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Current Affairs, December 2022

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1. Polity and Governance

1.1 Exit polls

As voting for Gujarat elections ends today, exit polls will be out by the evening.

What are Exit polls?

- An exit poll asks voters which political party they are supporting.
- It is held after voters have cast their votes in an election; while an opinion poll, is held before the elections.
- An exit poll gives an indication of which way the winds are blowing in an election, along with the issues, personalities, and loyalties that have influenced voters.
- Exit polls in India are conducted by a number of organisations, often in tie-ups with media organisations. The surveys can be conducted face to face or online.

Factors of a good exit poll:

- A sample size that is both large and diverse
- A clearly constructed questionnaire without an overt bias – so that data can be collected coherently and analysed systematically to arrive at vote share estimates.
- Political parties often allege that these polls are motivated, or financed by a rival party. Critics also say that the results gathered in exit polls can be influenced by the choice, wording and timing of the questions, and by the nature of the sample drawn.

Rules in India:

- In 1957, during the second Lok Sabha elections, the Indian Institute of Public Opinion had conducted such a poll.
- In India, results of exit polls for a particular election are not allowed to be published till the last vote has been cast.
- Exit polls can't be telecast from before voting begins till the last phase concludes

1.2 National party

What is a national party?

- That has a presence 'nationally', as opposed to a regional party whose presence is restricted to only a particular state or region.
- National parties are usually India's bigger parties, such as the Congress and BJP. However, some smaller parties, like the communist parties, are also recognised as national parties.
- A certain stature is sometimes associated with being a national party, but this does not necessarily translate into having a lot of national political clout.
- Some parties, despite being dominant in a major state — such as the DMK in Tamil Nadu, BJD in Odisha, YSRCP in Andhra Pradesh, RJD in Bihar, or TRS in Telangana — and having a major say in national affairs, remain regional parties.

Technical Criterion for a party to be recognised as a national party by the EC

- As per the ECI's Political Parties and Election Symbols, 2019 handbook, a political party would be considered a national party if:
- It is 'recognised' in four or more states; or
- If its candidates polled at least 6% of total valid votes in any four or more states in the last Lok Sabha or Assembly elections and has at least four MPs in the last Lok Sabha polls; or
- If it has won at least 2% of the total seats in the Lok Sabha from not less than three states.

To be recognised as a state party, a party needs:

- At least 6% vote-share in the last Assembly election and have at least 2 MLAs; or have 6% vote-share in the last Lok Sabha elections from that state and at least one MP from that state; or
- At least 3% of the total number of seats or three seats, whichever is more, in the last Assembly elections; or
- At least one MP for every 25 members or any fraction allotted to the state in the Lok Sabha; or
- Have at least 8% of the total valid votes in the last Assembly election or Lok Sabha election from the state.
- As of now, the ECI has recognised eight parties as national parties — the BJP, Congress, Trinamool Congress, CPI(M), CPI, Nationalist Congress Party (NCP), Bahujan Samaj Party (BSP), and Conrad Sangma's National People's Party (NPP), which was recognised in 2019. Once the official results of the Gujarat elections are announced, AAP will become the ninth party to be recognised as a national party.

1.3 Sixth Schedule

Several political groups in Ladakh have been demanding Statehood and possible inclusion of Ladakh under the Sixth Schedule of the Constitution, on the lines of Jammu & Kashmir.

In 2021, Ladakh's only member in the Lok Sabha, the BJP's Jamyang Tsering Namgyal, demanded constitutional safeguards by amending the Ladakh Autonomous Hill District Council (LAHDC) Act for the protection of land, employment, and the cultural identity of Ladakh under the Sixth Schedule

The Sixth Schedule:

- It is under Article 244
- It applies to Assam, Meghalaya, Mizoram (three Councils each), and Tripura (one Council).
- It provides for the formation of autonomous administrative divisions — Autonomous District Councils (ADCs) — that have some legislative, judicial, and administrative autonomy within a state.
- ADCs have up to 30 members with a term of five years.
- ADCs can make laws, rules, and regulations with regard to land, forest, water, agriculture, village councils, health, sanitation, village- and town-level policing, inheritance, marriage and divorce, social customs and mining,
- The Bodoland Territorial Council in Assam is an exception with more than 40 members and the right to make laws on 39 issues.
- Aim: protects tribal population and inclusion in socio-economic development.

Ladakh's situation:

- The Parliamentary Standing Committee on Home Affairs tabled a report in the Rajya Sabha which said that, according to the 2011 Census, the tribal population in the Union Territory of Ladakh is 2,18,355, that is 61% of the total population of 2,74,289.
- Ladakh administration had recently increased the reservation for Scheduled Tribes in direct recruitment from 10% to 45%.
- The committee recommended that special status may be granted to the Union Territory of Ladakh considering the developmental requirements of the tribal population.
- The Committee further recommends that the possibility of including Ladakh in fifth or sixth Schedule may be examined.

1.4 Case pendency

The Supreme Court has suggested a less cumbersome and even “out-of-the-box” thinking, including roping in senior lawyers to act as ad hoc judges in High Courts, to meet the rising tide of pendency.

- Senior advocates in High Courts may not be willing to give up their lucrative legal practices permanently but may be interested in joining the Bench as ad hoc judges under Article 224A of the Constitution for a

limited period of may be two years.

- Retired judges who were willing to come back to the Bench as ad hoc judges would bring their experience in dealing with arrears.

Background: In April 2021, the court had identified five situations in which the judiciary could seek the aid of ad hoc judges:

- If the vacancies are more than 20% of the sanctioned strength.
- The cases in a particular category are pending for over five years.
- More than 10% of the backlog of pending cases are over five years old.
- The percentage of the rate of disposal is lower than the institution of the cases either in a particular subject matter or generally in the Court.
- Even if there are not many old cases pending, but depending on the jurisdiction, a situation of mounting arrears is likely to arise if the rate of disposal is consistently lower than the rate of filing over a period of a year or more.

The Way Forward

- The ad-hoc judges to be appointed to the High Court are not being appointed for the first time. They have served previously and thus have the expertise to deal with the heavy workload. Therefore, the process for their appointment ought to be simpler than regular appointments.
- If the appointment is not made within a few days of the commendation of the Chief Justices of the High Courts, then meritorious candidates end up losing interest and the justice delivery system faces a huge loss.

Pendency of cases

- Over 59 lakh cases were pending in the High Courts until July 22.
- Allahabad High Court has the highest number of pending cases at over 10 lakh.
- Next are the High Courts of Rajasthan (just over 6 lakh) and Bombay (just under 6 lakh).

1.5 Remission of crime

Supreme Court judge, Justice Bela M. Trivedi recused herself from hearing a writ petition filed by Bilkis Bano against a Gujarat government decision to prematurely release 11 men sentenced to life imprisonment for gang-raping her during the 2002 riots.

The convicts were released under the Premature release policy of the Gujarat 1992.

Context:

- Bano has argued that the early release of the convicts amounted to a violation of her fundamental right to life.
- She has said the remission policy of the State of Maharashtra, where the trial happened, and not Gujarat would have governed the case.
- The Government of India conveyed the concurrence/approval of the Central government under Section 435 of the Code of Criminal Procedure for premature release of 11 prisoners.

Bilkis Bano case:

- Bilkis Bano and her family were attacked in 2002 Gujarat Riots.
- She was gangraped and seven of her family members were murdered.
- The Supreme Court ordered a CBI probe into the incident and arrests were made in 2004.
- In 2008, the Special CBI Court in Mumbai sentenced the 11 accused to life imprisonment on the charges of conspiring to rape a pregnant woman, murder and unlawful assembly under the Indian Penal Code.
- One of the convicts had approached the Supreme Court for the remission of his sentence. This plea led to the remission of the sentences of the 11 convicts.

- The apex court directed the Gujarat government to look into the issue of remission, following which the government formed a committee. Following the recommendation of the committee, the government decided to release the convicts.

Rules of Remission:

- Life imprisonment means convicts remain in jail for the whole of their life.
- However, they can be released by the State and Central governments but not before they complete 14 years, by remitting the remaining prison term.
- Judicial decisions advocate both subjective and objective norms for remission.
- Courts have ruled that remission should be informed, fair and reasonable, and not arbitrary; that it should not undermine the nature of the crime.
- In *Laxman Naskar vs Union of India (2000)*, the Supreme Court laid down five considerations:
 - whether the offence is an individual act of crime that does not affect society;
 - whether there is a chance of the crime being repeated in future;
 - whether the convict has lost the potentiality to commit crime;
 - whether any purpose is being served in keeping the convict in prison;
 - Socio-economic conditions of the convict's family.
- A remission panel usually consists of government officials, officers in charge of parole, rehabilitation and probation of offenders and prison officials.
- Section 432(7) of the CrPC says the appropriate government will be "the State within which the offender is sentenced or the said order is passed".

Challenges:

- Brutal and horrific nature of the crime of gang-rape.
- Against Current remission policy (2014) – It bars those found guilty of heinous crimes from being given remission.
- "Prisoner convicted for murder with rape or gang rape" are not eligible
- Absence of mandatory consultation required under Section 435 of the Code of Criminal Procedure (CrPC), in a case investigated by the CBI, prior to remission.
- However, the remission has been granted by the Gujarat government without consulting the Centre.
- The Supreme Court has also ruled that 'consultation' means 'concurrence' in this regard.
- Presence of political functionaries on the committee that recommended remission may have influenced the decision. It contained some Bharatiya Janata Party (BJP) functionaries, including two MLAs.
- The injustice of exceptionalism – the district judge is understood to have opposed the grant of remission.
- The 1992 policy did not clearly state eligibility criteria.
- Convicts in the Bilkis Bano case were not eligible under the 2014 policy for remission.

Suggestions:

- The question whether Gujarat is indeed the appropriate government may also be raised again, even though the order by which the Supreme Court wanted their remission plea to be considered has already given its finding.
- In 2003, the Justice Malimath Committee submitted a report advocating a permanent statutory committee to prescribe sentencing guidelines to reduce ambiguity in the award of such sentences.
- In April 2022, a Supreme Court bench, led by Justice U Lalit, revoked the death sentence of Mohammad Firoz, a man convicted for the rape and murder of a four-year-old girl.

Way forward:

- There is a need to balance retributive justice with restorative justice
- Justice must not be denied on account of jurisprudence and technicalities of law.

1.6 Public Accounts Committee

The Public Accounts Committee (PAC), in its 55th report on “Provisioning, procurement and issue of High-Altitude Clothing, Equipment, Ration and Housing”, has said that all efforts should be made to fully implement Phase III of the Central Inventory Control Group (CICG)

- The report is based on the Comptroller and Auditor General’s (CAG) findings in 2019.
- A huge quantity of essential items under Special Clothing and Mountaineering Equipment (SCME) Category-II were procured or held when they were not issued or required for long.

About CICG:

- CICG is an automated centralised database.
- It had been created for effective inventory procurement and management.
- Aid in reduction of procurement timelines through hand-holding of new Defence Public Sector Undertakings (erstwhile ordnance factories) by the Ministry.

About PAC

- First set up in 1921 in the wake of the Montague-Chelmsford Reforms.
- Constituted every year under Rule 308 of the Rules of Procedure and Conduct of Business in Lok Sabha.
- Consists of maximum 22 members comprising of 15 members elected from Lok Sabha (proportional representation) and 7 members from Rajya Sabha
- Chairman appointed by the Speaker from among the Members of Lok Sabha elected to the Committee.
- Conventionally, chairman is a member from the Opposition in Lok Sabha.
- Term = 1 year
- A Minister is not elected a member of the Committee, and if a member, after his election to the Committee is appointed a Minister, he ceases to be a member of the Committee from the date of such appointment.

Scope & Functions:

- Examination of accounts showing the appropriation of sums granted by Parliament for the expenditure of the Government of India.
- Examination of annual finance accounts of the Government.
- Examination of three annual audit reports of CAG, which are laid before the Parliament by the President – report on appropriation accounts, report on finance accounts, and report on public undertakings
- Ensuring expenditure conforms to the authority which governs it and every re-appropriation has been made in accordance with the provisions

Limitations:

- Recommendation of the committee are only advisory in nature.
- The committee cannot intervene in the questions of policy or in matters of day-to-day administration.
- It is not vested with the power of disallowance of expenditures by the departments.
- It is an executive body only and hence, cannot issue an order.

1.7 Zonal councils

Union Home and Cooperation Minister Shri Amit Shah presided over the 25th Eastern Zonal Council meeting .

Aim of Zonal councils:

- To solve inter-State problems and foster balanced socio-economic development of the respective zones.
- To develop the habit of cooperative working among these States

Zonal Councils:

- The idea of creation of Zonal Councils was mooted by the first Prime Minister of India, Pandit Jawahar Lal Nehru in 1956
- Five Zonal Councils were set up vide Part-III of the States Re-organisation Act, 1956 – north, south, east, west and central.
- The North Eastern States i.e. (i) Assam (ii) Arunachal Pradesh (iii) Manipur (iv) Tripura (v) Mizoram (vi) Meghalaya and (vii) Nagaland are not included in the Zonal Councils
- Their special problems are looked after by the North Eastern Council, set up under the North Eastern Council Act, 1972.
- The State of Sikkim has also been included in North Eastern Council vide North Eastern Council (Amendment) Act, 2002.

Organisational structure:

- Chairman – The Union Home Minister is the Chairman of each of these Councils.
- Vice Chairman – The Chief Ministers of the States included in each zone act as Vice-Chairman of the Zonal Council for that zone by rotation, each holding office for a period of one year at a time.
- Members- Chief Minister and two other Ministers as nominated by the Governor from each of the States and two members from Union Territories included in the zone.
- Advisers– One person nominated by the Planning Commission for each of the Zonal Councils, Chief Secretaries and another officer/Development Commissioner nominated by each of the States included in the Zone
- Each Zonal Council has set up a Standing Committee consisting of Chief Secretaries of the member States of their respective Zonal Councils.
- Union Ministers are also invited to participate in the meetings of Zonal Councils depending upon necessity.
- Each Zonal Council shall meet at such time as the Chairman of the Council may appoint in this behalf.
- Since their inception in 1957, the Zonal Councils have met 106 times.

Role & Objective:

- Bringing out national integration
- Arresting the growth of acute State consciousness, regionalism, linguism and particularistic tendencies;
- Enabling the Centre and the States to co-operate and exchange ideas and experiences;
- Establishing a climate of co-operation amongst the States for successful and speedy execution of development projects.

Functions:

- Each Zonal Council is an advisory body and may discuss any matter in which States have a common interest and advise the Government.
- In particular, a Zonal Council may discuss, and make recommendations with regard to:
- any matter of common interest in the field of economic and social planning;
- any matter concerning border disputes, linguistic minorities or inter-State transport;
- any matter connected with or arising out of, the re-organization of the States under the State's Reorganisation Act.

1.8 Review petition

The Supreme Court rejected a review petition filed by Bilkis Bano.

About Review petition:

- According to the Indian Constitution, any mandate by the Supreme Court of India is final and binding. However, Under Article 137 provided the Supreme Court with the power to review its judgments. This

provision forms the legal basis for a “review petition”.

- It is not necessary that only parties related to a case can seek a review of the judgment. Any person aggrieved by a ruling can seek a review.
- A review petition must be filed within 30 days of the court verdict.
- Review petitions are usually not heard in open court. They are heard through “circulation” by judges in their chambers.
- In a Review Petition case, Lawyers usually make their case through written submissions, and not oral arguments.
- The same judges who passed the original verdict generally also hear the review petition.
- There are specific grounds on which a review petition can be accepted in court, but not accepted in case of “minor mistakes”.
- In 1975, the Supreme court mentioned that a review petition can be accepted “only where a glaring omission or patent mistake or like grave error has crept in earlier by judicial fallibility”.
- In 2013, the Supreme Court laid down 3 conditions for accepting a review petition:
- The discovery of new and important matter or evidence which was not within the knowledge of the petitioner or could not be produced by him earlier.
- A mistake or error is apparent on the face of the record.
- Any other sufficient reason.
- It is rare for the Supreme Court to both admit reviews and overturn an original decision in a review.
- It did agree to review its original verdict in the Sabarimala case but refused to review its ruling on the Rafale deal.
- In the Union of India v. Sandur Manganese & Iron Ores Ltd case (2013), the court laid down nine principles on when a review is maintainable.
- The court held that a review is by no means an appeal in disguise whereby an erroneous decision is reheard and corrected but lies only for patent error.

Who can file a review petition?

- It is not necessary that only parties to a case can seek a review of the judgment on it. As per the Civil Procedure Code and the Supreme Court Rules, any person aggrieved by judgment can seek a review.

Who hears the review petitions?

- Review petitions are heard, as far as practicable, by the same combination of judges who delivered the order or judgment that is sought to be reviewed. If a judge has retired or is unavailable, a replacement is made keeping in mind the seniority of judges.

1.9 J&K Land Grant Rules

The J&K Lieutenant Governor’s administration notified fresh land rules under J&K Land Grant Rules-2022 and replaced the J&K Land Grants Rules-1960, which dealt with the special rules to grant government land on lease in erstwhile State of J&K.

Previous rules:

- Prime locations such as Srinagar, Jammu, Gulmarg and Pahalgam were opened up for construction of hotels, commercial structures and residential buildings in the past.
- These land laws were considered as the backbone of J&K’s upper middle class and allowed a new chain of hotels and commercial structures to come up in prime locations.

Need for amendment:

- Because the previous land laws were “regressive”.
- The present land holders just paid ₹5 to enjoy profit from ₹100 crore property.

New rules:

- Leases of current land owners will not be extended in case of expiry.
- Expired leases shall not be renewed and shall stand determined.
- lease period has been reduced to 40 years (earlier 99 yrs.)
- Outgoing lease holders to evict properties or else face evictions.
- An expert committee will enlist all properties where lease had ended.
- It will be e-auctioned afresh.
- The rules open bidding to “any person legally competent under Section 11 of the Indian Contract Act, 1872.”
- These rules deem a person or an entity in default of Government Revenue accrued to the government under J&K Land Grant Act, 1960 or Government convicted under Prevention of Money Laundering Act, 2002 shall not be eligible for participation in the auction.

According to now-repealed land laws, no such land shall be granted on lease to the person, who is not a permanent residence of the State; except where the Government, for the reasons to be recorded, relax this restriction in the interest of industrial or commercial development or in the favour of a registered charitable society.

Uses of leased lands:

- Education, healthcare, agriculture, tourism, skill development and development of traditional art, craft, culture and languages.
- For hydro-electric projects, stadiums, playgrounds, gymnasiums or other recreational purposes.
- For self-employment or for housing purposes of ex-servicemen, war widows and the families of martyrs, one who has sacrificed his life in the line of duty.
- For facilities of migrant workers, buildings and other construction workers.

Impact of new rules:

- Hundreds of properties will open for fresh auction, where outsiders could also participate.
- Tourist hotspots Gulmarg, Pahalgam, Srinagar and Jammu’s Patnitop will go up for auction.

Concerns and oppositions:

- Opposition contends that the first right to these lease properties “belongs to those who were already settled here”.
- Bringing rich outsiders to buy prime property in J&K may be at the cost of local businesses and their interests
- No local could participate in the e-auction given the conditions business houses were in due to the uncertain situation of the past 30 years.
- Only millionaires from outside will buy these properties and the locals, who hold these properties currently, will be forced to sell their personal properties, including houses, to repay loans raised on these properties.
- Kashmir’s two key traders’ bodies, the Jammu Kashmir Hoteliers Club (JKHC) and the Chamber Of Commerce Industry Kashmir (CCIK), said J&K’s economy would come to a grinding halt and urged the L-G to reconsider the decision.
- All the stakeholders are sons of soil and the matter should be looked into through the prism of humanity and personally.

