom Pens	229

- Hosts Barren Island - home to India's only active volcano.
- The Island hosts the following National parks.
 - Campbell Bay National Park
 - Galathea National Park
 - Mahatma Gandhi Marine National Park
 - Middle Button Island National Park
 - Mount Harriet National Park
 - North Button Island National Park
 - Rani Jhansi Marine National Park
 - Saddle Peak National Park
 - South Button Island National Park

7.2 THE FINANCIAL ACTION TASK FORCE (FATF) AND VIRTUAL ASSETS

Many countries yet to fully implement steps to prevent misuse of virtual assets, says FATF.

New details

- **FATF** found that many countries are yet to fully implement its requirements aimed at preventing misuse of **virtual assets (VAs)** and **virtual asset service providers (VASPs)**.
- **The FATF plenary in February 2023** agreed on a road map to strengthen the implementation of its standards on VAs and VASPs.
- Recently, it published a paper on the *"Recommendation 15 by FATF Members and Jurisdictions with Materially Important VASP Activity"*.

About VAs (crypto assets)

- It refers to **any digital representation** of value that can be digitally traded, transferred, or used for payment.
- It does **not include digital representation of fiat currencies**.

FATFs Concern Regarding VAs

- **Volume of data:** Large-scale trend data related to virtual assets is difficult to obtain and may change rapidly.
- **Nature of asset:** **Virtual assets were inherently international and borderless**, any failure to regulate VASPs in one jurisdiction could have serious global implications.
- **Proliferation of weapons:** **Laundering of hundreds of millions of dollars' worth of virtual assets** is done for financing the proliferation of weapons of mass destruction.
- **Terrorist financing:** Terrorist groups as well as ethnically motivated terrorist entities, are increasingly using virtual assets to raise and move funds globally.
- **Cybercrime:** **Ransomware payments** are almost exclusively demanded in virtual assets.

FATF Findings Regarding India

- India has conducted a **risk assessment covering VAs and VASPs** and explicitly prohibited its use.
- It is **compliant on issues** such as enactment of legislation/regulation requiring VASPs to be registered or licensed and application of **Anti-money Laundering/Counter-terrorism Financing measures**.
- FATF is yet to evaluate and rate India's performance with respect to the revised standards on virtual assets and VASPs.

Global Scenario

- The countries like **China, Egypt and Saudi Arabia** have explicitly prohibited the use of virtual assets and VASPs.
 - While it is in progress in **Seychelles and Indonesia**.

About FATF

- An intergovernmental **body** established in **1989 by the G7**.
- It originally included the **G7 countries, the European Commission** and **eight other** countries.
- **Headquarters:** Paris, France
- **Role:** To examine money laundering techniques and trends, review the action already taken at a national or international level, and to **set out measures needed to combat money laundering**.
 - In 2001, the FATF expanded its mandate to also combat terrorist financing.
 - Since 2019, the FATF has had an open-ended mandate, after originally operating under fixed terms.
- **Memberships:** As of today (March 2024), it is a **40-member body** representing most major financial centres in all parts of the globe.
 - Out of 40 members, there are two regional organizations: the European Commission, and the Gulf Cooperation Council.
- **India and FATF:** India joined with observer status in 2006 and became a full member of FATF in 2010.
 - India is also member of Asia Pacific Group and Eurasian Group (EAG)
- **FATF suspended membership of the Russian Federation on 24 February 2023**
- **President:** The FATF President is a senior official appointed by the FATF Plenary from among its members.
 - The term of the President begins on **1 July and ends on 30 June two years** after assuming office.
- **Plenary:**
 - Consists of Member jurisdictions and organizations.
 - It is the **decision-making** body of the FATF.
 - Its decisions are taken by **consensus**.

Black and Grey lists

- The FATF identified jurisdictions with weak measures to combat money laundering and terrorist financing (AML/CFT) in **two FATF public documents** that are issued **three times** a year.
- **Grey list**
 - This list is also known as the **increased monitoring list**.
 - It means FATF has placed a country under **increased monitoring to check** its progress on measures against money laundering and terrorism financing.
 - To be pulled out of the grey list, a **country must fulfil the tasks recommended by the FATF**.
- **Blacklist**
 - '**High-Risk Jurisdictions subject to a Call for Action**' identifies countries or jurisdictions with serious strategic deficiencies to counter money laundering, terrorist financing, and financing of proliferation.
 - As of now, **Iran, North Korea and Myanmar** are the three blacklisted countries.

7.3 COMBINED MARITIME FORCES

INS Talwar seized 940 kg of drugs in the Arabian Sea on April 13, the Indian Navy's first interdiction of illicit narcotics as a member of the Combined Maritime Forces (CMF).

About The Combined Maritime Forces (CMF)

- It is a **multinational maritime partnership**.
- It **upholds the Rules-Based International Order (RBIO)** by countering illicit non-state actors on the high seas and promoting security.
- CMF's focus areas are **counter-narcotics, counter-smuggling, suppressing piracy, encouraging regional cooperation, and engaging** with regional and other partners to strengthen relevant capabilities to improve overall security.
 - **When requested**, CMF assets at sea will also respond to environmental and humanitarian incidents.
- **Members:** CMF has 43 member and partner nations; **Finland is its 43rd member**.
- **Participation is purely voluntary, and members are not bound** by either a fixed political or military mandate.
- **Member Nations:** Australia, Bahrain, Belgium, Brazil, Canada, Colombia, Denmark, Ecuador, Egypt, Finland, France, Germany, Greece, **India**, Iraq, Italy, Japan, Jordan, Kenya, Republic of Korea, Kuwait, Malaysia, the Netherlands, New Zealand, Norway, Pakistan, the Philippines, Poland, Portugal, Qatar, Saudi Arabia, Seychelles, Singapore, Spain, Thailand, Türkiye, UAE, United Kingdom, United States, and Yemen.
- **Partner Nations:** Djibouti, Oman, and Sri Lanka.
- It is commanded by a **U.S. Navy Vice Admiral**.
- **Headquarters:** It is co-located with US Naval Central Command and US Navy Fifth Fleet at **Naval Support Activity (NSA) Bahrain**.

7.4 GOVERNMENT'S EFFORTS TO BOOST UP SECURITY IN ARUNACHAL PRADESH

- Construction work on the **2,400-km trans-Arunachal highway** along the length of the border is almost complete.
- The **1,800-km-long frontier highway** from Bomdila in Arunachal's west, passing through Nafra, Huri and Monigong villages is also progressing well.
- Another **3,000 km of road infrastructure** is also under planning and construction in the State under PM Gati Shakti Project.
- A total of 34 new bridges have been constructed between 2020 and 2023 with the ability to carry heavy infantry battle tanks.
- All seven valleys have related **Chinook-specific helipads to ensure aerial connectivity**.
- Several battalions that were committed to counter-insurgency roles in the Northeast were moved to the LAC.
- The **Army's artillery guns — M777 Ultra-Light Howitzers and 105mm Indian Field Guns** — are deployed close to the LAC.



Other Programs

- **Vibrant Villages Programme (VVP)** was approved as a centrally sponsored scheme for the development of 2,967 villages along the border with China.
- Under the **USOF (The Universal Service Obligation Fund)**, an agreement was signed with

the Bharti Group in 2021 for the commissioning of towers and provision of 4G-based mobile service roll out was also made.

- Army with the help of the Pune-based Aseem Foundation through funds under **Operation Sadbhavna** has initiated a social welfare scheme spanning the areas of environment, education, and skilling.
- **Under the Seema Darshan project**, the State government, with support from the Army, has approved **12 tourist circuits**, including two foreign tourist ones, beyond the Kameng area.

7.5 INDRA APP

- **Indian Naval Dynamic Resource for Weather Analysis (INDRA) is indigenous mobile application.**
- **Purpose:** to disseminate weather related information and forecasts empowering optimal & quick decision making.
- **Developed by:** Bhaskaracharya National Institute for Space Applications and Geo-informatics (BISAG) in coordination with the Directorate of Naval Oceanology and Meteorology, Indian Navy.

Bhaskaracharya National Institute for Space Applications and Geo-informatics (BISAG-N)

- **About:**
 - It is an autonomous society registered under the Societies Registration Act, 1860.
 - Nodal Ministry: Ministry of Electronics & Information Technology (Meity).
 - BISAG (N) has three main domain areas: satellite communication, geoinformatics and geo-spatial technology.
 - It provides specialized services and solutions in implementing map-based Geographic Information Systems.

7.6 COBRA UNIT

- **Commando Battalion for Resolute Action (CoBRA)** is a specialized force established to undertake operation of guerrilla and jungle warfare.
- **Central Reserve Police Force (CRPF)** authorized to raise ten unattached battalions of CoBRA among CRPF personnel.
- Also called the **Jungle warrior**.

- Established in 2008.
- **CoBRA** battalion deployed across regions affected by **left wing extremism**.

7.7 AGNI PRIME

- Recently, the new generation Medium-range ballistic missile Agni-Prime was successfully flight-tested.
- It was tested by the Strategic Forces Command (SFC) along with the Defence Research and Development Organization (DRDO) from the Dr APJ Abdul Kalam Island off the coast of Odisha.
- **Range: 1,000 - 2,000km**
- It is **lighter than earlier Agni missiles**.
- It is a **two-stage canisterised solid propellant ballistic missile**.
- Navigation: dual redundant navigation and guidance system
- It is the **sixth missile in the Agni series**.
- It features **Maneuverable Reentry Vehicle (MaRV) capability**.
- It was tested for the first time in June 2021.

Strategic Forces Command

- It is also known as Strategic Nuclear Command.
- It forms **part of India's Nuclear Command Authority (NCA)**.
- It is a tri service agency.
- It is responsible for the management and administration of the country's tactical and strategic nuclear weapons stockpile.
- It was formed on **4 January 2003**.
- It is commanded of a Commander-in-Chief who is a three-star rank officer.

Dr APJ Abdul Kalam Island

- It is an island off the coast of **Odisha**.
- It is located close to the Gahirmatha Marine Sanctuary, the world's largest rookery of the endangered olive ridley sea turtle.
- It was formerly known as **Wheeler Island** before being renamed in 2015 to honor the late Indian president.
- The Integrated Test Range missile testing facility is located on the island.