1.10 International Arbitration Centre

The New Delhi International Arbitration Centre (Amendment) Bill was passed by the Rajya Sabha on 14th December 2022.

- The Bill renames the New Delhi International Arbitration Centre as the India International Arbitration Centre.

- The original Act requires the NDIAC to strive to facilitate the conduct of international and domestic arbitration and conciliation. The Amendment Bill expands this to include conduct of other forms of alternative dispute resolution.

Background

- Setup in 2019 under the provisions of New Delhi International Arbitration Centre (NDIAC) Act, 2019
- Objective: For better management of arbitration in India.
- The Act declared NDIAC as an institution of national importance.
- Replaced the International Centre for Alternative Dispute Resolution (ICADR), an existing institution established in the year 1995.

Objectives

- Promoting research, providing training and organizing conferences and seminars in alternative dispute resolution matters.
- Providing facilities and administrative assistance for the conduct of arbitration, mediation and conciliation proceedings.
- Maintaining a panel of accredited professionals to conduct arbitration, mediation and conciliation proceedings.

Key Functions

- Facilitating conduct of arbitration and conciliation in a professional, timely and cost-effective manner; and
- Promoting studies in the field of alternative dispute resolution.
- Composition: The NDIAC will consist of seven members including:
 - A Chairperson who may be a Judge of the Supreme Court or a High Court, or an eminent person with special knowledge and experience in the conduct or administration of arbitration;
 - Two eminent persons having substantial knowledge and experience in institutional arbitration;
 - Three ex-officio members, including a nominee from the Ministry of Finance and a Chief Executive Officer (responsible for the day-to-day administration of the NDIAC);
 - A representative from a recognized body of commerce and industry, appointed as a part-time member, on a rotational basis.

Term and Superannuation

- The members of NDIAC will hold office for three years and will be eligible for re-appointment.
- The retirement age for the Chairperson is 70 years and other members is 67 years.

Finance and Audit

- The NDIAC will be required to maintain a fund which will be credited with grants received from the central government, fees collected for its activities, and other sources.
- The accounts of the NDIAC will be audited and certified by the Comptroller and Auditor-General of India.

Institutional Support

- The NDIAC will establish a Chamber of Arbitration which will maintain a permanent panel of arbitrators.
- Further, the NDIAC may also establish an Arbitration Academy for training arbitrators and conducting research in the area of alternative dispute resolution.
- The NDIAC may also constitute other committees to administer its functions.
- India as an International hub of Arbitration
- India is the fifth biggest economy in the world, yet we are not the international hub of arbitration, while small countries and cities have emerged as major centres for arbitration.
- Presently, places such as Singapore, London and Hong Kong are the preferred centres for arbitration.
- NDIAC can provide arbitration awards at more affordable charges in comparative to those centres.
- Alternative Dispute Resolution (ADR) Mechanisms
- ADR is a mechanism of dispute resolution that is non adversarial, i.e. working together co-operatively to

reach the best resolution for everyone.

- ADR can be instrumental in reducing the burden of litigation on courts, while delivering a well-rounded and satisfying experience for the parties involved
- Arbitration: The dispute is submitted to an arbitral tribunal which makes a decision (an “award”) on the dispute that is mostly binding on the parties.
- Mediation: In mediation, an impartial person called a “mediator” helps the parties try to reach a mutually acceptable resolution of the dispute.
- Arbitration and mediation have a long history in India.
- Recently they have acquired prominence across the world as methods of dispute resolution.
- Alternative dispute resolution methods are beneficial to the parties due to various reasons
- low-cost speed
- more control over timelines and process
- autonomy of parties
- a more comfortable environment
- a non-adversarial nature

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2. International Relations

2.1 Indo Pacific relations

India stands for a free, open and rules-based Indo-Pacific as it is important for the economic development of not only the region but also the wider global community. This was stated by Raksha Mantri Shri Rajnath Singh during his keynote address at the Indo-Pacific Regional Dialogue (IPRD) in New Delhi.

It included the 'Margdarshan' session

- Raksha Mantri released a book, published by the National Maritime Foundation (NMF) titled 'Coastal Security Dimensions of Maritime Security'.
- The IPRD is an annual apex-level international outreach of the Indian Navy that seeks to foster exchange of ideas and promote deliberations on maritime issues relevant to the Indo-Pacific.

Context:

- Throughout history, the maritime domain has been a crucial space in establishing new and emerging powers shaping regional dynamics and the larger security architecture.
- The emergence of the Indo-Pacific as a new geographic space—bringing together the Indian and the Pacific Oceans—represents the new strategic reality of the twenty-first century.
- India's role in the Indo-Pacific is considered crucial by countries such as Australia, Japan, and the United States and is an important domain in India's foreign policy.

What constitutes Indo-Pacific:



- An interconnected space between the Indian Ocean and the Pacific Ocean ranging from eastern Africa to western coast of the United States
- It is a product of growing forces of globalization, trade and geopolitics.
- It contains the world's most crucial sea routes, the world's most populous nations fuelling high energy demands on its rims and a stretch encapsulating finest global commons.
- The Indo-Pacific is adjudged to be the centre of the globe in terms of politics and economics.
- These island states are near key sea lines of communication (SLOCs) critical for the movement of goods and people in times of both peace and conflict.

- Access to key choke points and help expand and sustain naval presence across vast maritime domains.
- Example – Mozambique Channel, Bab-el-Mandeb Strait

Indo-Pacific initiatives:

- In 2016 India created a new division within the MEA, called the Indian Ocean Region Division (IOR), which brings together the island nations of Maldives, Mauritius, Seychelles, and Sri Lanka for better coordination of initiatives and policy in the Indian Ocean.
- Indo-Pacific Ocean Initiative launched during the East Asia Summit held in Bangkok, Thailand in 2019
- Important pillars – Regional cooperation and participation
- Vision of SAGAR i.e., Security and Growth for All in the Region.
- India-ASEAN Defence Ministers’ Meeting held in Cambodia
- ASEAN-India Initiative for women in UN Peace Keeping Operations contribute towards conflict resolution and humanitarian approach
- ASEAN-India Initiative on Marine Plastic Pollution Response towards improving the marine ecosystem
- Asia-Africa Growth Corridor, an initiative largely seen as a direct counter to China’s Maritime Silk Road (component of BRI) with Japan as a collaborating partner.
- Regional institutions such as ASEAN and the Indian Ocean Rim Association – The European Union and India have a shared interest in maintaining a rules-based order.

Challenges:

- China in India’s neighbourhood: China’s economic growth, combined with its military modernization, across the Indian and Pacific Oceans challenges the maritime security as well as widens the strategic and capacity gap with India.
- Increasing collaborations between China and island states such as Maldives, Mauritius, Seychelles, and Sri Lanka threaten India’s role of a security provider.
- Belt and Road initiative 2013
- China-Pakistan Economic Corridor (CPEC) 2017
- Sri Lankan government leased Hambantota Port to China in 2017
- Malé owed Beijing \$1.4 billion in loans for projects.
- Deteriorating relations with Island nations
- In 2012, Maldives cancelled a \$511 million international airport expansion contract with India-based GMR Group and gave it to China for \$800 million.
- Weakening regional governance mechanisms – Lack of an agreed ground rule for navigation, climate change, maritime security and oceanic degradation.
- Uncertainty in relationships between US-China, US-Japan and US-South Korea
- ASEAN on side-lines: Individual ASEAN nations are being pulled into China’s orbit because they see that the economic cost of opposing China’s agenda is too high

Suggestions:

- Partnerships as a central pillar:
- Address capability gap with help from west such as QUAD
- Modi’s 2018 Shangri-La address provided a framework for India’s Indo-Pacific priorities.
- Connectivity and security:
- Maritime Domain Awareness (MDA) across the Indian Ocean of Indian Navy
- The IFC-IOR aims to provide a holistic picture of the entire Indian Ocean and international centre for the collation and sharing of information.

Bilateral dialogues:

- New Delhi hosts annual 2+2 Dialogues with Australia, Japan, and the United States and has an annual defines dialogue with France.
- Annual Maritime Security Dialogues with Australia, the European Union, France, Japan, Myanmar, the

United States, and Vietnam in 2019.

- QUAD – Australia, USA, India and Japan meeting of ministerial leaders
- Capacity building and infrastructural initiatives:
- In 2019, New Delhi met for the first time with the Pacific Islands Developing States (PSIDS) announcing a grant of \$1 million to its members and a concessional line of credit of \$150 million to Pacific Island countries for projects in solar power.

Humanitarianism and Goodwill:

- Indian Navy is the first responder for humanitarian crises across the region due to its access through the IOR—in comparison to Beijing,
- Environmental concerns: due to climate change and global warming increasing threats to small island nations and littoral states
- Australia, Japan, and the United States became founding members of the Coalition for Disaster Resilient Infrastructure in 2019 – an Indian initiative
- UN Security Council: need to elevate the paradigm of collective security to a level of shared interests and security for all

Way forward:

- In the times when humanity is facing problems like climate change, Covid-19 pandemic & widespread deprivation, it is essential that we all work together to surmount these mammoth challenges, without being distracted by the destructive seduction of wars and conflicts.
- National security should not be considered as a zero-sum game and we should strive to create a win-win situation for all.
- Dialogue only civilised mechanism for resolving disputes & creating global order

2.2 QUAD & 5G

In 2022, Quad signed a New Memorandum of Cooperation on 5G Supplier Diversification and Open RAN, and reaffirmed their desire to “collaborate on the deployment of open and secure telecommunications technologies in the region.”

Context:

- The advent of 5G provides the Quadrilateral Security Dialogue—or the Quad of the United States (US), Japan, Australia and India—a unique opportunity to demonstrate how democracies can engage in effective technology collaboration
- Maintaining momentum requires close coordination of resources and policies.
- No one country can build resilient, open, and secure telecommunications networks on its own, particularly as countries deploy 5G and think ahead to 6G.

What is Quad:

- Known as the ‘Quadrilateral Security Dialogue’ (QSD)
- The Quad is an informal strategic forum comprising four nations, namely — USA, India, Australia and Japan.
- One of the primary objectives of the Quad is to work for a free, open, prosperous and inclusive Indo-Pacific region.
- The group met for the first time in 2007

Status of 5G rollout:

- Recognising the risks that companies like Huawei, which is connected to the Chinese Communist Party, pose to telecommunications networks, each member country of the Quad has taken steps to ensure secure and resilient access to 5G.

- India is deploying its first 5G services in select cities in October 2022 and is unlikely to include Huawei in its networks, given the Galwan Valley clash.
- Australia banned Huawei from its 5G rollout in 2018
- Japan has accelerated its efforts to create 'Open Radio Access Networks (Open RAN)', which promote vendor diversification and competition for better solution

Significance:

- To promote secure 5G rollout in the Indo-Pacific.
- To serve as a model for other democracies in other parts of the globe
- To "build trust, integrity, and resilience" into technology ecosystems by having suppliers, vendors, and distributors ensure strong safety and security-by-design processes
- To ensure a fair and open marketplace.
- Quad member countries must work together in four key areas:
 - standard-setting
 - security
 - talent development
 - vendor diversity

Standard Setting:

- Global standards enable interoperability and facilitate trade.
- Allow international standard-setting costs to qualify as expenditures under R&D tax credits.
- Providing guidance on how to engage in standard-setting with sanctioned companies
- Coordinate and harmonise their respective policies on how industry can participate in standard-setting alongside sanctioned entities.

Security:

- 5G networks are critical infrastructure and vulnerable to risks posed by untrustworthy vendors on 5G networks.
- Firstly, Virtualised (software-based) networks will be the norm in the next 10 years.
- Secondly, early attention to security issues for emerging telecommunications technologies will help ensure that there is sufficient focus on security in the runup to 5G rollouts.
- Focus on a unified zero-trust strategy for 5G networks, with special emphasis on Open RAN deployments.
- Partner with the EU to develop an Open RAN risk assessment and security framework

Talent development:

- Quad Fellowship will support 100 students per year to pursue STEM-related graduate degrees in the United States.
- Australia has raised its permanent immigration cap by 35,000 for the current fiscal year.
- As jobs disperse across the country and remote work accelerated by the pandemic becomes permanent, it is time to seize talent in overlooked areas and communities.
- Recruitment in rural areas to address significant tech worker shortages that may stymie a growing start-up ecosystem.

Vendor Diversity:

- With current 5G infrastructure, software, hardware, and antennae are all supplied by one company.
- Only three companies control 80% of world's supply of wireless network-based stations: Huawei, Nokia, and Ericsson
- Due to risks of national security and opportunity for diversification, Quad countries can embrace Open RAN in following ways:
 - Create a subject matter expert (SME) grant program
 - Skill development

- Business growth
- Coordinate vendor diversification efforts
- Provide R&D incentives
- Develop a recruitment framework for telecommunications
- Incentivise 5G deployment in underserved areas
- Enhance public-private partnerships.

Way forward:

- By working together, Quad countries can leverage their individual strengths to improve standard-setting engagement processes, bolster security, and create more opportunities for talent development and vendor diversification.
- Their alignment on Open RAN makes them key to operationalising discussions that other democratic nations are still hesitant to have.
- Quad countries will provide a secure, resilient, and open 5G network model to the Indo-Pacific

2.3 Free Trade Agreement (FTA)

In recent times, the Indian government has been actively pursuing free trade agreements (FTAs) with a wide range of countries.

About Free Trade Agreement (FTA):

- A free trade agreement is a pact between two or more nations to reduce barriers to imports and exports among them.
- Goods and services can be bought and sold across international borders with little or no government tariffs, quotas, subsidies, or prohibitions to inhibit their exchange.
- The concept of free trade is the opposite of trade protectionism or economic isolationism.
- Relationship Between Multilateralism and FTA:
- Article 1 of GATT (General Agreement on Tariffs and Trade) (about Most Favoured Nation) states that “any advantage, favour, privilege, or immunity granted by any contracting party to any product originating in or destined for any other country shall be accorded immediately and unconditionally to the like product originating in or destined for the territories of all other contracting parties.”
- However, derogations from this MFN principle are permitted for forming FTAs under specific conditions as per the following provisions of the WTO Agreements:
- FTA members shall not erect higher or more restrictive tariff or non-tariff barriers on trade with non-members than existed prior to the formation of the FTA.
- Elimination of tariffs and other trade restrictions be applied to “substantially all the trade between the constituent territories in products originating in such territories.”
- Elimination of duties and other trade restrictions on trade within the FTA to be accomplished “within a reasonable length of time,” meaning a period of no longer than 10 years.

Different Types of Economic Engagements:

- Preferential Trade Agreement (PTA): In a PTA, two or more partners agree to reduce tariffs on an agreed number of tariff lines. The list of products on which the partners agree to reduce duty is called a positive list. India MERCOSUR PTA is such an example. However, in general PTAs do not cover substantially all trade.
- Free Trade Agreement (FTA): In FTAs, tariffs on items covering substantial bilateral trade are eliminated between the partner countries; however, each maintains an individual tariff structure for non-members.
- For example India – Sri Lanka FTA.
- Common Market: Integration provided by a Common market is one step deeper than that by a Customs Union.
- A common market is a Customs Union with provisions to facilitate free movements of labour and capital,

harmonize technical standards across members etc.

- For example The European Common Market is an example.
- Economic Union: Economic Union is a Common Market extended through further harmonization of fiscal/monetary policies and shared executive, judicial & legislative institutions.
- European Union (EU) is an example.
- Comprehensive Economic Cooperation Agreement (CECA) and Comprehensive Economic Partnership Agreement (CEPA): These terms describe agreements which consist of an integrated package on goods, services and investment along with other areas including IPR, competition etc.
- The India Korea CEPA is one such example and it covers a broad range of other areas like trade facilitation and customs cooperation, investment, competition, IPR etc.
- Custom Union: In a Customs union, partner countries may decide to trade at zero duty among themselves, however they maintain common tariffs against the rest of the world.
- Example Southern African Customs Union (SACU) amongst South Africa, Lesotho, Namibia, Botswana and Swaziland.
- The European Union is also an outstanding example

Significance of FTAs:

- FTAs give businesses and consumers improved access to a wider range of competitively priced goods and services, new technologies, and innovative practices.
- FTAs help to obtain more benefits from foreign investment.
- FTAs promote regional economic integration and build shared approaches to trade and investment between the trading partners.
- FTAs can deliver enhanced trade and investment opportunities that contribute to the economic growth of less-developed economies.
- FTAs support stronger people-to-people and business-to-business links that enhance overall bilateral relationships with FTA partners.
- FTAs can continue to provide additional benefits to the trading partners over time, including via in-built agendas that encourage ongoing domestic reform and trade liberalisation.

Major Challenges in adopting FTAs:

- Protectionist Tendencies: Moves such as plans to raise import duties on “non-essential items”, will only expose the government to the charge of being protectionist.
- The first two decades after 1991-92 saw a steep decline in tariff rates.
- The trend, however, has been reversed under the ruling government with the average applied import tariff actually rising. But still challenges remain.
- Demographic dividend: These Non-tariff issues could pose hurdles for India in reaping the gains of its comparative labour advantage.
- Shift of focus: Wrapping up these FTA talks could narrow soon given that India’s focus would shift to the series of events linked to India’s G20 Presidency.
- Influential lobbies can delay it more: Political lobbying from influential lobby groups such as farmer unions and the auto sector could intensify.
- Priority to non-tariff issues: In much of the negotiations currently under discussion, climate action, carbon emissions and labour issues are taking precedence over trade issues.
- GSP (Generalised System of Preferences): Currently, we may benefit from the GSP but if they come in a non-tariff barrier by citing labour or environment, then it becomes an issue citing standards, adjustments, child labour as reasons.
- India had been a beneficiary of the US’ GSP programme since November 1975, under which beneficiary countries are allowed to export thousands of products to the US without the added burden of duties.
- Recessionary conditions: These could potentially offer partner countries a handle to trigger non-tariff protectionist measures as developed nations stare at recessionary conditions.
- Environmental issues: Developed countries such as the US have brought up the issue of carbon emissions in the process of manufacturing melted steel as a non-tariff-related issue.

- India mostly produces steel generated from iron ore which comes from mining.
- Most developed countries have resorted to methods to generate it from scrap which results in lower carbon emissions. Thus, there may be a levy of carbon adjustment tax.
- Carbon Border Adjustment Mechanism: The European Union has proposed CBAM to tax carbon-intensive products, such as iron and steel, cement, fertiliser, aluminium and electricity generation from 2026.
- EU importers will buy carbon certificates corresponding to the carbon price that would have been paid, had the goods been produced under the EU's carbon pricing rules.

Way Forward:

- Towards Open and Competitive Economy: The trade policy framework must be accompanied by economic reforms that result in an open, competitive, and technologically advanced economy.
- Therefore, country looking for FTAs must focus on inclusion of entrepreneurs in global economic networks that will also allow them to pursue greater financial security.
- Strengthening MSME Sector: With a contribution of about 29% to the GDP and 40% to international trade, MSMEs are the key players in achieving the ambitious export targets.
- It is important for India to link Special Economic Zones with the MSME sector and incentivize small businesses.
- Enhancing Domestic Base: India needs to strengthen its domestic manufacturing base in value-added products like engineering goods, electronic products, drugs and pharmaceuticals, textiles, and agriculture machinery, that could be used to boost exports.
- Infrastructural Evolution: A robust infrastructure network – warehouses, ports, testing labs, certification centers, etc. will help Indian exporters compete in the global market.
- It also needs to adopt modern trade practices that can be implemented through the digitisation of export processes. This will save both time and cost.
- Scrutiny of FTAs: The Committee on Commerce should be tasked with scrutinizing FTAs, discussing different aspects of agreements and negotiations, thus ensuring executive accountability to the legislature.