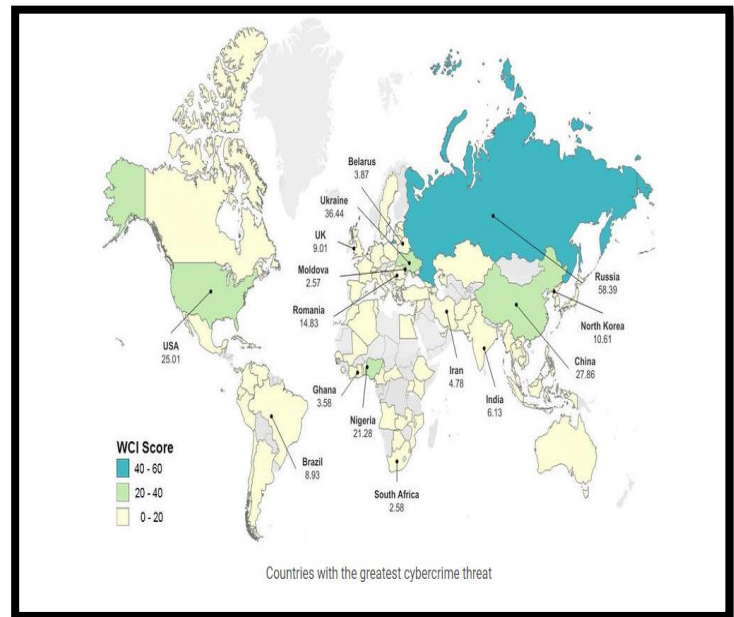
- The first missile test conducted on Abdul Kalam Island was the successful test of the Prithvi missile on 30 November 1993.

7.8 DOXXING

- Doxxing (Doxing, short for "dropping dox") is a malicious practice **where an individual's private information is exposed online without their consent** such as revealing personal details such as real names, addresses, occupations, or any other identifying data.
- In India, there is no law in place to prevent and/or punish doxxing directly.
- There are laws in place **against voyeurism (Section 354C IPC and IT Act)**, divulging sexually explicit content (The IT Act) and obscene content (Section 292 IPC), defamation (Section 499 IPC) and online stalking (Section 354D IPC).

7.9 WORLD CYBERCRIME INDEX

- It identifies the globe's major cybercrime hotspots by ranking the most significant sources of cybercrime at a national level.
- It has been developed as a **partnership** between the University of Oxford and UNSW Canberra.
- **The data that underpins the index** was gathered through a survey of 92 leading cybercrime experts from around the world who are involved in cybercrime intelligence gathering and investigations.
- It ranks roughly 100 countries and identifies key hotspots according to various categories of cybercrime, including ransomware, credit card theft, and scams.
- Russia tops the list, **followed by Ukraine, China, the USA, Nigeria, and Romania.**
- 97 countries were named by at least one expert as being a hub for a particular category.
- **India captured the number 10 spot** in the rankings.



7.10 ROCKS MISSILE

- Also known as **Crystal Maze 2**.
- It is an **air-launched ballistic missile** capable of hitting targets over 250 kilometers away.
- It has been **imported by the Indian Air force** from Israel under emergency procurement powers.
- It is an extended stand-off range air-to-surface missile, earmarked for targeting high-value stationary and relocatable objectives such as long-range radars and enemy air defense systems.
- It is specifically **effective in GPS-denied environments**, like the conditions faced by India during the **Kargil War** and can also **penetrate areas protected by air defense systems**.

7.11 INDIGENOUS TECHNOLOGY CRUISE MISSILE (ITCM)

- DRDO successfully test fired indigenous long range **subsonic cruise missile (estimated speed 0.7 Mach)**.
- The specifications of the missiles were **like the Nirbhay subsonic cruise missile**.
- Developed by Bengaluru-based **DRDO laboratory Aeronautical Development Establishment (ADE)** along with contributions from other laboratories and domestic industries.
- The estimated range of the missile is believed to be **about 1000-1500 km**.
- The **indigenous small turbofan engine (STFE) "Manik"** engine has been used to power it.

- It is a **2-stage rocket system** where the **First stage uses Solid fuel** whereas the **second stage uses Liquid fuel**.
- The missile can be launched from Multiple Platforms and can carry conventional and nuclear warheads.
- It can deliver both **nuclear and conventional warheads**.
- It can travel at a speed of Mach 3.
- **It is a 2-stage rocket.**
 - **1st Stage:** **Solid rocket booster [EEL]**
 - **2nd Stage:** **Liquid rocket ramjet [NPO]**
- A future hypersonic missile, to be called the BrahMos-II is under development.
- **It has Sea skimming capabilities and works on fire and forget principle.**

7.12 NATIONAL SECURITY GUARD

- **It is a statutory body under the National Security Guard Act, 1986** commonly known as Black Cats.
- It is a unit raised for **counterterrorism** in India.
- It is one of the seven **Central Armed Police Forces of India**.
- It is under the administrative control of the **Ministry of Home Affairs**.
- **Manesar is the operational headquarter of the NSG.**
- **It was founded on 16 October 1984**, following Operation Blue Star, to combat terrorist activities and protect states against internal disturbances.
- In January 2020, NSG was relieved of its additional responsibilities of VIP security and its original roles of **counterterrorism and anti-hijacking were restored**.
- It was inspired by and modeled on **the British Special Air Service as well as Germany's GSG 9**.

Other CAPFs under the MHA include.

- The Central Reserve Police Force (CRPF)
- The Border Security Force (BSF)
- The Indo-Tibetan Border Police (ITBP)
- The Central Industrial Security Force (CISF) and
- The Sashastra Seema Bal (SSB).
- Assam Rifles (AR)

7.13 BRAHMOS MISSILE

- India delivered the BrahMos supersonic cruise missiles to the Philippines as part of a \$375-million deal signed in 2022.
- It is a medium-range ramjet supersonic cruise missile that can be fired from land, sea and air.
- It is produced by **BrahMos Aerospace, a joint venture between the Indian Defence Research and Development Organization (DRDO)** and the Russian Federation's NPO Mashinostroyeniya.
- It is named after the rivers Brahmaputra and Moskva.

7.14 TRANSOCEANIC EXPEDITION

- A transoceanic expedition is an expedition crossing or extending across the ocean.
- **The Indian Naval Sailing Vessel INSV Tarini** returned to her base port at Goa after a historic transoceanic expedition of nearly two months by two women officers of the Indian Navy.
- **The expedition was undertaken in double-handed mode by Lieutenant Commander Dilna K. and Lieutenant Commander Roopa A.**
- Their exceptional journey marks a historic milestone **as they become the first from India to accomplish such a feat.**
- The two officers now prepare for their next monumental voyage, a circumnavigation of the globe, the Sagar Parikrama-IV expedition, on INSV Tarini, scheduled to commence in September this year.

8 HISTORY AND CULTURE

8.1 RAJA RAVI VARMA

The first true copy of the painting Indulekha by legendary artist Raja Ravi Varma will be unveiled at the Kilimanoor Palace, on his 176th birth anniversary celebrations.

Painting Indulekha:

- **Indulekha**, the protagonist of the first modern novel in Malayalam literature by O. Chandu Menon published in 1889.
- **The oil painting has Indulekha** holding a letter addressing her lover Madhavan, the hero of the novel, as '**Dear Madhavan ...**' dated 1892.

About Raja Ravi Varma

- **Raja Ravi Varma** was an Indian painter and artist, considered as one of the greatest painters in the history of Indian art.
- **Date of Birth:** April 29, 1848, Varma was born into aristocracy at Kilimanoor in the erstwhile **Travancore state of present-day Kerala**.
 - Studied oil painting with the **British painter Theodore Jensen**.
- **Subjects of painting:** He showed special interest in portraying the charm of South Indian women, Painting Hindu mythological figures, **Portraits of many Indians as well as Europeans**.
 - E.g. Depicting episodes from the story of **Dushyanta and Shakuntala** and that of **Nala and Damayanti, Lord Rama's triumph over Varuna** and Ravana's expression of arrogance while clipping one of the wings of Jatayu.
- **Paintings can be classified into three categories:** portraits, portrait-based compositions and theatrical compositions based on myths and legends.
- **Great Paintings of Raja Ravi Varma**
 - **A Family of Beggars:** Painting represented the sorry state of Indian economics.
 - **A Lady Playing Swarbat:** Modeled after a **South Indian woman**.
 - **Arjuna and Subhadra:** Narrates a story from the Hindu epic Mahabharata.
 - **Damayanti Talking to a Swan:** Scene straight out of Mahabharata.
 - **Draupadi Dreading to meet Kichaka:** Narrates a story from Mahabharata.
 - **Girl in Sage Kanwa's Hermitage (Rishi-Kanya):** Talks about the story of Shakuntala.
- **Awards: Kaiser-i-Hind Gold Medal (1904)**
 - In 2013, a crater on the planet Mercury was named in his honor.
- **Recognition:** The Government of Kerala has instituted an award in his name known as the '**Raja Ravi Varma Puraskaram**', the award is given to individuals in the field of art and culture.

8.2 RANA PUNJA BHIL

The Union government is making several efforts to "reclaim" the lost stories of Adivasi resistance movements to build a nationalistic tribal identity.

About Punja

- **Rana Punja Bhil** is also known as Poonja.
- He was a **tribal leader of the Bhil tribe**, and the great Bhil king of Bhomat.
- He was a contemporary of Maharana Pratap, a **16th century ruler of Mewar**.
- He was born in the Mewar region to **Dunha Holika**.
- **His father died when Punja** was 15 and he was appointed head of Merpur.

- In 1576 he fought alongside **Maharana Pratap against the Mughal emperor Akbar's forces**, led by Man Singh I in the Battle of Haldighati.
- In the battle, Punja led a contingent of Bhil tribesmen which played a crucial role in Haldighati.
- He was bestowed the title of Rana by Maharana Pratap.

Bhil tribe

- **Bhils are considered as one of the oldest tribes in India.**
- They have a presence in **Rajasthan, Gujarat, Madhya Pradesh, Chhattisgarh, Karnataka, Maharashtra, Andhra Pradesh, Tripura, Bihar etc.**
- They are a cross section of the **great Munda race** and a wild tribe of India.
- They are one of the Dravidian racial tribes of Western India and belong to the Australoid group of tribes.
- They speak a language of **Dravidian origin**.
- Bhils are **Hindus by religion**.
- They appease deities of forest and evil spirits beside pujas of Lord Shiva and Durga. Small percentages among them follow Christianity.

8.3 BHOJSHALA-KAMAL MAULA COMPLEX DISPUTE

The Madhya Pradesh High Court ordered the Archaeological Survey of India (ASI) to conduct a survey of the premises of the disputed site within six weeks.

Background

- The Bhojshala Temple-Kamal Maula Mosque complex **was originally constructed by king Bhoja** of the **Paramāra** dynasty in the 11th Century AD.
- It is a **temple of goddess (Vagdevi) Sarasvati** where a school was also established by the king.
- **The tomb of Chishti Sufi saint Kamal-al-Din** was built here in around 1331 CE (Sultanate period) along with a mosque and the building came to be known as Kamal Maula Mosque.
- The mosque is built using structural members of the temple.
- The monument also retains some slabs inscribed with Sanskrit and Prakrit literary works.

The Case

- 'Hindu Front for Justice' petitioned the High Court, claiming the complex was a temple built in 1034 and the mosque here was constructed during the reign of Sultanate king, Alauddin Khalji in the 13th century by "destroying and dismantling ancient structures of previously constructed Hindu temples".