2.4 Silicon diplomacy

Semiconductors are becoming a critical geopolitical focal point. Technology alliances and diplomatic initiatives are being championed as the pathway toward building supply chain resilience.

India, as a fledgling semiconductor power, has an important role in the current setup of the industry. India must aim to utilise diplomacy and collaboration to become an indispensable part of the global semiconductor ecosystem.

Semiconductors are the brains of modern electronics:

- Semiconductors, with specified electrical properties, that sit between the conductor and insulator.
- They typically have four electrons in their valence shell (outermost shell), which helps in binding with other atoms to form crystals such as silicon crystals.
- They are an essential component of electronic devices, enabling advances in communications, computing, healthcare, military systems, transportation, clean energy, and countless other applications.
- A diode, integrated circuit (IC) and transistor are all made from semiconductors.
- A semiconductor chip controls and manages the flow of electric current in electronic equipment and devices.

Current Techno-Democratic Alliances:

- The Quad Semiconductor Supply Chain Initiative
- The Quad in 2021 decided to include semiconductors as an area of collaboration, as part of The Quadrilateral Security Dialogue.
- primary objective is to ensure a competitive market, prevent monopolies, and strengthen the current

supply chain against future shocks.

- US leads the world in chip design with its private sector design behemoths (such as Intel, Qualcomm, NVIDIA and AMD).
- US owns all Electronic Design Automation (EDA) software licences used in chip design.
- Japan has expertise in the production of silicon wafers (substrates on which designs are imprinted) and semiconductor manufacturing materials such as photoresists or etching gas, and remains critical to the fabrication process.
- Australia is an important source of critical minerals such as silica, gallium and indium, which are essential for developing silicon-based and composite semiconductor products.
- India can provide the required human resources, especially in the chip design services segment.

The Chip4 Alliance

- It is a semiconductor industry alliance with US, South Korea, Japan and Taiwan, to keep mainland China's fledgling semiconductor industry at bay.
- It covers all the key areas of the value chain of the semiconductor ecosystem.
- Taiwan is the global epicentre of semiconductor manufacturing, with over 60 percent of the world's chips being manufactured.
- South Korea is home to semiconductor behemoth Samsung, which has design and manufacturing capability.
- Japan has dominance over the production of critical manufacturing equipment and materials such as
- In 2021, China imported US\$350 billion worth of semiconductors, with the US and South Korea being its biggest suppliers.

US-EU Trade and Technology Council (TTC)

- to coordinate their respective chip investments so that they do not end up engaging in a 'subsidy race'
- Cross-border information dissemination

Challenges of semiconductors:

- As a political weapon including use of semiconductors as a punitive tool to hurt certain economies.
- Various restrictions have been imposed on exports, trade, and access to semiconductor technology that prevent certain states from moving up the value chain.
- Export control mechanisms have been put in place for semiconductor technology considering its dual-use and military capabilities such as the Wassenaar Agreement.
- Possibility of unilateral controls on countries' export of emerging technologies, which can hamper the chances of other countries accessing critical materials and equipment.
- US's Export Control Reform Act (ECRA 2018), which identifies export controls essential for technologies directly related to the country's national security.
- 2020 US sanctions on China related to semiconductors and chips.
- US also directed other companies, such as ASML Holding, a Dutch company known for their photolithography lithography tools—an integral semiconductor manufacturing equipment—to halt any exports to China
- Extensive dominance of US – The most recent sanctions are so extensive that they could cause an economic fallout for China and other semiconductor manufacturers.
- They can create high-end weapon systems which poses risks to national security.
- Semiconductor technology is being used in the diplomatic and geopolitical space as a tool of punitive action.
- In Russia-Ukraine war, West, imposed technology sanctions to punish Russia. Semiconductors and chips were central to the sanctions.

Suggestions for future:

- Quad Semiconductor Resilience Fund Building to cover import duties and license fees.
- Joint setting up of fabrication facilities focusing on emerging industries like AI, Quantum, Electric Vehicles,

and 5G/6G Communications.

- Building Centres of Excellence (CoEs) in all Quad countries
- Japan can build a CoE dedicated to semiconductor manufacturing
- Australia can host a CoE on critical materials for developing chips.
- India, has design workforce and can build design architecture
- Increase cooperation amongst other semiconductor alliances.
- Semiconductors can be one of the central focus areas in the EU-India TTC agreement signed in 2021
- In India-Taiwan collaboration, India can convince Taiwan to focus on building a low-investment trailing edge fab in the country to improve output volume and build redundancy into the ecosystem.
- India must position itself as a credible alternative for Taiwan's ATMP giants (Foxconn, Winstron) and its design behemoths (MediaTek) to outsource the assembly and design processes to the country.
- The availability of a skilled workforce in semiconductor design, as well as the low-cost labour needed for Assembly, Testing, Marking and Packaging (ATMP) facilities, can help India attract other potential.
- Champion free and open semiconductor technologies
- Open standards provide a royalty-free alternative on which technologies and platforms can be built
- The current industry standards remain licensed and hard to adopt for startups. Hence, it can level the playing field across the global ecosystem.
- For example, RISC-V, currently being developed to reduce the dependency on the licensed Arm instruction set architecture.
- Open-Source Hardware (OSH) projects related to EDA tools (currently dominated by three American companies) can be funded to remove existing bottlenecks.
- India can pave the way for procurement and deployment of open-source alternatives for design firms while saving their resources on licences and royalty fees.

Way forward:

- The Covid-19 pandemic exposed the fragilities of the semiconductor supply chain in the form of dependencies and bottlenecks
- Hence, multilateral cooperation in the industry is no longer a choice but a necessity.
- India's market share may be negligible, but key partnerships and alliances can help the local ecosystem grow.
- In this era of silicon diplomacy, India must tread a path favourable to international cooperation, which can help its domestic industry specialise in a specific area of the supply chain.

3. Economy

3.1 PMLA 2002

The Finance Ministry notified changes to the Prevention of Money Laundering Act (PMLA), 2002

Changes to PMLA 2002:

- Allowed Enforcement Directorate (ED) to share incriminating information and material about economic offenders with 15 more agencies.

These include

- National Investigation Agency (NIA)
- Serious Fraud Investigation Office (SFIO)
- Directorate General of Foreign Trade (DGFT)
- Competition Commission of India (CCI)
- National Intelligence Grid
- Central Vigilance Commission (CVC)
- Wildlife Crime Control Bureau
- MEA, State Police Department, regulators under various Acts, Defence Intelligence Agency, National Technical Research Organisation, Military Intelligence, inquiry authority under Central Civil Services Rules.
- Earlier, the ED was permitted to share data with only 10 agencies, including CBI, RBI, Sebi, IRDAI, Intelligence Bureau, and Financial Intelligence Unit (FIU), among others.

On ED's power under PMLA

An upshot of the judgment by the Supreme Court on the validity of certain provisions under the Prevention of Money Laundering Act

- The offence of money laundering is as heinous an offence as terrorism
- Section 3 (definition of money laundering), Section 24 (reverse burden of proof), and Section 5 (attachment of property) to stay
- Stringency in granting bail under the Act is legal and not arbitrary
- It is not mandatory to give an Enforcement Case Information Report (ECIR) in every case as it was not an FIR
- The statements made to ED are considered admissible
- Provision of attachment of property of accused as proceeds of crime 'balances' the interests of the accused and the State
- The question of enactment of PMLA amendments through the Money Bill route is to be decided by a larger Bench

Aim:

- Integrate numerous State and Central government agencies
- Empowering them with verified information related to an outlaw
- Expedite nabbing of law-breakers

- Apprehend social evils and bring them to justice in the court of law

Prevention of Money Laundering Act(PMLA):

- It is a criminal law of the Parliament of India passed by the NDA government in 2002
- PMLA became law and came into force on July 1, 2005.
- It has blanket powers assigned to the Enforcement Directorate (ED) under PMLA for seizing, investing, searching and attaching assets.
- Introduced due to India's commitment at the Vienna Convention to combat money laundering.

3.2 RBI's digital lending norms

The modified guidelines on digital lending by the Reserve Bank of India (RBI) have come into effect from 1st December, 2022.

About Digital Lending:

- Digital lending involves giving and recovering loans through web platforms or mobile apps.
- It facilitates speedy disbursement and helps lower costs.
- Lending Service Providers (LSPs) operate in collaboration with Non-Banking Financial Companies (NBFCs) who disburse credit to customers using the LSPs platform.
- These platforms often resort to reckless practices by lending beyond a borrower's repayment capacity.

About Digital Lenders:

RBI has categorised digital lenders into three groups:

- Entities which are regulated by the RBI and are allowed to carry out lending business.
- Example: All Commercial Banks, Primary (Urban) Co-operative Banks, State Co-operative Banks, District Central Co-operative Banks; and Non-Banking Financial Companies.
- Entities that are authorised to carry out lending as per other statutory or regulatory provisions but are not regulated by the RBI.
- Example: merchant bankers, stock brokers, bankers to issues, debenture trustees, portfolio managers, DPs, registrars to issues, share transfer agents, etc.
- Entities lending outside the purview of any statutory or regulatory provisions.
- Example: Informal lenders

About new guidelines issued by RBI:

Objective:

- The digital lending modified guidelines aim to protect customers from exorbitant interest rates and keep a check on unethical loan recovery practices.
- The regulatory framework is basically focussed on the digital lending ecosystem of RBI-regulated entities and the lending service providers.

Loan disbursements and repayments:

- These are to be executed only between the bank accounts of the borrowers and the regulated entities such as the banks and the NBFCs.
- There will be no pass-through/pool account of the Lending Service Providers (LSPs).

Fees and Charges:

- Any fees or charges payable to Lending Service Providers (LSPs) in the credit intermediation process shall be paid directly by Regulated Entities and not by the borrower.

Applicability:

- Instructions are only applicable for the existing customers availing fresh loans and to new customers getting onboarded.

Data collection:

- Data collected by digital lending apps must be need-based, with the borrower's prior consent, and can be audited if required.

Increase in credit limit:

- Borrower's consent on the increase in the credit limit is must.
- An automatic credit increase without the consent would be prohibited.

Grievance redressal officer:

- A nodal grievance redressal officer will also be deployed.
- Such grievance redressal officers shall also deal with complaints against their respective Digital Lending Apps (DLAs).
- Digital Lending Apps (DLAs) are mobile and web-based applications with user interfaces that allow a borrower to borrow from a digital lender.

Ombudsman:

- The borrower can complain to the Integrated Ombudsman Scheme of the RBI if their grievance is not resolved by the bank within 30 days.

Credit Information Companies (CICs):

- Regulated Entities are required to ensure that any lending carried out through digital lending apps has to be reported to Credit Information Companies (CICs).
- Lending through the Buy Now Pay Later (BNPL) mode also needs to be reported to the CICs.

Advantages of new norms:

- Financial inclusion: with new innovations underway, digital lending has enabled many Financial Service Providers a way to offer much better products to the masses at a much faster rate which is even more cost-efficient.
- Reaching to the remotest area: Digital lending can prove to be a tool acting towards the growth of higher quality financial services to underserved businesses and people.
- Tackling concerns: The guidelines aim to tackle concerns like unscrupulous lending practices and involvement of third parties, mis-selling and data privacy.
- Regulated market: Licensed and compliant players will have an advantage over fintech's with other NBFC partnerships and are likely to see rising market share in the future.
- Avoiding delay: Online lending has played a pivotal role in evading cumbersome red-tapism usually involved while availing loans offline in a traditional setting.

Issues associated with the new norms:

- Unregulated apps: There were about 1,100 lending apps available for Indian android users of which about 600 were illegal. They were either unregulated by the RBI or had NBFC partners with an asset size of less than 1,000 crore, prompting doubts on its operability.
- The space is largely dominated by NBFCs: Its customers particularly include small borrowers without a documented credit history and thus, not served by traditional financial institutions.
- LSPs often resort to reckless lending practices by endowing credit beyond a borrower's repayment capacity. The risk is mitigated by spreading it to all users by charging higher interest rates.
- There is absence of standardised disclosure and regulatory norms which made it cumbersome to assess a participant's operational legitimacy.
- Others: The concerns primarily relate to unbridled engagement of third parties, mis-selling, breach of data privacy, unfair business conduct, charging of exorbitant interest rates, and unethical recovery practices.

Way Forward:

- The need of the hour is competent systems and processes that would further strengthen data privacy and security of confidential information shared between customers and regulated entities. This regulation would also address concerns emanating from TechFin which are companies that are primarily tech-based service providers, say e-commerce, and also offer financial services.

3.3 Directorate of Revenue Intelligence (DRI)

Recently the Directorate of Revenue Intelligence (DRI), the apex anti-smuggling intelligence and investigation agency functioning under the aegis of the Central Board of Indirect Taxes and Customs (CBIC), celebrated its 65th Foundation Day at New Delhi.

The Union Minister for Finance released the “Smuggling in India Report 2021-22” which analyses trends such as Smuggling of Gold, Narcotics Drugs and Psychotropic Substances, wildlife etc., Commercial Frauds and International enforcement operations & cooperation.

About Directorate of Revenue Intelligence’s (DRI):

- The Directorate of Revenue Intelligence is the apex anti-smuggling agency of India, working under the Central Board of Indirect Taxes & Customs, Ministry of Finance, Government of India.
- It was constituted on 4th December, 1957.
- It is headquartered in New Delhi.
- The DRI has also been designated as the lead agency for Anti-Smuggling National Coordination Centre (SCord).
- It is tasked with detecting and curbing smuggling of contraband, including drug trafficking and illicit international trade in wildlife and environmentally sensitive items, as well as combating commercial frauds related to international trade and evasion of Customs duty.

3.4 National Financial Reporting Authority

The National Financial Reporting Authority (NFRA) has started inspections of five audit firms.

- The Conference on “Financial Reporting & Governance Framework – Building Trust” was organised by the Confederation of Indian Industry(CII)
- There is a need to revisit the existing short-term and vague ‘Going Concern’ accounting concept and replace it with long-term viability or Resilience Statements by the Management and Board.

About NFRA:

- It is the country’s sole independent audit regulator.
- It was constituted in 2018 by the Government of India
- It was established under the Companies Act, 2013.
- It comes under Ministry of Corporate Affairs.

Aim:

- To continuously improve the quality of all corporate financial reporting in India.

Composition:

- Chairperson is a Chartered Accountant and a person of eminence having expertise in accountancy, auditing, finance or law (appointed by the Central Government) and a maximum of 15 members.

Functions and Duties:

- Recommend accounting and auditing policies and standards to be adopted by companies for approval by the Central Government;
- Monitor and enforce compliance with accounting standards and auditing standards;

- Oversee the quality of service of the professions associated with ensuring compliance with such standards and suggest measures for improvement in the quality of service

Powers:

- The NFRA has the same powers as the Civil Court.
- Debarring the member/firm from practice as a member of ICAI between 6 months to 10 years as may be decided.
- To investigate the matters of professional or other misconduct.

Scope:

- Companies listed in India
- Unlisted Companies whose:
 - Net worth \geq Rs. 500 crore; or
 - Paid up Capital \geq Rs. 500 crore; or
 - Annual turnover \geq Rs. 1000 crore (As on 31st March of the preceding financial year); OR
- Companies whose securities are listed outside India

3.5 Paris Club

Paris Club creditor nations are proposing a 10-year moratorium on Sri Lankan debt and another 15 years of debt restructuring as a formula to resolve the Sri Lankan debt crisis.

- Earlier this year, Sri Lanka had defaulted on its 51 billion dollar external debt in the midst of spiralling political and economic crisis.
- India has provided emergency aid to the tune of four billion dollars.
- The Paris club has also called upon the Global north and south to take a similar haircut in restructuring of Sri Lankan debt.

The Paris Club:

- It is an informal group of official creditors from 22 wealthy countries who find sustainable solutions for challenges faced by debtor countries.
- It provides a platform for governments facing financial difficulties to reduce and renegotiate their debt repayments.
- Formed in 1956, it has signed more than 400 agreements to date, worth more than half a trillion dollars to about 100 countries.
- The “G20 Common Framework” is an initiative endorsed by the G20 together with the Paris Club.
- Other creditor nations are allowed to participate in negotiation meetings on a case-by-case basis, if they meet certain conditions.
- The members meet in Paris once a month except for February and August.
- Each meeting includes a one-day ‘Tour d’Horizon’, during which creditors talk about the external debt situation of debtor nations, or issues regarding how those countries are managing their debts.
- The Paris Club invites debtor nations to a meeting with its creditors after it has concluded an appropriate program with the IMF (International Monetary Fund) that shows that the country cannot meet its external debt obligations, and therefore requires a new payment arrangement with its foreign creditors.
- Representatives of the World Bank, the IMF and other international institutions, plus the relevant regional development bank, may also attend the meeting as observers.
- The debtor country’s representative is usually its Minister of Finance, who heads a team comprising officials from his or her ministry and the central bank.

3.6 RoDTEP Scheme

RoDTEP Scheme gets extended to Chemicals, Pharmaceuticals and Articles of Iron & Steel under chapters 28, 29,

30 and 73 of ITC (HS) schedule of items.

About the scheme:

- RoDTEP stands for Remission of Duties and Taxes on Export Products.
- The scheme is being implemented from 1st January 2021
- It replaced MEIS (Merchandise Exports from India Scheme).
- RoDTEP is based on the globally accepted principle that taxes and duties should not be exported, and taxes and levies borne on the exported products should be either exempted or remitted to exporters.
- The RoDTEP scheme rebates/refunds the embedded Central, State and local duties/taxes to the exporters that were so far not being rebated/refunded.
- The rebate is issued as a transferable electronic scrip by the Central Board of Indirect Taxes & Customs (CBIC) in an end-to-end IT environment.
- Quick verification through digitisation – Verification of the records of the exporters will be done with the help of an IT-based risk management system to ensure speed and accuracy of transaction processing.
- The ICEGATE portal (Indian Customs Electronic Gateway) will contain the details regarding the credits availed by the exporter.

Aim:

- To boost exports which were relatively poor in volume previously.
- To support domestic industry and make it more competitive in the international markets.
- Export centric industries are being reformed and introduced to better mechanisms to increase their competitiveness, boost exports, generate employment and contribute to the overall economy.
- Achieving our vision of building an Aatmanirbhar Bharat.

3.7 Microfinance institutions

In recent times, Microfinance institutions have been increasingly adopting technology to enhance operational efficiency, improve underwriting models and reduce expenses.

About Microfinance:

- Microfinance is a banking service provided to unemployed or low-income individuals or groups who otherwise would have no other access to financial services.
- Microfinance allows people to take on reasonable small business loans safely, and in a manner that is consistent with ethical lending practices.
- The term “microfinancing” was first used in the 1970s during the development of Grameen Bank of Bangladesh, which was founded by Muhammad Yunus.
- Today, microfinance is available in nearly 85 per cent districts of India with more than two lakh frontline employees distributing credit and associated services.

Need for Microfinance:

- To safeguard the interest of people outside the formal financial system.
- Failure of formal banking institutions in lending to the rural poor in the absence of proof of recognised employment or collateral that can be offered by them while applying for loans leaves the poor with no alternative but to borrow money from local moneylenders at high-interest rates.
- In order to provide credit facilities to such individuals, MFIs are useful.