Current Status of the Complex

- It is a protected site and monument under the Archaeological Survey of India under **the Archaeological Sites and Remains (AMASR) Act, 1958**.
- It is in the List of **Monuments of National Importance in Madhya Pradesh**.
- **According to Archaeological Survey of India guidelines**, following an arrangement in 2003 Muslims pray on Friday, while Hindus pray on Tuesday and on the festival for goddess Sarasvati, namely Vasant Panchami.
- **The site is open to visitors on other days.**

Earlier Survey

- A survey was carried out during **the British regime by John Malcolm in 1822** who mentioned many legends about Raja Bhoja, including the dams he built, but did not mention any Bhojshala.
- **On its floor, Malcolm is said to have found a Hindu inscription, indicating the mosque was built with pre-used material.**
- Whether the pre-used material was of a local place of worship or otherwise, he did not investigate.

- William Kincaid in his survey conducted in 1844 also concluded similar to Malcolm.
- According to a 2012 research paper by Micheal Willis published in the Royal Asiatic Society, the Bhojshala or 'Hall of Bhoja' is a term used to describe the center for Sanskrit studies associated with King Bhoja.

King Bhoj

- Paramara dynasty King (1010 CE to 1055 CE).
- His kingdom was centered around the Malwa region in central India, where his capital Dhara-nagara (modern Dhar) was located.
- Bhoja is best known as a **patron of arts, literature, and sciences**.
- He was a **polymath**, and several books covering a wide range of topics are attributed to him.
- He is also said to have constructed many Shiva temples, although **Bhojeshwar Temple in Bhojpur** (a city founded by him) is the only surviving temple that can be ascribed to him with certainty.

8.4 KG JAYAN

- KG Jayan, a renowned Carnatic musician and singer, passed recently.
- He was born on November 21, 1934, in **Kottayam, Kerala**.
- KG Jayan was **known for his devotional tracks**, particularly dedicated to **Lord Ayyappa**.
- He composed the first Ayyappa devotional song performed by a **woman, P Leela**.
- Alongside his twin brother KG Vijayan, they formed the celebrated "Jaya-Vijaya" duo, known for their musical prowess.
- He was honored with the **Padma Shri award in 2019**.
- He received accolades such as the **Kerala Sangeetha Akademi** and the **Harivarasanam Awards**.

Lachit Borphukan

- He was a **legendary army commander of the Ahom kingdom (1228-1826)** known for leading the Battle of Saraighat, 1671 which resulted in the victory of Ahoms over the Mughals.
- He **united and brought together the tribal forces of Assam** and was also inspiration behind strengthening India's naval force.
- **Commemoration –**
 - **The Lachit Borphukan Gold Medal** is awarded to the best cadet from the National Defence Academy.
 - **Lachit Divas celebrated on November 24**

8.5 STATUE OF VALOUR

- Recently, the Prime Minister unveiled a 125-foot bronze statue of **Ahom general Lachit Borphukan in Jorhat, Assam**
- It is **sculpted by Ram Vanji Sutar** (Padma Bhushan awardee).
- The **statue is called the 'Statue of Valour'**.



9 INSTITUTION IN NEWS

9.1 UNIVERSITY GRANTS COMMISSION (UGC)

Recently, NSE CEO Ashish Chauhan and Zoho founder Sridhar Vembu, along with educational figures, appointed as UGC members by the Department of Higher Education for three years.

About University Grants Commission (UGC)

- It is a **statutory body** under the provisions of **UGC Act, 1956**.
- It provides recognition to universities in India and disburses finances to such identified universities and colleges.
- **Nodal Ministry:** Department of Higher Education, Ministry of Education
- The Commission **can have ten members, apart from the chairman and vice chairman**.
- **Headquarters:** The headquarters are in New Delhi, and it has **six regional centres in Pune, Bhopal, Kolkata, Hyderabad, Guwahati, and Bangalore**.

Mandate of UGC

- Promoting and coordinating college schooling.
- Determining and retaining standards of coaching, exam state and studies in universities.
- Framing rules on minimum standards of education.
- Monitoring tendencies in collegiate and college schooling; disbursing offers to the colleges and faculties.
- Advising the Central and State governments on the measures essential for the development of university education.

9.2 DIRECTORATE OF VIGILANCE (DOV)

The Directorate of Vigilance recently terminated the service of Delhi CM Arvind Kejriwal's PA Bibhav Kumar over a pending criminal case.

Directorate of Vigilance

- It functions under the overall supervision and control of **Chief Secretary**, who is also Chief Vigilance Officer for the Government of the **National Capital Territory of Delhi**.
- **Headed by - Director (Vigilance)**, who is also ex-officio Joint Commissioner of Police Anti-Corruption Branch.

- **Structure-** It has two wings-
 - **Anti-Corruption Branch** - Supervised by the Joint Commissioner of Police.
 - **Vigilance Branch** - Supervised by the Additional Secretary (Vigilance).
- **Functions-**
- It deals with **disciplinary cases against delinquent gazetted officers** of all departments under the Govt. of NCT of Delhi.
- It also monitors **complaints against gazetted/non-gazetted employees received through public, CBI, CVC, and other sources**.
- Regarding specific serious irregularities, investigation is done through the Anti-Corruption Branch which functions as the investigating agency.
- Functions **as nodal agency for advice on vigilance matters** to CVOs of local bodies, Vigilance Officers, HOD's and other Organizations of Govt. of Delhi.

9.3 NATIONAL MEDICAL COMMISSION (NMC)

Supreme Court directs NMC to submit details of stipend paid to interns by medical colleges in all states.

About NMC

- **The National Medical Commission (NMC)** has been constituted by an act of Parliament known as **National Medical Commission Act, 2019** which came into force in September 2020.

Aim of the National Medical Commission

- **Quality education:** Improve access to quality and affordable medical education,
- **Skill human resource:** ensure availability of adequate and high-quality medical professionals in all parts of the country.
- Promote **equitable and universal healthcare**.
- **Grievance redressal:** have an effective grievance redressal mechanism.

Composition of NMC

- **Strength:** NMC consist of 33 members, appointed by the Central Government, namely
 - **Chairperson** (Outstanding Medical professional and having experience of not less **than twenty years**)

- Ten ex officio Members; and
- Twenty-two part-time Members
- **Tenure:** Not exceeding four years and not eligible for extension or re-appointment.
 - Cease to hold office after attaining the age of seventy years.
- **Meeting:** Shall meet at least once every quarter
- **Quorum:** One-half of the total number of Members of the Commission including the Chairperson
- **Head office:** Located at New Delhi
- **Nodal Ministry:** Ministry of Health and Family Welfare.

NMC consist of four separate autonomous boards for:

- Undergraduate medical education, Postgraduate medical education, medical assessment and rating, Ethics and medical registration.

Functions:

- **High quality standards:** lay down policies for maintaining a high quality and high standards in medical education.
- **Lay down policies for regulating medical institutions,** medical research and medical professionals and observance of professional ethics.
- **Appellate Jurisdiction:** exercise appellate jurisdiction with respect to the decisions of the Autonomous Boards.
- **Frame guidelines for determination of fees and all other charges** in respect of fifty per cent of seats in private medical institutions and deemed to be universities.

Functions

- **Gender equality:** It supports UN Member States as they set global standards for achieving gender equality.
- **Multi front support:** It works with governments and civil society to design laws, policies, programmes and services needed to ensure that the standards are effectively implemented and truly benefit women and girls worldwide.
- **For SDG:** It works globally to make the vision of the Sustainable Development Goals a reality for women and girls.
- **Coordination:** It coordinates and promotes the UN system's work in advancing gender equality, and in all deliberations and agreements linked to the 2030 Agenda.
- **It cores areas of work include:**
 - Women's leadership and political participation
 - Economic empowerment
 - Ending violence against women
 - Peace and security.
 - Humanitarian action
 - Governance and national planning Youth
 - Women and girls with disabilities
 - Sustainable development agenda
 - HIV and AIDS

9.4 UN WOMEN

Over a million women and girls lack necessities like safe drinking water, functioning toilets and sanitary pads, reveals UN Women report on Gaza.

About UN WOMEN

- It was established by a merger of the UN Development Fund for Women (UNIFEM, established in 1976) and other entities in 2010.
- **It is headquartered in New York City,** United States.
- UN Women is a member of the UN Development Group.

10 PLACES IN NEWS

10.1 KATCHATHEEVU ISLAND

PM Modi's remark on Katchatheevu island has sparked debate around control of the island.

About Katchatheevu Island

- Katchatheevu is a 285-acre uninhabited island in the Palk Strait, between India and Sri Lanka.
- The island is not suited for permanent settlement as there is no source of drinking water on the island.



Island's history

- 14th century - formed due to **volcanic eruptions** in the 14th century.
- Early medieval period - **controlled by the Jaffna kingdom of Sri Lanka**.
- 17th century-control passed to the **Ramnad zamindari based out of Ramanathapuram**.
- British Raj - Became part of the **Madras Presidency**.
- 1921- **Both British colonies (India and Sri Lanka), claimed Katchatheevu to determine fishing boundaries.**
 - A survey marked Katchatheevu in Sri Lanka, but a British delegation from India challenged this, citing ownership of the island by the Ramnad kingdom.
 - This dispute was not settled until 1974.
- 1974 - Indira Gandhi government **'ceded' Katchatheevu to Sri Lanka**.

Indo-Sri Lankan Maritime agreement

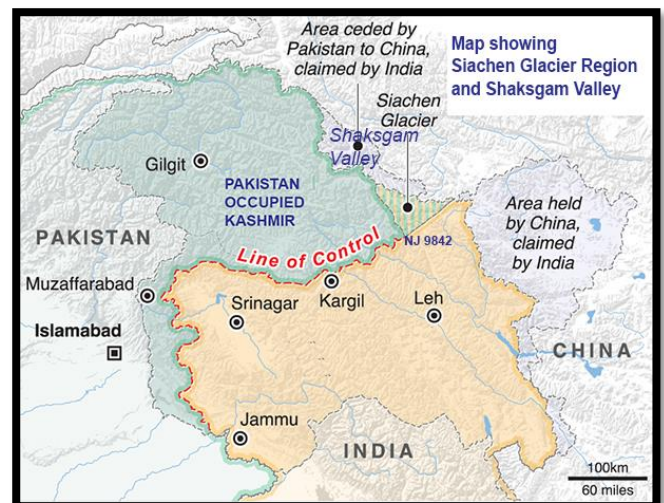
- In 1974, Indira Gandhi government **'ceded' Katchatheevu to Sri Lanka**.

- As per the agreement, Indian fishermen were still allowed to access Katchatheevu **"hitherto"**.
- But Sri Lanka interpreted Indian fishermen's right to access Katchatheevu to be limited to **"rest, drying nets and for visit to the Catholic shrine without visa"**.
- Another agreement in 1976, during the period of Emergency in India, barred either country from fishing in the other's Exclusive Economic Zone.
- Katchatheevu lay **right at the edge of the EEZs of either country, retaining a degree of uncertainty with regards to fishing rights**.