Benefits of Microfinance:

- Financial Inclusion: Microfinance has emerged as one of most important tools to foster financial inclusion.
- It enables the poor and low-income households to come out of poverty, helps women to become owners of assets, has an increased say in decision making and leads dignified lives embodying the concept of a collective good.
- Inclusive Growth: Microfinance plays a critical role in promoting inclusive growth by making credit

available at the last mile and therefore, acts as a safety net for those at the bottom of the pyramid.

- Microfinance loans provide financial access to the poorest that allows many of them to start new businesses, grow existing businesses, insure against shocks due to bad weather and illness, and smooth consumption.
- Adopting Tech: MFIs (microfinance institutions) have been increasingly adopting technology to enhance operational efficiency, improve underwriting models and reduce expenses while continuing the focus on customer-centricity.
- Audio-visual content in vernacular languages is widely utilised to continuously impart financial literacy.
- Improve Underwriting Models: A separate credit bureau for microfinance was established about a decade back.
- Intense efforts by MFIs and credit bureaus have led to the development of robust databases and a credit bureau report is an essential part of underwriting now.
- Expanding Reach of Microfinance: In terms of reach, microfinance operations cover 28 states and 9 union territories (UTs).
- In terms of regional distribution, eastern & north-eastern regions of the country have the largest share at 37 per cent followed by south at 27 percent and west at 15 per cent.
- Thus, in impacting the lives and livelihoods, the role of microfinance continues to be important. While microfinance is present in almost all nooks and corners of the country, in terms of geographical distribution, 82 per cent of the loan portfolio is concentrated in ten states.
- Strong Customer Protection: The RBI regulations for microfinance provide an effective framework for customer protection.
- This framework is supported by the RBI recognised self-regulatory organisation (SRO).
- The SRO supports the MFIs in the implementation of the regulations, takes initiatives for capacity building, improves governance through regular guidance and surveillance and provides a platform for resolving sector level challenges.
- Digitalisation initiatives: Digitalisation initiatives have been aligned with the rapid diffusion of smartphones and growing comfort of borrowers with digital modes of transactions.
- Today, nearly 100 per cent of loans are digitally disbursed directly into the bank account of the borrowers and an increasing number of repayments are also being done digitally.

Challenges of micro financial institutions:

- Fragmented Data: While overall loan accounts have been increasing, the actual impact of these loans on the poverty-level of clients is not clear as data on the relative poverty-level improvement of MFI clients is fragmented.
- Impact of Covid-19: It has impacted the MFI sector, with collections having taken an initial hit and disbursals yet to observe any meaningful thrust.
- Social Objective Overlooked: In their quest for growth and profitability, the social objective of MFIs—to bring in improvement in the lives of the marginalized sections of the society—seems to have been gradually eroding.
- Loans for Non-income Generating Purposes: The proportion of loans utilized for non-income generating purposes could be much higher than what is stipulated by the RBI which is 30% of the total loans of the MFI.
- These loans are short-tenured and given the economic profile of the customers, it is likely that they soon find themselves in the vicious debt trap of having to take another loan to pay off the first.

Regulatory Framework for Microfinance in India:

- The Reserve Bank came out with a comprehensive and revised regulatory framework for microfinance loans in March 2022.

Core Principles:

- Intent in framing these guidelines was built around the idea of customer protection. To achieve, the framework has incorporated five core principles, namely –

- Addressing regulatory arbitrage with the introduction of a lender agnostic and activity-based regulation so that all the regulated entities engaged in microfinance pursue the goal of customer protection within a well-calibrated and harmonized set-up.
- Protection of microfinance borrowers from over-indebtedness caused by granting of loans beyond the repayment capacity of the borrowers which, then, can potentially get manifested into coercive recovery practices.
- Enabling the competitive forces to bring down the interest rates by way of enhanced transparency measures.
- Enhancement of customer protection measures by way of strengthening them and extending them to all regulated entities.
- Facilitating flexibility to design products/ services to meet the needs of microfinance borrowers in a comprehensive manner.

Major Provisions:

- The central bank has allowed households earning up to ₹3 lakh annually to be classified as eligible for microloans, expanding the market for microfinance institutions (MFIs)
- It also removed the cap on pricing loans, aiding deeper penetration into existing markets and entry into new ones.
- There shall be no pre-payment penalty on microfinance loans.

Significance

- MFIs believe these measures, along with the rising demand for loans in rural India, should drive growth for NBFC-MFIs.
- These regulations can improve credit culture. Credit assessment of households is very beneficial for long-term sustainability.
- This harmonised regulatory framework for different types of lenders, will encourage healthy competition and enable customers to make an informed choice regarding their credit needs.

Way Forward:

- The microfinance program has witnessed phenomenal growth in India in the last decade. However, the focus of most of the microfinance service providers has remained on expanding the outreach of microfinance programs with little attention to the depth, quality and viability of the financial services. The RBI should encourage all institutions to monitor their impact on society by means of a 'social impact scorecard'.

3.8 Coffee and its production

A block chain-enabled trading platform for coffee that will help connect growers with roasters and traders directly is likely to be launched by the Coffee Board of India. It will ensure better realizations of prices for the growers and will also help address the traceability issue for the buyers.

About Coffee and its production in India:

- It is believed to be an indigenous plant of the Abyssinian Plateau in Ethiopia
- The plant reached Arabia in 11th century as the propagators of Sufi Islam carried it with them.
- In the 17th Century Baba Budan Giri, a Sufi saint smuggled 7 beans of Coffee from Yemen to India while coming from a Hajj pilgrimage.
- He planted the beans on the slopes of the Chandragiri Hills in Chikkamagaluru district, Mysore State (present day Karnataka).
- This hill range was later named after him as the Baba Budan Hills and is one of the major Coffee producing areas.

Climatic conditions:

- Heavy rainfall from 150 to 250 cm but stagnant water is harmful.
- So grown on hill slopes at elevations from 600 to 1,600 meters above sea level.
- Hot and humid climate with temperature varying between 15°C and 28 °C.
- It does not tolerate frost, snowfall, high temperature above 30°C and strong sun shine and is generally grown under shady trees.
- Dry weather is necessary at the time of ripening of the berries
- Well-drained, rich friable loams containing a good deal of humus and minerals like iron and calcium are ideal for coffee cultivation.

Coffee production India:

- In India, coffee is traditionally grown in the Western Ghats spread over Karnataka, Kerala, and Tamil Nadu.
- Coffee cultivation is also expanding rapidly in the non-traditional areas of Andhra Pradesh and Odisha as well as in the North East states.

Types of Coffees in India

- The two main varieties of coffee viz. Arabica and Robusta are grown in India.
- Arabica is mild coffee, but the beans being more aromatic, it has higher market value compared to Robusta beans.
- On the other hand, Robusta has more strength and is, therefore, used in making various blends.
- Platform will help in Price discovery

Current mechanism

- Currently, the coffee trade is largely unorganized and is not under the purview of the APMC system.
- Though prices of Indian coffee mirror the broader trend in the New York and London terminals.
- The curing houses and traders fix the actual farm gate prices depending upon the locations and quality parameters.

New mechanism based on blockchain platform:

- Coffee growers, curers, traders and exporters can participate and trade online on the trading platform where the price discovery will happen.
- Once the trading platform is operationalized-
- Growers can sell directly from their farm gates or
- They can ship to an empanelled warehouse that will approve the quality parameters and then the trade takes place online.
- Sellers can give a base price or an expected price for their coffees.
- After the seller accepts the trade, then a smart contract will be generated, after which the buyer has to transfer the money into the escrow account of the platform within 24 hours.
- Subsequently the seller has to ship or the warehouse has to raise the clearance.
- The buyer can go and collect the commodity and then the money moves to the seller's account from the escrow account.

Advantages of having this platform:

- The blockchain-based traceability application by Acviss is an anti-counterfeiting solution that helps to reorganize the unstructured supply chain.
- It provides transparency in transactions, and protects farmers from fraud and fake GI tag products with the help of quality evaluation.
- This app also helps farmers to generate stable income and protects them from any collateral damage with the help of automated payments, insurance and financing as there are no middlemen involved.
- For the end users, this app also helps consumers by providing authenticated certifications ensuring that the bought product is safe for consumption.

Way Forward:

- The platform developed by the Acviss Technologies could be a game changer for all the stakeholders from growers, traders to buyers and can give fillip to the digitalization in Agri marketing. Although it remains to see if the Coffee Board can materialize such a beneficial platform given the past records of the coffee board wherein it had failed to activate a similar block chain based e-marketplace in collaboration with Eka Plus.

About Coffee Board of India:

- It is a statutory organization constituted under Section (4) of the Coffee Act, 1942.
- It functions under the administrative control of the Ministry of Commerce and Industry, Government of India.
- It is headquartered in Bengaluru.
- The Board has a Central Coffee Research Institute at Balehonnur (Karnataka)
- The Board comprises 33 Members including the Chairperson who are appointed by the GoI.

Role of Coffee Board:

- Coffee Board serves as the friend, philosopher and guide to the Coffee sector covering the entire value chain.
- The Board is mainly focusing its activities in the areas of research, extension, development, market intelligence, external & internal promotion, and welfare measures.

3.9 Multi-tranche financing facility

Recently, Asian Development Bank has approved a USD 780 million multi-tranche financing facility (MFF) to build new lines and improve the connectivity of the metro rail system in Chennai with the city's existing bus and feeder services.

This project will expand Chennai's metro rail system to provide better transport solution to improve urban mobility.

About Multi-tranche financing facility:

- MFF is a longer-term partnership between Asian Development Bank (ADB) and client country.
- It provides funds for complex project which would need a longer commitment than a typical ADB investment loan could offer.
- Like a wide-range road network or energy program.
- It can finance multiple projects under investment program in a sector or in various sectors.

3.10 Rural manufacturing

- There is growing evidence to suggest that the most conspicuous trend in the manufacturing sector in India has been a shift of manufacturing activity and employment from bigger cities to smaller towns and rural areas.
- This has often been interpreted as a mixed bag, as it could transform the rural economy, but presents a set of constraints, which could hamper higher growth.
- However, the compulsions of global competition often extend beyond the considerations of low-wage production and depend on the virtues of 'conducive ecosystems' for firms to grow.

Current rural scenario:

- Urban-rural manufacturing shift:
- Work Bank report (Ghani, Ejaz et al (2012) "Is India's Manufacturing Sector Moving Away from Cities? Policy Research Working Paper, World Bank").

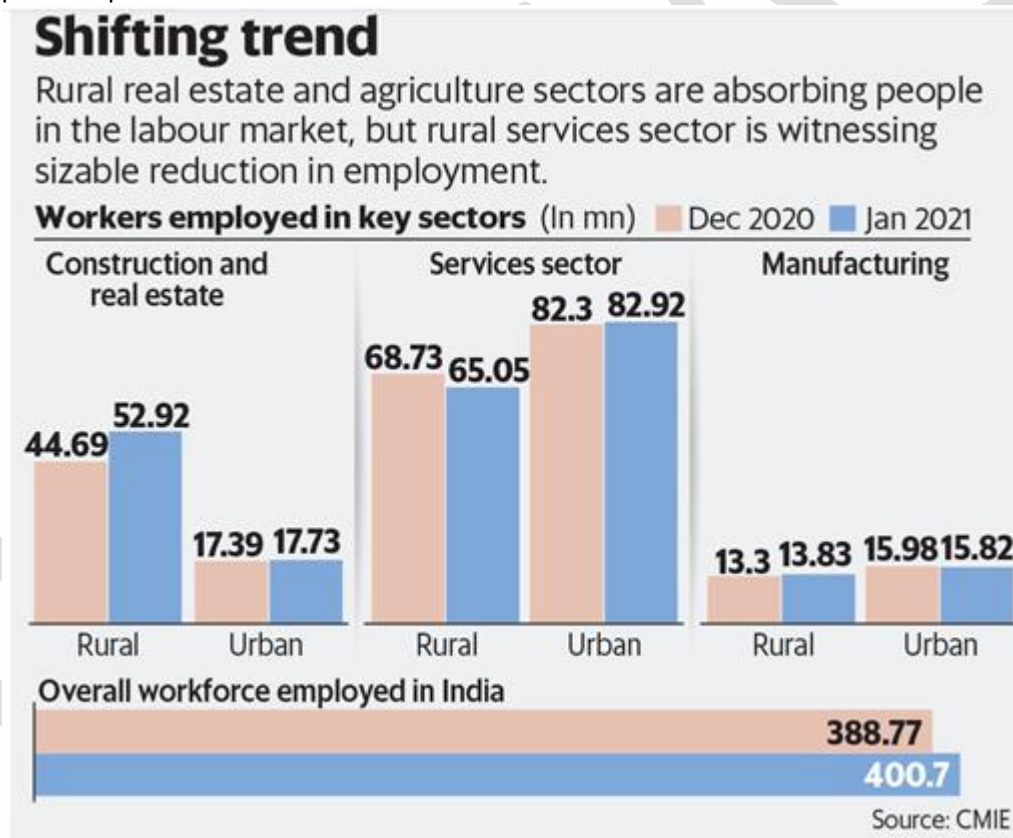
- Manufacturing is moving towards rural areas, while informal sector is moving from rural to urban locations.

Significant contributor to manufacturing Output:

- Annual Survey of Industries for 2019-20 – 42% of factories are in rural areas, 62% of fixed capital is in the rural side.
- Rural factories contributed to exactly half of the total manufacturing sector.

Employment:

- In terms of employment, it accounted for 44%, but had only a 41% share in the total wages of the sector.
- Production cost differentials – Wages, property, and land costs are all lower than in most metropolitan areas.
- Cheap labour: Big firms deliberately shift production from cities to take advantage of the availability of less skilled, less unionised and less costly rural labour.
- Factory floorspace supply constraints – When locations get more urbanised and congested, the greater these space constraints are.
- Capital restructuring – there is a tendency for growing capital accumulation and centralisation by large multi-plant corporations.



Significance of shift:

- Helped maintain the importance of manufacturing as a source of livelihood diversification in rural India.
- This trend helped to make up for the loss of employment in some traditional rural industries.
- In the aftermath of trade liberalisation, import competition intensified for many Indian manufacturers, forcing them to look for cheaper methods and locations of production.
- One way to cut costs was to move some operations from cities to smaller towns, where labour costs are cheaper.
- An economic base for the transition out of agriculture.

Challenges:

- Higher cost of capital for firms operating on the rural side, despite benefits of lower costs via lower rents
- The rural segment accounted for only 35% of the total rent paid, while it had 60% of the total interest payments.
- The benefits reaped from one source seem to be offset by the increased costs on the other front.
- Skills shortage in rural areas
- Manufacturing needs higher skilled workers to compete in the highly technological global 'new economy'.
- Manufacturers who depend only on low-wage workers simply cannot sustain their competitive edge
- Manufacturers who need higher skilled labour find that rural areas cannot supply it in adequate quantities.

Suggestions:**Institutional arrangements:**

- The Ministry of Micro, Small and Medium Enterprises encompasses many such organisations – KVIC, National Small Industries Corporation Limited (NSIC), Coir Board, Council for Advancement of, NABARD, SIDBI
- Khadi and Village Industries Commission (KVIC): SFURTI – Scheme of Fund for Regeneration of Traditional Industries, PMEGP – Prime Minister's Employment Generation Programme
- National Small Industries Corporation Limited: Export credit insurance Rural Industrialization, Raw Material assistance, Providing Infomediary Services, etc.

Integrated infrastructural development:

- Nayak Committee (1992) recommendations – raising project outlay from Rs.30 lakh to Rs.50 lakh in the single window scheme, timely supply of credit, etc.

Government programs:

- Cluster Development Programme: For holistic development of selected MSEs clusters through value chain and supply chain management on cooperative basis.
- Rural Industry and Entrepreneurship (ASPIRE) – implementing incubation and commercialisation of Business Ideas Programme through technical/research institutes

Credit Linked Capital Subsidy Scheme (CLCSS) –

- Technology upgradation of small-scale industries, including khadi, village and coir industrial units, by providing 15 percent upfront capital subsidy (limited to a maximum of Rs 15 lakh).
- Prime Minister's Employment Generation Programme (PMEGP) – implemented by KVIC, a total of 5.45 lakh micro enterprises have been assisted with a margin money subsidy of Rs 12,074.04 crore, providing employment opportunities to an estimated 45.22 lakh persons since 2019.
- Provision of more education and skilling for rural workers.
- To establish rural areas' comparative advantage of low wages, higher reliability and productivity
- hasten the process of the movement out of agriculture to higher-earning livelihoods.
- Augmentation of Sources of Demand and Supply Opportunities for Large-Scale Industries – utilization of traditional methods and materials in small-scale industries will make provision of enhancement opportunities for rural individuals.

Way forward:

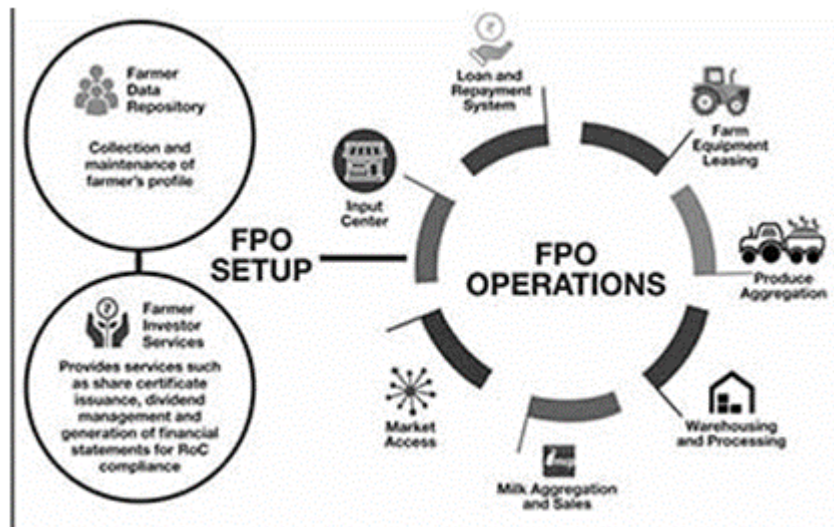
- Need for clear solutions to the problems of rural manufacturing so that rural economy can jump-start a revival.
- Given the size of the Indian economy and the need for balanced regional development, the dispersal of manufacturing activities is a welcome sign.

3.11 Farmer Producer Organizations (FPOs)

Recently Watershed Organization Trust organized a webinar themed “Promoting FPOs for resilient incomes and sustainable farming practices in India”.

To address these issues of water stress, natural disasters, uncertainty in yields, etc. the concept of Farmers Producer Organization (FPO) was introduced in 2003 in the Indian agricultural landscape.

About Farmer Producer Organizations (FPOs):



- FPOs are voluntary organizations controlled by their farmer-members who actively participate in setting their policies and making decisions.
- The FPOs are formed to leverage collectives through economies of scale in production and marketing of agricultural and allied sectors.
- The FPOs are incorporated as a legal entity under the Companies Act or Co-operative Societies Act of the concerned States.
- To facilitate and support the State Governments in the formation of the FPOs the Small Farmers Agribusiness Consortium (SFAC) was set up by the Department of Agriculture and Cooperation.
- The FPO membership is open to all persons able to use their services and willing to accept the responsibilities of membership, without gender, social, racial, political, or religious discrimination.
- FPOs in various states including Gujarat and Rajasthan among others have shown encouraging results and have been able to realize higher returns for their produce.
- For Instance, tribal women in the Pali district of Rajasthan formed a producer company and they are getting higher prices for custard apples.

Challenges of FPOs:

- Studies of NABARD shown the following challenges for building sustainable FPOs:
- Low capital base: A report from Azim Premji University (2022) reveals that less than 4% of the FPOs have paid up capital of more than ₹10 lakh.
- Many FPOs are unable to access required financial support from banks/financial institutions for want of collateral security and credit history.
- Credit guarantee cover from Small Farmers Agri-Business Consortium (SFAC) in respect of collateral free-lending is available only to the FPOs with a minimum membership of 500 and above.
- Poor human resources: Majority of the FPOs struggle to comply with statutory norms viz., audited financials and filing Goods and Services Tax returns due to lack of skilled manpower, expertise, and other resources.
- Not in a position to hire talent from the market for this purpose, they depend on Cluster Based Business Organizations (CBBOs)/Promoting organizations.

- Lack of commercial viability: Commercial viability refers to procurement of inputs at reasonable rates and marketing of output at remunerative prices.
- As Indian farmers' share is close to 25% of consumers' Rupee of expenditure vis-a-vis 70 % in the US and Europe, commercial viability of FPOs is less than satisfactory.
- Absence of market linkages: An NIRDPR recent study shows that most of the FPOs depend on the local market without exploring the export market.
- Apni Saheli, an FPO based in Dholpur, Rajasthan is working with NCDEX in commodity derivatives/futures markets (wheat and bajra) for better price realization for its members.
- Infrequent patronage of members: Field survey indicates the majority of members of FPOs are largely unaware of operations of the collectives, their responsibilities, and exhibit insignificant levels of ownership.
- The FPOs for dairy, small ruminants, and vegetables offer more regular cash flows than the seasonal crops based FPOs which also reduces interaction with the group members.
- Obsolete technology: Most of the FPOs are unable to mobilize requisite funds for mechanization of farming, good agricultural practices, through advanced technologies (drones and nanotechnology) which need to be replicated.
- Negligible value addition to Agri-produce: Field surveys show that about 40% of the farmer members avail themselves of agricultural value chain activities from FPOs.
- Majority of the FPOs sell their produce without value addition due to inadequate working capital, information asymmetry on demand-supply gaps, and lack of post-harvest infrastructure facilities.
- Government's Initiatives for the promotion of FPOs: Since 2011 the government has been intensively promoting FPOs under the ambit of the Small Farmers' Agri-Business Consortium (SFAC), NABARD, state governments and NGOs.
- Financial support: A grant of matching equity (cash infusion of up to Rs 10 lakh) to registered FPOs.
- A credit guarantee cover to lending institutions (maximum guarantee covers 85 percent of loans not exceeding Rs 100 lakh).
- Tax exemption and other budgetary support: The government announced a five-year tax exemption in the 2018-19 budget.
- In the 2019-20 budget the government revealed its plan of setting up 10,000 more FPOs in the next five years.
- One District One Product Cluster: The Ministry of Agriculture has been stressing on developing large production clusters, wherein agricultural and horticultural products are grown/cultivated for leveraging economies of scale and improving market access for members.
- "One District One Product" cluster will promote specialization and better processing, marketing, branding and export.
- Collective Farming: FPOs can be used to augment the size of the land by focusing on grouping contiguous tracts of land as far as possible.

Suggestive measures to make FPOs financially sustainable:

- Need to focus on business strategy: Indian agriculture needs to give due weightage to business strategy along with focus on enhanced production.
- So FPOs may be linked to Agri-export zones/e-commerce (Big Basket and Sabziwala) to supply sanitary and Phyto sanitary-compliant Agri-products.
- Diversify cropping pattern and integration of Agri-allied activities: FPOs have to diversify their cropping pattern (power shift to high value crops like kiwi, and roses) and adopt integrated farming along with dairy, poultry, and fisheries, without compromising on food security.
- Promotion of extension and knowledge augmenting agencies: They need a lot of data on markets and prices and other information and competency in information technology.
- So, the promoting agencies should nurture and build FPOs and educate them on
- Enhancement of product quality.
- Reduction of wastage and
- aspects of business management along with value addition.

- Free access to institutional finance for FPOs should be made available to enable them to invest in Agri-value chains from 'farm to fork'.
- Banks must have structured products for lending to FPOs.

Way Forward:

- It is time for funding agencies to focus on financing a few pilots in such Agri block-chain technology to facilitate this transformation. Currently, only a few FPOs have developed mobile phone-based extension guidance to help reduce cost of cultivation and access information about market prices of commodities.
- While FPOs do a good job in the provision of inputs, which is a kind of low-hanging fruit, linking the farmers to the markets with quality products is a challenge. The success of farmer organizations is critical for ensuring the success of smallholder and marginal farmers in India.
- Since agriculture is the key to fulfill half of the 17 Sustainable Development Goals (SDGs), strengthening FPOs in multiple dimensions is the key to achieve the SDGs which will ensure food security and eventually national security.

3.12 Factors of production (FOP)

Factors of production (FOP):

- These are resources that are the basic building blocks of production in any economy.
- They are basic inputs that are necessary for producing any good or service that is useful to final consumers.
- Land, labour, capital, and material are widely considered to be the three main factors of production.
- Others may include time and entrepreneurship.

Entrepreneurship:

- Entrepreneurship is considered to be the most crucial factor of production that brings together the other three factors.
- It may involve an element of uncertainty due to time factor and can be seen as the product of mixing the three primary factors of production, namely land, labour, and time.
- An entrepreneur's ideas can be considered fundamentally to be a form of labour as well.
- And the real estate and other materials the entrepreneur personally uses for work can be classified as land.

Ownership of FOP – Marxist economists

- FOP need to be collectively owned by the state.
- This was the driving philosophy behind centrally planned economies like the erstwhile Soviet Union in contrast to economies
- Private ownership of the factors of production leads to the exploitation of labour supplied by the working class and the mismanagement of scarce resources.
- Stale planners can overcome both these problems by framing a proper collective economic plan.

Free market economists:

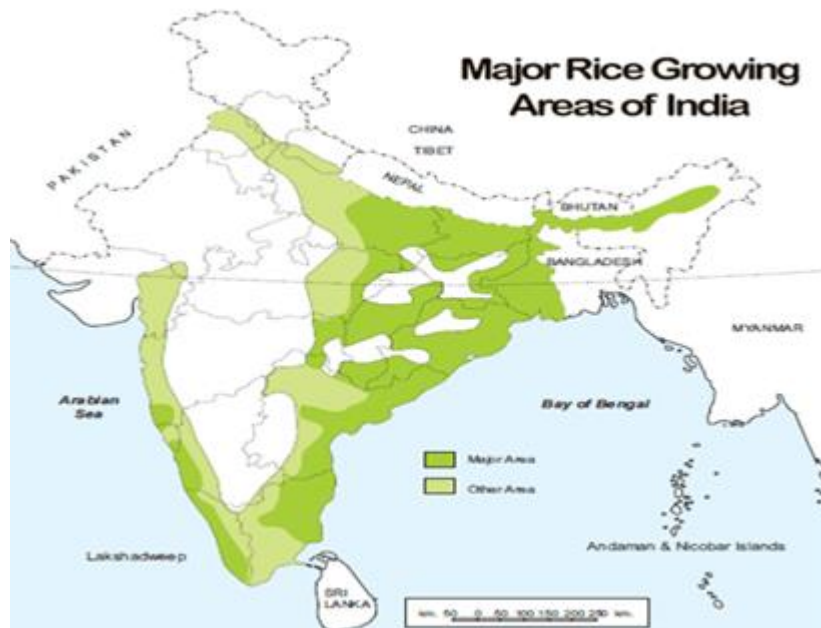
- Believe in private ownership of all factors of production in an economy.
- Private ownership offers resource owners the incentive to use the factors of production most efficiently, both in terms of avoiding unnecessary wastage and extracting the most value out of limited resources.
- In the United States factors of production are largely owned by private individuals or groups.

3.13 Paddy cultivation

Delays in paddy planting and stubble burning in certain districts of Punjab and Haryana act like a cascade. They

have caused excessive pollution in areas downwind over the past decade, a new research paper by Harvard University in the United States has said.

About paddy cultivation:



- Rice/*Oryza Sativa*, it is believed, is associated with wet, humid climate, though it is not a tropical plant.
- It is probably a descendent of wild grass that was most likely cultivated in the foothills of the far Eastern Himalayas.
- Another school of thought believes that the rice plant may have originated in southern India, then spread to the north of the country and then onwards to China.
- It then arrived in Korea, the Philippines (about 2000 B. C.) and then Japan and Indonesia (about 1000 B. C.).
- The journey of rice around the world has been slow, but once it took root it stayed and became a major agriculture and economic product for the people.
- In the Indian subcontinent more than a quarter of the cultivated land is given to rice (20011-12).
- It is a very essential part of the daily meal in the southern and eastern parts of India. In the northern and central parts of the subcontinent, where wheat is frequently eaten, rice holds its own and is cooked daily as well as on festivals and special occasions.

History of Rice in India:

- Historians believe that while the indica variety of rice was first domesticated in the area covering the foothills of the Eastern Himalayas (i.e. north-eastern India), stretching through Burma, Thailand, Laos, Vietnam and Southern China, the japonica variety was domesticated from wild rice in southern China which was introduced to India. Perennial wild rice still grow in Assam and Nepal.
- It seems to have appeared around 1400 BC in southern India after its domestication in the northern plains.
- It then spread to all the fertile alluvial plains watered by rivers. Some says that the word rice is derived from the Tamil word arisi.

Climatic Requirements:

- In India rice is grown under widely varying conditions of altitude and climate. Rice cultivation in India extends from 8 to 35 N latitude and from sea level to as high as 3000 meters.
- Rice crop needs a hot and humid climate. It is best suited to regions which have high humidity, prolonged sunshine and an assured supply of water.
- The average temperature required throughout the life period of the crop ranges from 21 to 37° C. maximum temp which the crop can tolerate 40 to 42 Celsius.

Nutritional value of Rice:

- Rice is a nutritional staple food which provides instant energy as its most important component is carbohydrate (starch).
- On the other hand, rice is poor in nitrogenous substances with average composition of these substances being only 8 per cent and fat content or lipids only negligible, i.e., 1 per cent and due to this reason, it is considered as a complete food for eating.
- Rice flour is rich in starch and is used for making various food materials. It is also used in some instances by brewers to make alcoholic malt.
- Likewise, rice straw mixed with other materials is used to produce porcelain, glass and pottery.
- Rice is also used in manufacturing of paper pulp and livestock bedding.
- The variability of composition and characteristics of rice is really broad and depends on variety and environmental conditions under which the crop is grown.
- In husked rice, protein content ranges in between 7 per cent to 12 per cent. The use of nitrogen fertilizers increases the percentage content of some amino acids.

Medicinal Value:

- The immense diversity of rice germplasm is a rich source for many rice based products and is also used for treating many health related maladies such as indigestion, diabetes, arthritis, paralysis, epilepsy and give strength to pregnant and lactating mothers.
- Ancient Ayurvedic literature testify the medicinal and curative properties of different types of rice grown in India. Medicinal rice varieties like Kanthi Banko (Chhattisgarh), Meher, Saraiphul and Danwar (Orissa), Atikaya and Kari Bhatta (Karnataka), are very common in India.
- Few varieties cultivated in restricted pockets of Kerala for their medical properties e.g. Chennellu, Kunjinellu, Erumakkari & Karuthachembavu etc.

Crop Production Practices:

- In India Rice is mainly grown in two types of soils i.e., (i) uplands and (ii) low lands.
- The method of cultivation of rice in a particular region depends largely on factors such as situation of land, type of soils, irrigation facilities, availability of labourers intensity and distribution of rainfalls.
- The crop of rice is grown with the following method
- Dry or Semi-dry upland cultivation
- Broadcasting the seed Sowing the seed behind the plough or drilling
- Wet or lowland cultivation
- Transplanting in puddled fields. Broadcasting sprouted seeds in puddled fields.

Selection of Seeds:

- The use of quality seeds in cultivation of rice is an important factor to get better crop yield. Therefore, proper care has to be taken in selecting seeds of the best quality.
- Much of the success in raising the healthy seedlings depends on the quality of seed. Seeds intended for sowing should satisfy the following requirements.
- The seed should belong to the proper variety, which is proposed to be grown.
- The seed should be clean and free from obvious mixtures of other seeds.
- The seed should be mature, well developed and plump in size. The seed should be free from obvious signs of age or bad storage. The seed should have a high germinating capacity.
- Before sowing the seed should be treated with fungicides which protects the seed against soil-born fungi and also give a boost to the seedlings.

3.14 Coal economy

IEA's Coal 2022: Analysis and forecast to 2025 report says coal is set to continue to be the growth engine of global coal demand.

- Global coal demand reached eight billion tonnes this year.
- In the absence of low-emissions alternatives that can replace coal at scale in the iron and steel sector in the near term, global coal demand is set to remain flat through the forecast period.

India:

- India, along with China, is the world's largest coal producer, consumer, and importer.
- Its own coal production will surpass a billion tonnes by 2025 as per the annual report of the International Energy Agency (IEA).
- India's coal consumption has doubled since 2007 at an annual growth rate of 6 per cent.
- India and China, are also the only two countries globally where there has been an uptick in investment in coal mine assets because domestic production has been ramped up in both countries to reduce external reliance.

Europe:

- Due to The Russian invasion of Ukraine and reliance on Russian gas, Europe sparked a surge in gas prices, which in turn pushed coal prices.
- The spike in the prices of gas due to the war as well as lower output from hydro and nuclear led to 'fuel switching' to coal in the European Union to generate power.
- However, in India and China, where coal is the backbone of electricity systems and gas accounts for just a fraction of power generation, the impact of steeper gas prices on coal demand has been limited.
- Still, the production of electricity from coal has not been much in most European countries except for Germany.
- However, both US and EU coal generation and demand will return to a downward trajectory soon.

China:

- Coal power generation in China increased by around 15 per cent year-on-year to over 500 terawatt-hours (TWh).
- Increase in renewable power generation in China means that growth in coal consumption is expected to remain relatively stagnant at an average of 0.7 per cent a year to 2025.

3.15 Consumer Price Index

The All-India Consumer Price Index Number for Agricultural Labourers and Rural Labourers for the month of November, 2022 increased by 8 points each to stand at 1167 (One thousand one hundred and sixty seven) and 1178 (One thousand one hundred and seventy eight) points respectively.

- Major rise came from food group due to increase in prices of rice, wheat-atta, jowar, bajra, pulses, meat goat, mustard-oil, milk, ghee, onion, mixed spices, tea, etc.
- Tamil Nadu topped whereas Himachal Pradesh stood at the bottom.
- Maximum increase – Bihar
- Maximum decrease – Assam
- Point to point rate of inflation based on the CPI-AL and CPI-RL stood at 6.87% & 6.99% in November, 2022 compared to 7.22% & 7.34% respectively in October '22.

About CPI:

- It is a comprehensive measure Consumer Price Index or CPI as it is commonly called is an index measuring retail inflation in the economy by collecting the change in prices of most common goods and services used by consumers.
- Called market basket, CPI is calculated for a fixed list of items including food, housing, apparel, transportation, electronics, medical care, education, etc.

- Remember, CPI is different from WPI, or Wholesale Price Index, which measures inflation at the wholesale level.

In India, there are four CPI numbers:

- CPI for Industrial Workers (IW)
- CPI for Agricultural Labourers (AL)
- CPI for Rural Labourers (RL) and
- CPI for Urban Non-Manual Employees (UNME).
- While the Ministry of Statistics and Program Implementation collects CPI (UNME) data and compiles it, the remaining three are collected by the Labour Bureau in the Ministry of Labour.

Uses:

- To calculate the inflation levels CPI's annual percentage change is also used to assess inflation.
- To compute the cost of living
- the purchasing power of a country's currency
- Understanding the real value of wages, salaries and pensions,
- Price regulation
- Provides insights to consumer spending capacity

The calculation

- The CPI is calculated with reference to a base year, which is used as a benchmark.
- The price change pertains to that year.
- $CPI = (\text{Cost of basket divided by Cost of basket in the base year}) \text{ multiplied by } 100$
- Base years
- $CPI(IW) = 1982$
- $CPI(AL) = 1986-87$
- $CPI(RL) = 1984-85$

3.16 Sovereign Gold Bond Scheme

The Reserve Bank of India (RBI) has announced the Sovereign Gold Bond Scheme 2022-23 – Series III, which will be open for subscription during December 19-23, 2022.

About Sovereign Gold Bond Scheme:

- The Government Sovereign Gold Bonds (SGB) Scheme was introduced in November 2015.
- SGBs are provided as a substitute for physical gold to investors.
- The main objective of the scheme is to reduce the demand for physical gold and shift a part of the gold imported every year for investment purposes, into financial savings through Gold Bonds.
- SGBs are issued by RBI on behalf of the Government of India on payment of the required amount in rupees and are denominated in grams of gold.
- The Bonds are restricted for sale to resident Indian entities including individuals, HUFs, trusts, Universities, charitable institutions.
- Minimum permissible investment is 2 grams of gold to be paid in rupees. The maximum amount subscribed by an entity will not be more than 500 grams per person per fiscal year (April-March).
- The bonds are available in both in Demat and paper form. The rate for the Bonds is fixed on the basis of simple average of closing price for gold of 999 purity of the previous week published by the India Bullion and Jewellers Association (IBJA).
- The tenor of the Bond is for a period of 8 years with exit option from 5th year onwards to be exercised on the interest payment dates.
- Exemption from capital gains tax is also available. Long term capital gains arising to any person on transfer

of SGB is also eligible for indexation benefits.

- On maturity, the investor will get the equivalent rupee value of the quantum of gold invested at the then prevailing price of gold.

3.17 Decriminalisation of GST laws

- Finance Minister Nirmala Sitharaman recommended to decriminalise certain offences under Section 132 of the Central Goods and Services Tax (CGST) Act, 2017.
- The GST Council in its 47th meeting had granted in-principle approval for allowing unregistered suppliers and composition taxpayers to make intra-state supply of goods through E-Commerce Operators (ECOs), subject to certain conditions.
- Since the implementation of GST, there has been a significant increase in tax evasion, with numerous cases of taxpayers using multiple strategies to avoid indirect tax coming to light. Hence, need for pondering about decriminalisation.

About the law:

- The GST law establishes stringent penalties and guidelines that taxpayers must abide by in order to ensure smooth intrastate or interstate trade of goods and to combat corruption and maintain an effective tax collection system.
- The GST Law provides for two different types of penalties –They may be both concurrent and simultaneous.
- The department authorities have the authority to impose monetary fines and the seizure of goods as penalties for violating statutory provisions.
- Criminal penalties include imprisonment and fines, which are also provided by GST Law but which can only be awarded in a criminal court following a prosecution.
- Many non-compliances fall under both categories of penalties, prosecution, and compounding.
- Under the CGST Act, if a group of two persons or more agree to commit an illegal act like tax evasion, fraud etc. they are held liable under the act of criminal conspiracy.
- Compounding of offences and arrest co-exist – Arrest is for the offence and compounding is when the prosecution is filed, which is the next stage.

Important sections:

- Sections 122 to 131 of the CGST Act of 2017 contain provisions relating to penalties, while Sections 132 to 138 contains provisions relating to prosecution and compounding.
- The aforementioned section further divides offences into those that are cognisable and bailable and those that are not cognisable and bailable.
- While Section 120A of the Indian Penal Code (IPC), defines criminal conspiracy, Section 120B deals with punishment for the same and Section 46 of the Code Of Criminal Procedure (CrPC) deals with how the arrest is made.
- Section 69 of the CGST Act provides the power to arrest a person by an order of a commissioner when he believes that a person has committed any offence under Section 132.
- Section 67 of CrPC states that if a summons is issued outside the local authority, a duplicate copy of that summons should be sent to the Magistrate of that outside authority to serve the summons.
- Section 165 of CrPC deals with the search by the police officer while Section 67 of the CGST Act defines that only an officer not below the rank of joint commissioner can authorise in writing an inspection or search.