Tamil Nadu's position on Katchatheevu

- It is claimed that Katchatheevu was **"given away"** to Sri Lanka without consulting the Tamil Nadu state assembly.
- There were **vehement protests against Indira Gandhi's move**.
- In 1991, in the aftermath of India's intervention in the Sri Lankan Civil War, the Tamil Nadu Assembly again sought retrieval of Katchatheevu and restoration of fishing rights of Tamil fishermen.
- In 2008, the late J Jayalalitha, **filed a petition in court saying Katchatheevu could not be ceded to another country without a constitutional amendment**.

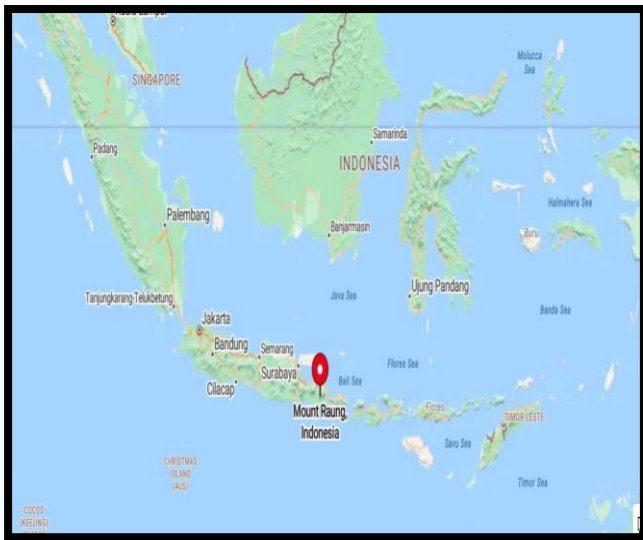
10.2 SIACHEN GLACIER



- The Siachen Glacier is in the **eastern Karakoram Range in the Himalayas northeast of the point NJ9842** where the Line of Control between India and Pakistan ends.

- The glacier lies between the Saltoro Ridge immediately to the west and the main Karakoram Range to the east.
- **It is a part of the union territory of Ladakh.**
- **It is the longest glacier in Karakoram and second-longest in the world's non-polar areas.**
- The Siachen Glacier lies immediately south of the great drainage divide that separates the Eurasian Plate from the Indian subcontinent.
- Sometimes called the **"Third Pole"**.
- The glacier's melting waters are the **main source of the Nubra River** in the Indian region of Ladakh, which drains into the Shyok River.

10.3 MOUNT RAUNG



- **Mount Ruang initiated its eruption recently**, propelling an ash cloud upwards of a mile into the sky.
- **Location:** It is stratovolcano in **Indonesia's North Sulawesi province**.
- **Specific feature:** The summit is truncated by a steep-walled, with a caldera that is about 2-km-wide.
 - **A caldera is a large depression** formed when a volcano erupts and collapses.

10.4 KODAIKANAL

- It is a hill station in **Tamil Nadu**.
- It is **situated at an elevation of 7,300 feet (2,225 metres) in the Palni Hills in western ghats, about 35 miles (55 km) west-southwest of Dindigul.**
- **Establishment:** Kodaikanal was created in **1845 by U.S. missionaries and British civil servants** as a hill

station to which administrative offices were moved during the summer.

10.5 PANTABANGAN TOWN

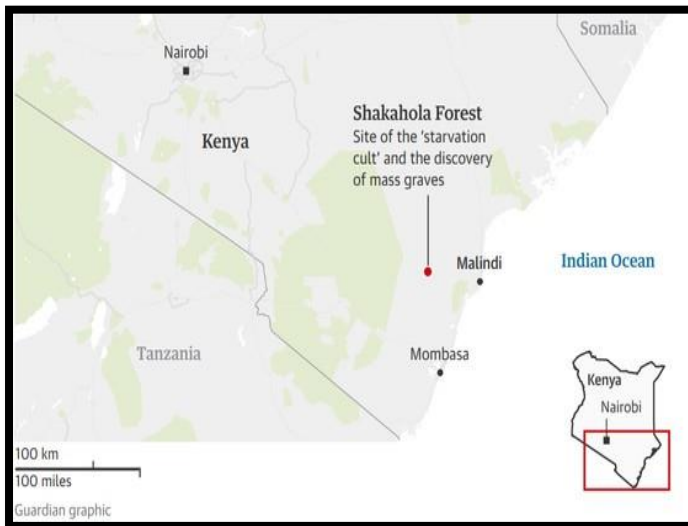
- **It is a centuries-old settlement submerged** by the construction of a dam in the northern Philippines in the 1970s.
 - It has reappeared as water levels **drop due to an El Niño-induced drought**.
- **Location:** Pantabangan Dam in Nueva Ecija province, Philippines.
 - The dam, built on the Pampanga River, is one of the largest reservoirs in Southeast Asia.



- **Remains of the old settlement resurface** are **St. Andrew Parish Church** built in the 19th century, an old public cemetery, Norma's Auditorium, and the stand of a statue of Jose Rizal.
 - It is now considered a cultural heritage zone.

10.6 SHAKAHOLA FOREST

- **The Shakahola Forest Massacre** was caused by a cult led by Self-proclaimed pastor Paul Nthenge Mackenzie in Kenya.
- **He convinced them to starve themselves** in the forest, believing it would lead them to meet Jesus.
- **Location:** Shakahola, inland from Kena's Indian Ocean town of Malindi.