Method of decriminalisation in GST:

- Raising the minimum threshold of tax amount for launching prosecution under GST from one crore to two crore, except for the offence of issuance of invoices without supply of goods or services.
- Reducing the compounding amount from the present range of 50 to 150% of the tax amount to the range

of 25 to 100%.

- Decriminalising certain offences specified under Section 132 of the CGST Act, 2017, such as obstructing or preventing any officer from doing his duties, deliberate tempering of material evidence and failure to supply information.

Impact of decriminalisation:

- The GST is a novel taxation system that includes a number of globally unprecedented features.
- The law is still developing and is in its infancy which makes the same difficult and uncertain to enforce.
- There are instances of conflict between court decisions and rulings.
- The government is still working to streamline the laws.
- In comparison to the pre-GST era, the GST compliance process with granular reporting is noticeably more onerous.
- Therefore, it is important to recognise that imposing penal provisions in an ambiguous ecosystem significantly alters how businesses perceive risk and uncertainty, directly impacting their ability to conduct business.
- The law already contains sufficient penalties that serve as a deterrent against tax evasion.
- Investors may be discouraged by the fear of criminal sanctions in small, trivial, and petty matters, even before their engagement in any business activity or investment.

Suggestions for future:

- Refunding unregistered persons and facilitating e-commerce for micro enterprises.
- There was no procedure for claim of refund of tax borne by unregistered buyers in cases where the contract/agreement for supply of services, like construction of flat/house and long-term insurance policy, is cancelled and the time period of issuance of credit note by the concerned supplier is over.
- The Council recommended amendment in CGST Rules, 2017, along with issuance of a circular, to prescribe the procedure for filing application of refund by the unregistered buyers in such cases.
- The GST Council in its 47th meeting had also granted in-principal approval for allowing unregistered suppliers and composition taxpayers to make intra-state supply of goods through E-Commerce Operators (ECOs), subject to certain conditions.
- The Council approved the amendments in the GST Act and GST Rules, along with issuance of relevant notifications, to enable the same.
- Further, considering the time required for development of the requisite functionality on the portal as well as for providing sufficient time for preparedness by the ECOs, the Council has recommended that the scheme may be implemented from October 2023.

Way forward:

- If the above decriminalisation of GST offences are implemented with adequate checks, then prosecution, arrest and imprisonment in GST cases would only be in the rarest of rare cases of hard, habitual, deliberate defaulters and blatant specific fraudulent practices.
- Other resolution mechanisms such as Alternate Dispute Resolution (ADR) mechanism, private ruling and mediation, faceless adjudication and appeals, etc. could be explored
- A GST Appellate Tribunal could help in improving GST governance

3.18 Maritime Anti-Piracy Bill 2022

Parliament has passed the Maritime Anti-Piracy Bill 2022 with Rajya Sabha approving it.

In 2014 to 2022, 19 incidents of piracy happened in which 155 Indian crew members were involved. More than 90 percent of trade taking place by sea routes

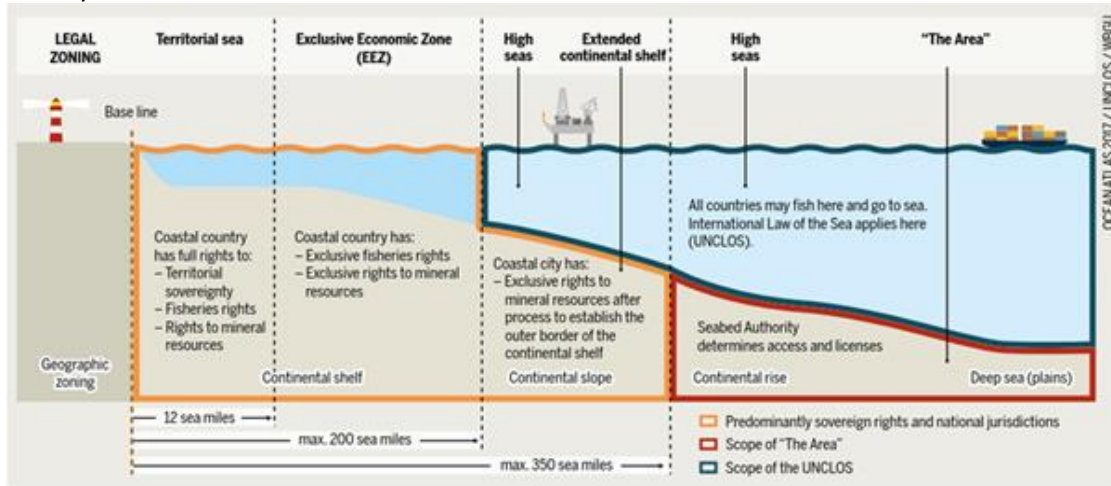
Aim:

- Strengthen India's credentials as a partner with other countries to make the world more piracy free.

- Provide an effective legal instrument to combat maritime piracy, not only in India's territorial waters in the Exclusive Economic Zone but also on the high seas.
- Enhance India's global credentials and strengthen maritime security.

About the bill:

- The Bill defines piracy as any illegal act of violence, detention, or destruction against a ship, aircraft, person, for private purposes, by the crew or passengers of a private ship or aircraft.
- The Bill enables Indian authorities to act against piracy on the high seas.
- It applies to the sea beyond the Exclusive Economic Zone (EEZ)
- EEZ is beyond 200 nautical miles from India's coastline.



3.19 Khanij Bidesh India Limited

Khanij Bidesh India Limited (KABIL), expressed interest to partner with CAMYEN, Argentina recently for prospecting two areas identified with the objective of establishing projects for extraction of lithium in due course of time.

KABIL has signed three MoUs with JEMSE, CAMYEN and YPF (Govt. Companies of Argentina) in July – Sep, 2020 to explore sourcing of lithium and other mineral assets in Argentina's in la Aguada and El Indio in Catamarca. It also signed MoUs with Australia and Chile

KABIL:

- It is a Joint Venture Company set up with the participation of three Central Public Sector Enterprises namely, National Aluminium Company Ltd.(NALCO), Hindustan Copper Ltd.(HCL) and Mineral Exploration Company Ltd. (MECL).
- It was formed in 2019 for sourcing strategic minerals like lithium and cobalt from overseas locations.
- It is under the Ministry of Mines.
- The equity participation between NALCO, HCL and MECL is in the ratio of 40:30:30

Aim:

- KABIL has been created in a bid to ensure India's mineral security and to attain self-reliance in the area of strategic and critical minerals. KABIL has been mandated to identify and acquire overseas mineral assets like Lithium, Cobalt etc.
- KABIL ensure mineral security of the nation as well as help in realizing overall objective of import substitution.

Functions:

- The KABIL would carry out identification, acquisition, exploration, development, mining and processing of

strategic minerals overseas for commercial use and meeting country's requirement of these minerals.

- The sourcing of these minerals or metals is to be done by creating trading opportunities, G2G collaborations with the producing countries or strategic acquisitions or investments in the exploration and mining assets of these minerals in the source countries.
- The new company will help in building partnerships with other mineral rich countries like Australia and those in Africa and South America, where Indian expertise in exploration and mineral processing will be mutually beneficial bringing about new economic opportunities.

3.20 National Mobile Monitoring System

The Union government has made digitally capturing MGNREGA attendance universal from January 1, 2023 through (NMMS). From May 16, 2022, capturing attendance via the app was made compulsory for all worksites with 20 or more workers.

About NMMS:

- The National Mobile Monitoring Software (NMMS) App was launched by the Ministry of Rural Development in 2021.
- It aimed at bringing more transparency and ensuring proper monitoring of the schemes.
- Significance:
- The NMMS App permits taking real time attendance of workers at Mahatma Gandhi NREGA worksites along with geo-tagged photographs.
- The app helps in increasing citizen oversight of the programme.

Issues:

- Poor internet connectivity, little access to smartphones and glitches in the app have created a problem in the daily activities of the workers.
- The workers are forced to buy a smartphone which is pushing them to leave the job.
- Many workers have complained that the process is very difficult, and they are illiterate.

4. Science & Technology

4.1 Neuralink

Neuralink, the Elon Musk company is the target of a federal investigation over its animal trial program, has been trying to develop a brain chip that would enable the paralyzed to walk and the blind to see.

Musk said last week he believes Neuralink can start human clinical trials in six months.

About Neuralink:

- Founded in 2016 by Elon Musk and a group of engineers.
- Neuralink is building a brain chip interface that can be implanted within the skull, which it says could eventually help disabled patients to move and communicate again, and restore vision.
- Neuralink's device has a chip that processes and transmits neural signals that could be transmitted to devices like a computer or a phone.
- Neuralink has produced several examples of testing aspects of its technology successfully on animals, including a video in 2021 that showed a macaque playing a simple videogame after being implanted with a brain chip.
- It has yet to secure U.S. regulatory approval to move to human trials
- Its competitor Synchron has less ambitious goals for its medical advances.

Application:

- The company hopes that a person would potentially be able to control a mouse, keyboard or other computer functions like text messaging with their thoughts.
- Neuralink also believes its device will eventually be able to restore neural activity inside the body, allowing those with spinal cord injuries to move limbs.
- The San Francisco and Austin-based company also aspires to cure neurological conditions such as Alzheimer's and dementia.

4.2 ChatGPT

Last week, OpenAI, introduced a new chatbot called ChatGPT.

About ChatGPT:

- ChatGPT is a 'conversational' AI.
- It is based on the company's GPT 3.5 series of language learning models (LLM).
- GPT stands for Generative Pre-trained Transformer 3
- This is a kind of computer language model that relies on deep learning techniques to produce human-like text based on inputs.
- It has gone viral is because of the kind of responses it gives, being seen as a replacement for much of the daily mundane writing, from an email to even college-style essays.
- The model is trained to predict what will come next, and that's why one can technically have a 'conversation' with ChatGPT.
- It is trained using "Reinforcement Learning from Human Feedback (RLHF)."
- OpenAI uses Microsoft Azure's cloud infrastructure to run these models.
- Users have the option of downvoting or upvoting a response.

How to access:

- Currently, it is open in beta to all users.

- One can go to the OpenAI website and sign up to try out ChatGPT by creating an account.
- The chatbot has already crossed one million users, and you might get a message that the beta is full.

Application:

- It will answer queries just like a human would.
- Such as tips on how to set up a birthday party, write an essay on why parliamentary democracy is better, and even a fictional meeting between two well-known personalities.
- It can answer follow-up questions and can also admit its mistakes, challenge incorrect premises, and reject inappropriate requests.
- It is being seen as a replacement for the basic emails, party planning lists, CVs, and even college essays and homework.
- It can also be used to write code, solve math equations, and even spot errors in code.
- It can write fiction but not at the level of a humans.

Limitations:

- It may generate incorrect information, and create “biased”
- Its knowledge of the world and events after 2021 is limited
- It could give “plausible-sounding but incorrect or nonsensical”
- It can sometimes overuse certain phrases
- The chatbot displayed clear racial and sexist biases
- The chatbot gives answers which are grammatically correct and read well– though some have pointed out that these lack context and substance, which is largely true.

About Open AI:

- ChatGPT is a start-up of Open AI focused on artificial intelligence and its potential use cases.
- OpenAI’s notable investors include Microsoft, Khosla Ventures and Reid Hoffman’s charitable foundation. Greg Brockman is the company’s chairman and president, while Sam Altman is the CEO. Ilya Sutskever is Open AI’s chief scientist.
- The company is best known for Dall-E — the AI-based text-to-image generator

4.3 SpaceTech Innovation Network (SpIN)

Recently, The Indian Space Research Organisation (ISRO) signed an MoU with Social Alpha to launch SpaceTech Innovation Network (SpIN).

About SpaceTech Innovation Network (SpIN):

- Space entrepreneurship: SpIN is India’s first dedicated platform for innovation, curation, and venture development for the burgeoning space entrepreneurial ecosystem.
- Public-private collaboration: The space agency said that the tie-up is a one-of-a-kind public-private collaboration for start-ups and SMEs in the space industry.
- SpIN will primarily focus on facilitating space tech entrepreneurs in three distinct innovation categories:
- Geospatial Technologies and Downstream Applications;
- Enabling Technologies for Space & Mobility; and
- Aerospace Materials, Sensors, and Avionics.

Significance of SpIN:

- Shaping policies: This novel partnership is a significant step forward in providing further stimulus to India’s recent space reform policies.
- Creating market potential & ecosystem: It will work towards identifying and unleashing the market potential of the most promising space tech innovators and entrepreneurs in India.

- The SPIN platform is also expected to create a level playing field for various stakeholders to collaborate and contribute to the space ecosystem in the country.

Areas of innovation:

- Early-stage start-ups for developing solutions in areas of maritime and land transportation, urbanisation, mapping, and surveying, disaster management, food security, sustainable agriculture, environmental monitoring, and natural resources management, among others are encouraged to apply.

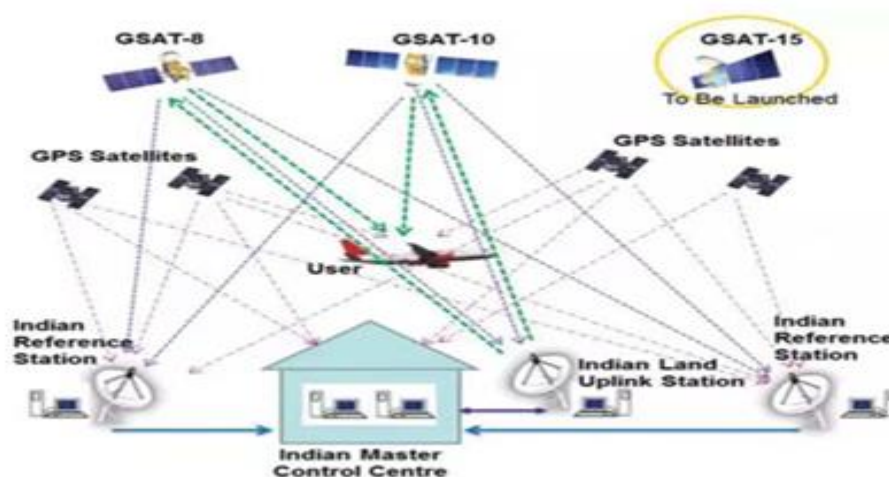
Significance of the innovation challenge:

- The selected start-ups and innovators will be able to access both Social Alpha's and ISRO's infrastructure and resources as per the prevailing guidelines.
- They will be provided active hand-holding in critical areas, including access to product design, testing and validation infrastructure, intellectual property management, go-to-market strategy, and access to long-term patient capital, among other technical and business inputs.

4.4 GAGAN (GPS Aided Geo Augmented Navigation)

Recently consultative committee of Ministry of Civil Aviation meets in New Delhi to discuss GAGAN (GPS Aided Geo Augmented Navigation).

About GAGAN:



- GAGAN is an acronym for GPS Aided GEO Augmented Navigation.
- It is a Space Based Augmentation System (SBAS) jointly developed by ISRO and AAI to provide the best possible navigational services over Indian FIR (Flight Information Region) with the capability of expanding to neighbouring FIRs.
- GAGAN is a system of satellites and ground stations that provide GPS signal corrections, giving you better position accuracy.
- GPS alone does not meet the ICAO's navigational requirements for accuracy, integrity and availability.
- GAGAN corrects for GPS signal errors caused by Ionospheric disturbances, timing and satellite orbit errors and also it provides vital information regarding the health of each satellite.

Services Offered under GAGAN:

- Aviation, Forest management, Railways signalling, Scientific Research for Atmospheric Studies, Natural Resource and Land Management, Location based services, Mobile, Tourism.

How it works?

- GAGAN consists of set of ground reference stations positioned across various locations in India called

Indian Reference Station (INRES), which gathers GPS satellite data.

- A master station, Indian Master Control Centre (INMCC) collects data from reference stations and create GPS correction messages.
- The corrected differential messages are uplinked via Indian Uplink Station (INLUS) and then broadcasted on a signal from three geostationary satellites (GSAT-8, GSAT-10 and GSAT-15).
- The information on this signal is compatible with basic GPS signal structure, which means any SBAS enabled GPS receiver can read this signal.

Coverage Area:

- Two GEOs simultaneously transmit the GAGAN signal in space. GAGAN GEO footprint expands from Africa to Australia and GAGAN system has capability to cater 45 reference stations for expansion to neighbouring countries.
- GAGAN provides a civil aeronautical navigation signal consistent with International Civil Aviation Organization (ICAO) Standards and Recommended Practices (SARPs) as established by the Global Navigation Satellite System (GNSS) Panel.
- The GAGAN system provides Non-precision approach (NPA) service accurate to within the radius of 1/10th of a nautical mile (Required Navigation Performance or RNP-0.1) over the Indian FIR as well as precision approach service of APV-1.0 (Approach with Vertical guidance) over the Indian landmass on nominal days.
- The system is interoperable with other international SBAS systems such as the S. Wide Area Augmentation System (WAAS), the European Geostationary Navigation Overlay Service (EGNOS), and the Japanese MTSAT Satellite Augmentation System (MSAS), and provides seamless air navigation across regional boundaries.

4.5 Anthrax

In 1922. On December 8th, the International Anthrax Commission has passed a resolution requiring the hairs and wools used in brush-making, upholstery and textile industries be disinfected before they are handled industrially.

About Anthrax:

- Anthrax is a zoonotic disease (could be transferred from animals to humans) caused by the spore-producing bacterium *Bacillus anthracis*.
- Reservoirs are grass-eating animals, and the spores can survive in the environment for decades.
- It is usually a disease of wild and domestic animals, including cattle, sheep, and goats.
- Human infection, while rare, does occur.
- Human infection usually results from contact with infected animals or their products.

Types of Anthrax:

- cutaneous (through the skin),
- gastrointestinal, and
- There have been no confirmed cases of person-to-person transmission of cutaneous, gastrointestinal, or inhalational anthrax.
- Anthrax is most common in developing countries.
- The largest reported agricultural outbreak occurred in Zimbabwe, with more than 10,000 cases reported between 1979 and 1985.

Treatment:

- Antibiotics, such as penicillin, are used to treat all forms of anthrax.
- An antibiotic known as ciprofloxacin (Cipro) was approved in August 2000 by the U.S. Food and Drug Administration for treating people who have been exposed to inhalational anthrax.

4.6 Base editing

Described by scientists as “the most sophisticated cell engineering to date,” an experimental treatment would provide the teenager Alyssa, diagnosed with blood cancer, a new lease of life.

About T-Cell blood cancer:

- T-cell acute lymphoblastic leukaemia (T-ALL).
- T-ALL affects the stem cells in the bone marrow that produce a particular kind of white blood cells (WBC) called T lymphocytes (T cells).
- These cells provide a person immunity by killing cells carrying infections, activating other immune cells, and regulating the immune response.
- At least 20% of these WBC are atypical– as they accumulate in the bone marrow, they crowd out “good” WBCs and hence weaken the immune system.
- These unhealthy cells can also accumulate in other parts of the body like the liver, spleen and lymph nodes.
- While found in both children and adults, T-ALL’s incidence decreases with age.

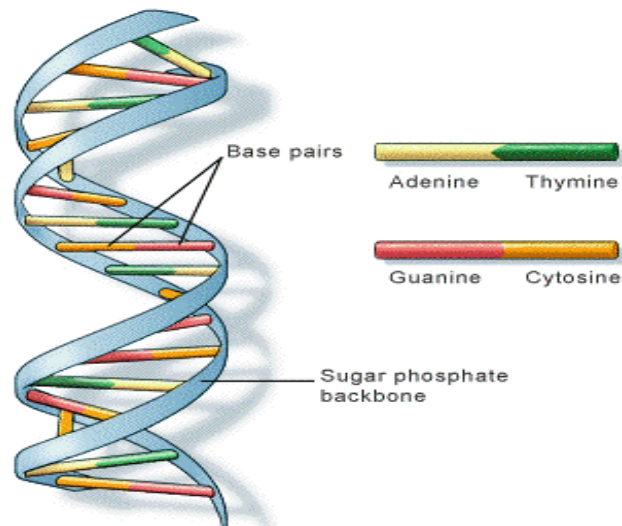
Its treatment:

- Similar to any leukaemia– chemotherapy and stem cell/bone marrow transplant.
- Chemotherapy – either kills the cancerous cells or stops them from further dividing.
- It may also wreck immunity system along with it.
- If chemotherapy fails, bone marrow transplant is done.
- Patients receive an infusion of healthy bone marrow cells that will hopefully multiply and restore immunity.
- Overall treatment for T-ALL is pretty effective– children have a survival rate of over 85 per cent after five years of receiving this treatment.

Treatment received by Alyssa:

- Alyssa received a dose of healthy T-cells from a donor that would hopefully attack her cancerous cells without destroying each other.
- Known as CAR-T therapy, this principle has been around for a while, but Alyssa’s case was different.
- Traditionally, CAR-T therapy involves following steps:
- First, an individual’s own T-cells are removed, which are then modified and reintroduced to the individual.
- Adding a gene to T-cells that causes them to seek out and destroy cancerous cells.
- The modified cells are known as CAR-T cells.
- Problem with CAR-T therapy: Very often, when an individual is really sick, it is simply impossible to obtain enough healthy T-cells to create CAR-T cells.
- While donors can provide healthy T-cells to an individual, these T-cells from a foreign body attack every single cell in that patient’s body, making the treatment counterproductive.
- Thus, scientists have resorted to what is known as base editing– through this technique of genetic editing, they make it possible for one donor to supply T-cells to multiple recipients, without the traditional risks associated with it.
- Thus, Alyssa received genetically modified cells that were programmed to specifically attack her cancer while leaving the rest of her body alone.

What is base editing?



U.S. National Library of Medicine

- Bases are the language of life.
- Just as letters in the alphabet spell out words that carry meaning, the billions of bases in our DNA spell out the instruction manual for our body.
- Scientists can zoom into a precise part of the genetic code to alter the molecular structure of just one base, effectively changing its genetic instructions.
- A team at the Great Ormond Street Hospital managed to use base-editing to create a new type of T-cell from a healthy donor that would not attack other cells in Alyssa's body, not kill each other, survive chemotherapy and finally, hunt down all other T-cells in Alyssa's body (healthy and cancerous).

4.7 Geminids meteor shower

This year, the Geminids will peak around December 13-14, when, with a clear sky and away from bright city lights, you can watch scores of meteors streak across the sky.

This year however, the moon is bright, and so only 30-40 meteors per hour will be visible in the Northern Hemisphere.

What are meteor showers:

- Meteors come from leftover comet particles and bits from asteroids
- Meteors are usually fragments of comets.
- As they enter the Earth's atmosphere at high speed, they burn up, creating a spectacular "shower".
- When these objects come around the Sun, they leave a dusty trail behind them.
- Every year Earth passes through these debris trails, which allows the bits to collide with our atmosphere where they disintegrate to create fiery and colourful streaks in the sky

About Geminids:

- One of the best and most reliable annual meteor showers
- With new moon and clear weather, the Geminids can produce approximately 100-150 meteors per hour for viewing.
- The Geminids are unique because unlike most meteor showers, they originate not from a comet, but from an asteroid –3200 Phaethon.
- As the 3200 Phaethon moves close to the Sun while orbiting it, the rocks on its surface heat up and break off.
- When the Earth passes through the trail of this debris, the Geminids are caused.

- The name Geminids – from constellation Gemini, from whose location in the sky the meteor shower appears to originate.
- It serves to aid viewers in determining which shower they are viewing on a given night.
- The constellation is not the source of Geminids.
- Geminids are visible throughout the night sky, not just in Gemini constellation

How to watch:

- Chances of a successful viewing are higher from locations far away from the lights of cities.
- Generally, pollution makes viewing meteor showers from India difficult.
- But in areas where there is no light or air pollution, viewers do not need to use any special equipment to view the showers.
- Make sure to give your eyes enough time to adjust to the darkness, which can take about 30 minutes.
- Additionally, viewers should try to stay away from their phones, as looking at bright screens affects night vision.

Asteroid 3200 Phaethon:

- Discovered on October 11, 1983.
- Named after the Greek mythology character Phaethon, son of the Sun God Helios.
- It takes 4 years to complete one round of the Sun.

Miscellaneous:

- Gemini constellation is located northeast of the constellation Orion and between the Taurus and Cancer constellations.

4.8 Fusion energy

Scientists in the United States have, for the first time, achieved a net gain in energy from a nuclear fusion reaction, seen as a big step forward in the decades-old endeavour to master a technology that is considered the most dependable source of energy in future.

- Fusion is a different, but more powerful, way of harnessing the immense energy trapped in the nucleus of an atom.
- This is the process that makes the Sun and all other stars shine and radiate energy.
- Attempts to master the fusion process have been going on at least since the 1950s, but it is incredibly difficult and is still at an experimental stage.
- The nuclear energy currently in use across the world comes from the fission process, in which the nucleus of a heavier element is split into those of lighter elements in a controlled manner.
- In fusion, nuclei of two lighter elements are made to fuse together to form the nucleus of a heavier atom.
- A large amount of energy is released in both these processes, but substantially more in fusion than fission.
- For example, the fusion of two nuclei of a heavier isotope of hydrogen, called tritium, produces at least four times as much energy as the fission of a uranium atom which is the normal process of generating electricity in a nuclear reactor.
- Besides greater energy yield, fusion is also a carbon-free source of energy, and has negligible radiation risks.
- But fusion reactions happen only at very high temperatures, 10 times the temperature that exists at the core of the Sun, and creating such an extreme environment in a laboratory requires huge amounts of energy.
- So far, the energy released in such experimental fusion reactions have been lower than what is consumed to create the enabling high temperatures.
- At best, some of these reactions have produced 'near break-even' energies. That is why the latest experiment conducted at the Lawrence Livermore National Laboratory in California is being considered a

big deal.

4.9 Thoracic aortic aneurysm

Grant Wahl, a US sportswriter covering the World Cup, died in Qatar. The autopsy found that Wahl had an “ascending thoracic aortic aneurysm”, a weakening of the blood vessel that often goes undetected.

About Thoracic aortic aneurysm:

- An aneurysm is a localized weakening of the wall of a blood vessel, which causes the vessel to bulge in that area, as a result of which the vessel may widen to more than 50 per cent of its usual diameter.
- Aneurysms are more commonly seen in arteries than in veins.
- The aorta is the main artery that carries oxygenated blood from the heart to the rest of the body and it is also the body’s largest blood vessel.
- An aortic aneurysm is a weakening and bulging in a portion of the aorta.
- Thoracic refers to that section of the blood vessel that passes through the chest.
- Aneurysms occur more often in the portion of the aorta that runs through the abdomen rather than the chest (causing what is called “abdominal aortic aneurysm”).
- The vessel may ultimately burst or separate, triggering a bleeding rush that can be life-threatening, and potentially lethal.

Causes and Symptoms

- degenerative disease that causes breakdown of the aortic wall tissue;
- genetic disorders such as Marfan syndrome;
- It is a genetic condition that affects connective tissue and can damage the blood vessels and cause aneurysms of the aorta
- family history;
- vasculitis, or inflammation of the arteries; and
- atherosclerosis, or the build-up of plaque on the walls of the artery.
- In rare cases, an infection can also trigger an aneurysm.

Treatment:

- Treatment may include monitoring the size and rate of growth of the bulge through an MRI or CT, and managing risk factors or a surgery.

4.10 Rare diseases

Rajya Sabha MP from the Nationalist Congress Party Fauzia Khan on Friday raised concerns over the benefits of the National Policy of Rare Diseases (NPRD) not reaching any patient with rare diseases even after several months since its introduction.

Context:

- The Union Ministry of Health and Family Welfare notified the NPRD in March 2021.
- An estimated 5000 to 8000 rare diseases have been identified worldwide, affecting approximately 6 to 8% of the population.
- Individual rare diseases affect few people, but cumulatively have a major impact on public health.

What are Rare diseases:

- A rare disease is any disease that affects a small percentage of the population such as fewer than 200,000 people across a broad range of possible disorders.

- These rare diseases are majorly thought to be genetic and are passed on from one generation to the next.
- In India, Haemophilia, Thalassaemia, Sickle cell anaemia and Primary Immuno Deficiency in children, auto-immune diseases, Lysosomal storage disorders such as Pompe disease and Gaucher's disease are in the rare diseases list.

National Policy of Rare Diseases (NPRD) 2021

- Objectives – promotion of research and development for diagnosis and treatment of rare diseases.
- Promotion of local development and manufacture of drugs and creation of conducive environment for indigenous manufacturing of drugs for rare diseases at affordable prices.
- The rare diseases have been identified and categorized into 3 groups.
- Group 1: Disorders amenable to one-time curative treatment.
- Group-2: Diseases requiring long term/lifelong treatment having relatively lower cost of treatment and benefit has been documented in literature and annual or more frequent surveillance is required.
- Group 3:- Diseases for which definitive treatment is available but challenges are to make optimal patient selection for benefit, very high cost and lifelong therapy.
- Eight (08) Centres of Excellence (CoEs) have been identified for diagnosis, prevention and treatment of rare diseases.
- Five Nidan Kendras have been set up for genetic testing and counselling services.

Challenges in India:

- Lack of treatment: About 95% rare diseases have no approved treatment and less than 1 in 10 patients receive disease specific treatment.
- Loss of lives due to delayed and misdiagnoses, limited access to resources, and absence of specific therapies often preclude patients from receiving proper, timely care.
- Impact on children: Children are disproportionately affected by these diseases as compared to adults
- 50 percent of new cases are observed to be in children, out of which 35 percent of children die before the age of one year, 10 percent die between the ages of 1 to 5 years, and 12 percent between the ages of 5 to 15 years. (Ministry of Health and Family Welfare 2017)
- High cost: The cost of treatment of rare diseases may vary from INR 10 lakhs to INR 1 crore on an annual basis.
- Issues in policy design: India does not have its standard definition for rare disease and neither does sufficient data on prevalence exists.
- The Government of India launched the Indian Rare Disease Registry only in April 2017.
- Only 450 rare diseases have been recorded in the registry as per data available from tertiary hospitals
- Unending delay and lack of urgency in policy implementation
- Eg lack of will of Centres of Excellence (CoE), designated as per the NPRD policy, has endangered the survival prospects of 415 patients, largely children, diagnosed with rare diseases.
- Majority of these patients have been diagnosed with Gaucher disease, for which therapy approved by Drug Controller General of India is available for many years.
- Lack of governance
- In NPRD policy, many CoEs were yet to seek financial support as per the policy for treating the patients.

Suggestions:

- The amount of 20 lakh sanctioned under the Rashtriya Arogya Nidhi, although appreciable but is barely enough to cover the costs of treatment.
- The Central Government recently informed the Delhi High Court that a digital platform has been made operational for crowdfunding of treatment and medicines for rare disease.
- Support from foundations, NGO's and crowdfunding-led initiatives is extremely helpful, however, it will not be accessible to all and is only a stop-gap solution.
- As of August 2019, Takeda Pharmaceutical Company's programme has covered 199 patients from 13 countries including India.
- Sustained medical and financial support to the patient from Government.

- Robust and inclusive policy in consultation with the State Governments.
- Public health concern is addressed sustainably to provide respite to thousands of victims of rare diseases and their families in India.

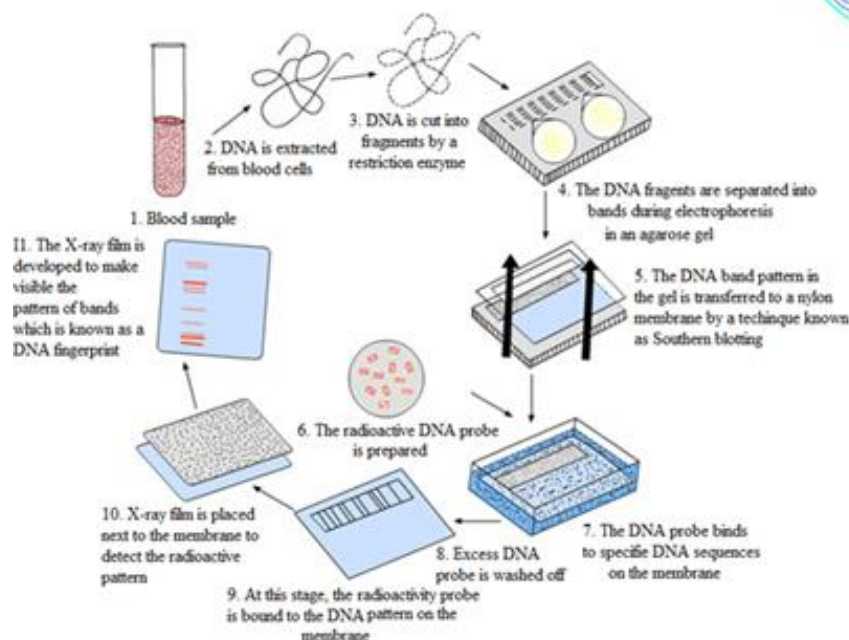
Way forward

- The private initiatives are leading the war, but without support from the Government, such solutions are not sustainable.
- Strength of policy making is integral to the strength of the government as a whole, and that of the country at large.

4.11 DNA fingerprinting

Recently Delhi Police recovered bones from the Mehrauli forest area in connection with the Shraddha Walkar murder investigation. DNA testing conducted on the bones — parts of the jaw, pelvis and lower limb — has now confirmed a positive match with Shraddha’s father.

About DNA fingerprinting:



- DNA fingerprinting is a procedure that shows the hereditary cosmetics of living things. It is a strategy for finding the distinction between the satellite DNA areas in the genome.”
- DNA profiling, DNA testing, DNA examination, Genetic profile, DNA distinguishing proof, genetic fingerprinting, and genetic investigation are a portion of the mainstream names utilized for DNA fingerprinting. This technique was invented by Alec Jeffreys in 1984.

Sources of DNA:

- Hair
- Bone
- Teeth
- Saliva
- Blood, etc.
- Because there is DNA in most cells in the human body, even a minuscule amount of bodily fluid or tissue can yield useful information.

DNA evidence is used to solve crimes in two ways:

- If a suspect is known, that person's DNA sample can be compared to biological evidence found at a crime scene to establish whether the suspect was at the crime scene or whether they committed the crime.
- If a suspect is not known, biological evidence from the crime scene can be analysed and compared to offender profiles in existing DNA databases to assist in identifying a suspect.

Uses of DNA Fingerprinting:

- Forensic analysis: It can be used in the identification of a (1) person involved in criminal activities, (2) for settling paternity or maternity disputes, and (3) in determining relationships for immigration purposes.
- Pedigree analysis: It can be used for inheritance pattern of genes through generations and for detecting inherited diseases such as Cystic Fibrosis, Haemophilia, Huntington's Disease, Sickle Cell Anaemia etc.
- Personal Identification: DNA fingerprints can be used as a genetic bar code to identify individuals.
- Anthropological studies: It is useful in determining the origin and migration of human populations and genetic diversities.
- DNA Barcoding: A technique for specifying the organisms' species using a short sequence of DNA situated in the genome is termed DNA bar-coding. The barcode DNA sequences are too short in respect to the complete genome and hence cheaper.

DNA Fingerprinting in India:

Pioneering work was done by Lalji Singh at the Centre for Cellular and Molecular Biology (CCMB), Hyderabad
Other centres are:

- Centre for Cellular and Molecular Biology (Hyderabad)
- Centre for DNA Fingerprinting & Diagnostics (Hyderabad)
- Central Forensic Science Laboratory, Kolkata
- National Bureau of Plant Genetic Resource (NBPGR), New Delhi
- National Institute of Plant and Genetic Research (NIPGR), New Delhi

4.12 End-to-end encryption

Apple announced it will be increasing the number of data points protected by end-to-end encryption on iCloud from 14 to 23 categories.

Context:

- With end-to-end encryption, user data will be protected even in case data is breached in the cloud. Similarly, Elon Musk wanted Twitter DMs to be encrypted.
- However, the government agencies are not happy with above developments.
- Such as, the FBI is deeply concerned with the threat of end-to-end encryption and user-only access pose as they hinder its ability to protect citizens from cyber-attacks, violence against children, and terrorism.

What is end-to-end encryption:

- End-to-end encryption is a communication process that encrypts data being shared between two devices.
- It prevents third parties like cloud service providers, internet service providers (ISPs) and cybercriminals from accessing data while it is being transferred.
- The process of end-to-end encryption uses an algorithm that transforms standard text into an unreadable format.
- This format can only be unscrambled and read by those with the decryption keys, which are only stored on endpoints and not with any third parties including companies providing the service.
- Apple shared that end-to-end encrypted data can only be decrypted by trusted devices where users are signed with their Apple ID. No one else can access this data and it remains secure even in the case of a data breach in the cloud storage.

Applications:

- End-to-end encryption is used to secure communications.
- Some of the popular instant-messaging apps that use it are Signal, WhatsApp, iMessage, and Google messages.
- It is also used to secure passwords, protect stored data and safeguard data on cloud storage.
- It has long been used when transferring business documents, financial details, legal proceedings, and personal conversations.
- It can also be used to control users' authorisation when accessing stored data, which seems to be what Apple intends to do.

Significance:

- The extra layer of protection would be valuable to targets of hacking attacks launched by well-funded groups.
- It secures users' data from snooping by government agencies, making it a sought-after feature by activists, journalists, and political opponents.
- It ensures that user data is protected from unwarranted parties including service providers, cloud storage providers, and companies that handle encrypted data.
- The data can only be accessed with access to the device passcode, password, recovery contact, or recovery key. The technology also makes it harder for service providers to share user information from their services with authorities.

Challenges of data:

- Data breach: Apple cited data breach research report, "The Rising Threat to Consumer Data in the Cloud", stating that the total number of data breaches more than tripled between 2013 and 2021.
- Data of 1.1 billion personal records were exposed in 2021 alone.
- AllMS servers have been hacked repeatedly.
- Non comprehensive: End-to-end encryption does not protect metadata, which includes information like when a file was created, the date when a message is sent and the endpoints between which data was shared.
- Threats of cyber-terrorism: FBI said it would enable tech companies "served with a legal order" to decrypt data
- In 2019, the U. S., the U. K., and Australia planned to pressure Facebook to create a backdoor into its encrypted messaging apps to allow governments to access the contents of private communications.
- Australia, in 2018, passed laws that would force tech companies and service providers to build capabilities allowing law enforcement secret access to messages on platforms like WhatsApp and Facebook.

Suggestions for future:

- EU's General Data Protection Regulation (GDPR) 2018 are the most forward-thinking and extensive legal provision for the protection of personal data and its ongoing security.
- It mitigates the risks of fraud, compromise and corruption, and protects the individual.
- US's California Consumer Privacy Act (CCPA) provides robust privacy rights and consumer protection.
- South Africa implemented Protection of Personal Information Act (POPIA) with equally stringent and rigorous personal data protection controls in place.
- Schrems II ruling addressed the flow of information from the European Union to the United States, has had an immense impact on global international privacy regulations and approaches.
- India enacted Personal Data Protection bill 2022 that embeds many of the tenets of GDPR within the country's context.
- These include requirements for notice and prior consent for the use of individual data, limitations on the purposes for which data can be processed by companies, and restrictions to ensure that only data necessary for providing a service to the individual in question is collected.
- In 2017, a supreme court judge ruled that it was unconstitutional for private companies to use Aadhaar data – a platform that was unveiled in 2009 and forms a massive part of the country's biometric

identification programme.