10.8 GOLAN HEIGHTS

- **Hezbollah says** it launched new rocket barrage at Israeli-annexed Golan.
- **Geography:** Golan is bounded by the Jordan River and the Sea of Galilee on the west, **Mount Hermon** on the north, the seasonal **Wadi Al-Ruqqād** (a north-south branch of the Yarmūk River) on the east, and the **Yarmūk River on the south**.
 - It is roughly **boat-shaped** and has an area of 1,150 square km.
- **History:** As an outcome of the **Syrian attack on Israel in the 1967 Six-Day War**, Israel gained control of the Golan Heights.
 - **The Israeli Syrian Agreement on Disengagement of 1974** established a buffer zone between them and a United Nations Observer Force to supervise its implementation.
 - Israeli law was applied by the **Knesset to the Golan Heights on 14 December 1981**.
- **Israeli settlement:** Over 40,000 people living there, less than half of them **Jewish** and the rest **Druze** and a small **Alawite minority**.
- **Strategic significance:** The region's **strategic**

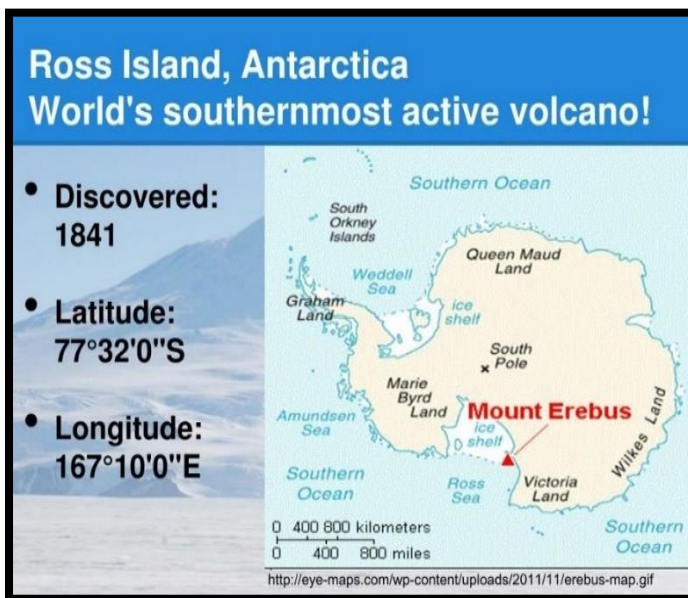


importance derives from its **location**.

- It supplies **Lake Kinneret (the Sea of Galilee)** - a **major source of water for Israel** - with one third of its water.

10.7 MOUNT EREBUS

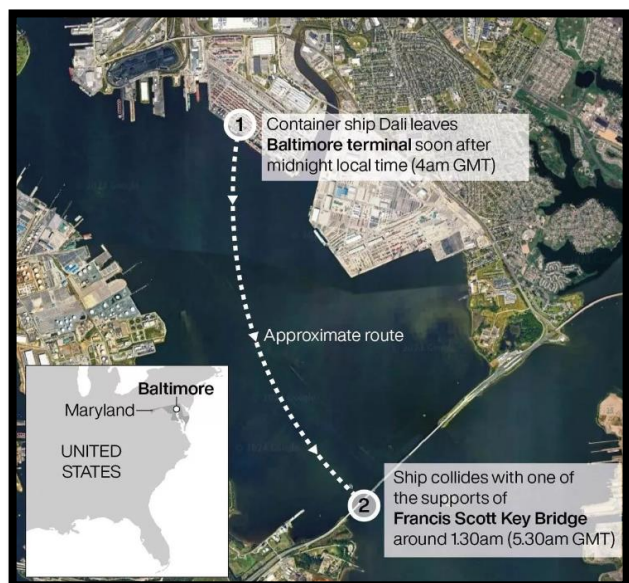
- **Mount Erebus**, an active volcano in Antarctica, has been in the **news for spewing gold dust** worth \$6000 every single day.
- Mount Erebus forms **part of the Ross Island volcanoes**, located off the coast of West Antarctica.
- British Royal Navy officer James Clark Ross first sighted, who named it after his ship, the Erebus.



- It is the **world's southernmost** active volcano.
- It is the **only volcano in the world** which is presently an **erupting phonolite volcano**.
 - Phonolite is a volcanic rock with a unique mineral composition, light color, and an ability to produce a ringing sound when struck.
- **Elevation:** Mount Erebus is the **tallest active volcano** 3,794 meters (12,448 feet).

10.9 BALTIMORE BRIDGE

- The container ship 'Dali' navigating down the Patapsco River, struck Baltimore's Francis Scott Key



Bridge, one of the busiest harbors in the U.S.

- The Port of Baltimore:** It is the deepest harbor in Maryland's Chesapeake Bay, on the USA east coast
- Importance:** Baltimore accounts for 4% of overall East Coast trade
 - Ninth largest U.S. port** by overall trade volume.
 - Export from port:** Automobiles, heavy machinery, coal and handles a large share of U.S. sugar imports.

10.10 MOUNT ETNA

- Volcanic vortex rings** emerge from a new pit crater on the north side of the southeast crater of the Etna Volcano in Sicily, Italy.

Mount Etna: It is the most active stratovolcano on the east coast of Sicily (South of the Alps ranges), Italy.

- It is **highest Mediterranean island mountain** (about 3,326 meters high)
- Active Volcano:** Its recorded volcanic activity dates



to 1500 B.C. Since then, it has **erupted more than 200 times**.

- World Heritage site:** In 2013 it was declared a UNESCO World Heritage site.
- Volcanic features of Etna:** volcanic features such as summit **craters**, **cinder cones**, lava flows and the **Valle de Bove depression**.
- Importance:** The fertile volcanic **soil supports** agriculture, **vineyards and orchards** spread across **plains of Catania to the South**.