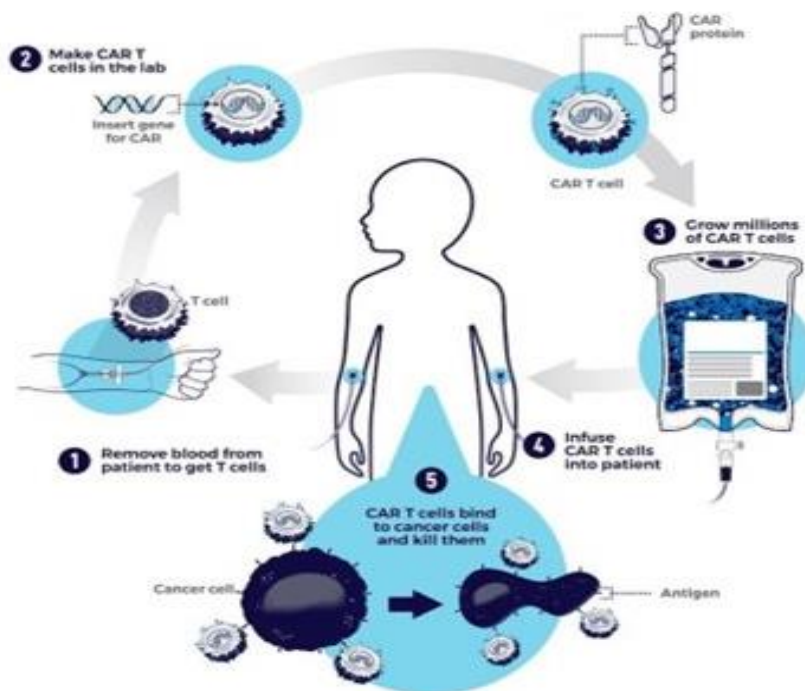
Way forward:

- While cryptographers and cybersecurity experts argue that attempts by law enforcement to weaken encryption with backdoors are ill-advised and could compromise the reliability of the internet, the move by tech companies to use end-to-end encryption to secure more user data seems to be getting stronger.
- Global regulations are constantly changing and adapting to trends, international best practices, and regulatory rulings.
- However, as these changes continue, it's likely that global requirements will align with one another more tightly to provide both country, citizen and organisation with a more solid regulatory footing.

4.13 CAR-T therapy

Anti-cancer CAR-T therapy reengineers T cells to kill tumors — and researchers are expanding the limited types of cancer it can target.

About CAR-T therapy:



- It is made up of two parts – CAR and T.
- T refers to cytotoxic T cells are a particular kind of white blood cells (WBC)
- CAR-T cell therapy starts with doctors isolating a patient's T cells from a sample of their blood.
- These T cells are genetically engineered in lab to produce a chimeric antigen receptor, or CAR.
- CARs are synthetic receptors specifically designed to redirect T cells from their usual targets have them recognize and hone in on tumor cells.
- On the outside of a CAR is a binder that allows the T cell to stick to tumor cells.
- Binding to a tumor cell activates the engineered T cell to kill and produce inflammatory cytokines proteins that support T cell growth and function and boost their cancer-killing abilities.
- These CAR-T cells are then stimulated to divide into large numbers over seven to 10 days, then given back to the patient via infusion.
- The infusion process usually takes place at a hospital where clinicians can monitor for signs of an overactive immune response against tumors, which can be deadly for the patient.

Solid tumors:

- While CAR-T cell therapy has seen success in blood cancers, it has faced hurdles when fighting what are called solid tumor cancers like pancreatic cancer and melanoma.
- Unlike cancers that begin in the blood, these types of cancers grow into a solid mass that produces a microenvironment of molecules, cells and structures that prevent T cells from entering into the tumor and triggering an immune response.
- Here, even CAR-T cells engineered to specifically target a patient's unique tumor are unable to access it, suppressing their ability to kill tumor cells.
- So, a new synthetic receptor that complements the first CAR design is developed.
- This receptor, called synthetic Notch receptor, or synNotch, is based on the natural form of Notch in the body, which plays an important role in organ development across many species.

Syn Notch vs CAR:

- Like CARs, the outside of synNotch has a binder that allows T cells to stick to tumor cells.
- Unlike CARs, the inside of synNotch has a protein that is released when a T cell binds to the tumor – This protein, or transcription factor, allows researchers to better control the T cell by inducing it to produce a specific protein.
- While, CAR binds to both tumor and healthy cells and induce T cells to kill both; synNotch ensure that engineered T cells are only activated when bound to a tumor cell and not healthy cells.
- Because T cells now require both CAR and synNotch receptors to recognize tumors, this increases the precision of T cell killing.

Uniqueness of synNotch:

- Use synNotch to improve CAR-T cell activity against solid tumors by inducing them to produce more inflammatory cytokines, such as IL-2, that enable them to kill tumor cells.
- These cytokines are highly toxic, there is a limit to how much IL-2 a patient can safely tolerate, limiting their use as a drug.
- Using synNotch, when a CAR-T cell encounters a tumor, it produces IL-2 within the tumor instead of outside it, avoiding causing harm to healthy cells.
- SynNotch modified CAR-T cells were able to trigger IL-2 production without causing toxicity to healthy cells in the rest of the body.
- Because synNotch is able to bypass the barriers tumors put up, it is able to help T cells amp up and maintain the amount of IL-2 they can make, allowing the T cells to keep functioning even in a hostile microenvironment.
- It is being used to treat lymphoma and multiple myeloma, and has shown remarkable response rates where other treatments have failed.

4.14 Deepfakes

The Cyberspace Administration of China, the country's cyberspace watchdog, is rolling out new regulations to restrict the use of deep synthesis technology and curb disinformation.

Deep synthesis:

- It is defined as the use of technologies, including deep learning and augmented reality, to generate text, images, audio and video to create virtual scenes.
- One of the most notorious applications of the technology is deepfakes, where synthetic media is used to swap the face or voice of one person for another.

Deepfakes:

- Deepfakes are a compilation of artificial images and audio put together with machine-learning algorithms to spread misinformation and replace a real person's appearance, voice, or both with similar artificial

likenesses or voices.

- It can create people who do not exist and it can fake real people saying and doing things they did not say or do.
- The term deepfake originated in 2017, when an anonymous Reddit user called himself “Deepfakes.” – the user manipulated Google’s open-source, deep-learning technology to create and post pornographic videos.
- The videos were doctored with a technique known as face-swapping – replaced real faces with celebrity faces.
- Deepfakes are getting harder to detect with the advancement of technology.
- Deepfake technology is now being used for nefarious purposes like scams and hoaxes, celebrity pornography, election manipulation, social engineering, automated disinformation attacks, identity theft and financial fraud.
- Deepfake technology has been used to impersonate notable personalities like former U.S. Presidents Barack Obama and Donald Trump, India’s Prime Minister Narendra Modi, Facebook chief Mark Zuckerberg and Hollywood celebrity Tom Cruise.

China’s new policy to curb deepfakes:

- The policy requires deep synthesis service providers and users to ensure that any doctored content using the technology is explicitly labelled and can be traced back to its source.
- The regulation also mandates people using the technology to edit someone’s image or voice, to notify and take the consent of the person in question
- When reposting news made by the technology, the source can only be from the government-approved list of news outlets.
- Deep synthesis service providers must also abide by local laws, respect ethics, and maintain the “correct political direction and correct public opinion orientation.
- Due to concerns about unchecked development and use of deep synthesis could lead to its use in criminal activities like online scams or defamation and to curb risks that might arise from activities provided by platforms which use deep learning or virtual reality to alter any online content.

India:

- There are no legal rules against using deepfake technology.
- However, specific laws can be addressed for misusing the tech, which include Copyright Violation, Defamation and cyber felonies.
- The European Union’s Code of Practice
- Introduced in 2018, the Code of Practice on Disinformation brought together for the first time worldwide industry players to commit to counter disinformation.
- The Code of Practice was signed by online platforms Facebook, Google, Twitter and Mozilla, as well as by advertisers and other players in the advertising industry. Microsoft joined in May 2019, while TikTok signed the Code in June 2020.
- If found non-compliant, these companies can face fines as much as 6% of their annual global turnover.

U.S’s bipartisan Deepfake Task Force Act 2021

- To assist the Department of Homeland Security (DHS) to counter deepfake technology.
- The measure directs the DHS to conduct an annual study of deepfakes — assess the technology used, track its uses by foreign and domestic entities, and come up with available countermeasures to tackle the same.

4.15 Arnala

Arnala’ for Indian Navy was launched at M/s L&T, Kattupalli, Chennai.

About Arnala:

- It is the first of 08 x ASW SWC Project
- Arnala class of ships will replace the Abhay class ASW Ships of Indian Navy
- The ship has been named Arnala to signify the strategic maritime importance accorded to the island of Arnala (located about 13 Km north of Vasai, Maharashtra) by the great Maratha warrior, Chhatrapati Shivaji Maharaj.
- Built by Garden Reach Shipbuilders & Engineers (GRSE), Kolkata.
- They are designed to undertake anti-submarine operations in coastal waters and Low Intensity Maritime Operations (LIMO) including subsurface surveillance in littoral waters.
- The 77.6m ASW SWC ships have a displacement of 900 tons with a maximum speed of 25 knots and endurance of 1800 NM.
- The ASW SWC ships will have over 80% indigenous content, ensuring that large scale defence production is executed by Indian manufacturing units thereby generating employment and capability build up within the country.

4.16 Dark patterns

Some Internet-based firms have been tricking users into agreeing to certain conditions or clicking a few links. Such acceptances and clicks are flooding inboxes of the users with promotional emails they never wanted, making it hard to unsubscribe or request deletion. These are examples of “dark patterns,” also known as “deceptive patterns.”

About Dark patterns:

- These patterns are unethical user interface designs that deliberately make users’ Internet experience harder or even exploit them.
- In turn, they benefit the company or platform employing the designs.
- By using dark patterns, digital platforms take away a user’s right to full information about the services they are using and their control over their browsing experience.
- The term is credited to UI/UX (user interface/user experience) researcher and designer Harry Brignull, who has been working to catalogue such patterns and the companies using them since around 2010.

Use of Dark patterns:

- Social media companies and Big Tech firms such as Apple, Amazon, Skype, Facebook, LinkedIn, Microsoft, and Google use dark or deceptive patterns to downgrade the user experience to their advantage.
- In social media, LinkedIn users often receive unsolicited, sponsored messages from influencers.

Concerns about Dark patterns:

- Dark patterns endanger the experience of Internet users and make them more vulnerable to financial and data exploitation by Big Tech firms.
- Disabling this option is a difficult process with multiple steps that require users to be familiar with the platform controls.
- Dark patterns confuse users, introduce online obstacles, make simple tasks time-consuming, and have users sign up for unwanted services/products.

4.17 DNA Technology Regulation Bill:

- In April 2022, The Ministry of Science and Technology (MST) announced the draft DNA Technology (Use and Application) Regulation Bill.
- With the recent introduction of the new Digital Personal Data Privacy Bill removing differences between sensitive personal data and personal data and adding to it the nuance of only governing digital data, privacy has become a popular concern.

- While stakeholders have enquired about the expansion of DNA use across the justice system, the MST has yet to confirm such plans.

DNA Technology Regulation Bill:

- The Bill creates an umbrella databank for multiple purposes
- It aims to set up DNA data banks across the country and DNA laboratories for testing and storing DNA profiles and use these for case resolution in crimes (primarily sexual assault).
- It includes training over 20,000 investigation officers, prosecution officers, and medical professionals to collect forensic evidence in cases of sexual assault using standardised sexual assault evidence collection kits.
- Preceding the draft, there was no specific legislation in India to outline the guidelines on DNA collection, storage and use in law enforcement. However, DNA evidence was covered under Section 45 of the Indian Evidence Act 1872 under 'scientific evidence.'
- The Bill has not introduced DNA evidence into the Indian legal system.
- However, DNA profiling is used in law enforcement have been seen in India since Kunhiraman vs Manoj, 1991, on proof of paternity.
- It aims to address the existing gap in regulating the use of biological sample evidence
- It also covers offences under special laws such as The Immoral Traffic (Prevention) Act, 1956; The Medical Termination of Pregnancy Act, 1971; The Scheduled Castes and the Scheduled Tribes (Prevention of Atrocities) Act, 1989, amongst others.

Challenges of the bill:

- Data bias: The Bill lists civil matters where lawful procedures can use DNA profiling.
- The application areas cover controversial disputes relating to pedigree, issues pertaining to reproductive technologies, immigration or emigration, and issues relating to establishing national identity.
- Enhancing discrimination against the groups it claims to protect. For example, The Immoral Traffic (Prevention) Act discriminates against transsexual people who cannot access formal employment and are thus consigned to sex work and solicitation.
- Lack of privacy and dignity of individuals: The photographic forensic data is used in combination with other digitised data and lack of collection guidelines within this regulation is a concern.
- DNA can reveal sensitive information used to criminalise a community and disclose information on ancestry, feeding into social discrimination.
- Insecurity over DNA laboratories hosting data – biases in artificial intelligence, algorithms it monitors, and the policies that use these,
- Data storage: It is unclear how the Bill intends to regulate data storage in such DNA laboratories.
- Lacunae in design: Incongruity in the Bill's understanding of DNA evidence as biological samples to further include photographic forensic samples.
- The integration of photographic or video material in this legislation has created an unnecessary caveat in how this evidence can be collected, stored, and used, especially since such samples may go against privacy requirement.

Biases in law enforcement:

- Much like automated policing, where crime is registered in higher numbers because of the increased surveillance and dispatch of police officers, the results of DNA database categorisation are often inaccurate due to unequal testing of certain disadvantaged communities over others.
- Facial Recognition Technology (FRT) used in law enforcement also displays these biases, aside from previously mentioned privacy concerns, churning up inaccurate outcomes (in one case, 138 out of 140 faces were misidentified by an FRT)
- Accuracy of DNA evidence – Lack of standardised analysis in hair, fibre and different crime scene samples can lead to wrongful convictions.
- For example, fingerprint analysts often alter their conclusions on prints and identification with additional and incremental information on prints.

- Issues of injustice: A single DNA profile might be mistakenly generated when samples from multiple people are combined or collected from a crime scene.
- Partial profiles can match many more people than complete profiles.
- Full profiles may also match a person other than the guilty individual.
- These outcomes are further complicated by different rates of DNA shedding, contamination issues, investigator biases etc., all of which still need to be fully addressed by the legislation in question.
- Others – DNA profiles will likely include virtually everyone since DNA is left at the crime scene before and after the crime by several persons who may not have been involved in the crime.

Suggestions:

- Individual privacy – use of DNA Technology Bill should not depend on launching a personal data protection bill and, in its absence, should create further clarifications on privacy guidelines.
- Reliability – In addition, to make DNA profiling more reliable, the account must be enhanced with specific guidelines to address the use of DNA technology in combination with other tools used in the justice system to avoid a future miscarriage of justice.
- Role of stakeholders – The document needs to define how different stakeholders will apply the legislation in the aforementioned areas.
- Role of judiciary – The Bill highlights the need for court approval in civil matters, consent of individuals in criminal investigations, and identifying missing persons.
- Consent– the Bill still needs to outline the necessary consent requirements for use in civil cases, taking agency away from those who may be involved in civil disputes.
- Accountability – With regard to video evidence, FRT, linkages of forensic data to surveillance systems need immediate oversight as lack of accountability can add to existing concerns on privacy.
- Holistic evidence – DNA evidence can place suspects at the location of the crime; this, in isolation, is not enough to mandate their conviction. Thus, other evidence, such as geotagged evidence, mobile records etc., will be needed to approach the case holistically.
- In addition, the combination of digital and biological data digitised and maintained on a database further induces privacy concerns.

Way forward:

- Thus, if combined with existing data biases in law enforcement, the DNA profiling bill can contribute to data that can be misused for caste-based or community profiling in the country, especially in cases where minority groups are disproportionately criminalised.
- The eventual extension of DNA profiling in other cases beyond sexual assault can be included as part of changes.

5. Environment & Ecology

5.1 Tungareshwar Wildlife Sanctuary

Supreme Court exempted Maharashtra's Tungareshwar Wildlife Sanctuary (TWS) from creation of a one-kilometre eco-sensitive zone (ESZ) around all Protected Areas in India.

- The bench is hearing applications filed in the TN Godavarman Thirumalpad case that has sought exemption from the order.
- We are all for the protection of the environment. But at the same time, we cannot halt development," Justice Gavai said.

About TWS:

- It was declared a wildlife sanctuary in 2003.
- It is in the suburbs of Mumbai.
- Tungareshwar is a mountain plateau situated between Virar and Vasai.
- Spread over 85 sq.km, it forms a corridor between Sanjay Gandhi National Park (also known as Borivali National Park) and Tansa Wildlife Sanctuary.
- There are three different types of forests – Dry Deciduous, Moist Deciduous and Semi Evergreen.
- It is a popular picnic destination.
- The region is rich in biodiversity: Oriental dwarf kingfisher (a migrant bird known as the Jewel of the forest), the Leopard, Wild Boar, Barking Deer, Langur, Bonnet and Rhesus Macaque, and Black-naped Hare, as well as a multitude of birds, including the Crested Serpent-eagle, Jungle Owlet, White-eyed Buzzard, Oriental Honey-buzzard, Emerald Dove and Heart-spotted Woodpecker can be found here.

5.2 Soil health

In 2014, the United Nations Food and Agricultural Organization (FAO) declared December 5 as 'World Soil Day'.

- The day was chosen as it coincides with the birthday of Thailand's king, HM King Bhumibol Adulyadej, who led the programme and made it happen.
- It aims to draw people's attention to the importance of healthy soil for the environment and for life.

Importance of soil:

- Provides plants nutrition to grow and foothold for their roots.
- It filters rainwater, recharges groundwater, regulates the discharge of excess rainwater, preventing flooding and it can store large amounts of organic carbon.
- Soil can help regulate emissions of carbon dioxide and other greenhouse gases.
- We build with soil — and on it — from mud brick houses to buildings, highways and more.
- It is a habitat for billions of organisms (including microorganisms) and about 25 per cent of the planet's biodiversity.
- The soil microbes help break down organic matter and extract vital nutrients plants can use.
- Soil's capacity to hold water varies according to the soil type (clay holds more water than sandy soil) and organic matter content.
- Each one per cent increase in soil organic matter helps the soil hold 20,000 gallons more water per acre.
- Healthy soils are the foundation of the food system.
- It is estimated that 95 per cent of our food is directly or indirectly produced on our soils.
- A healthy soil helps sustain life — plants, insects and microorganisms; withstand climate events like droughts, floods and erosion; and provide other ecosystem services.
- The microorganisms and larger organisms turn minerals into plant nutrients, which improve crop

production.

- Healthy soil can help mitigate climate change by increasing its carbon content – soil removes about 25 per cent of global fossil fuel emissions from the atmosphere each year.
- Healthy soil has the right chemical composition of macro- and micro-nutrients such as nitrogen, phosphorus, potassium, calcium, magnesium, sulphur, iron, manganese and others, which plants get from the soil.
- Healthy soils store carbon and other greenhouse gases in soil organic matter (SOM).
- Globally, 10-14 per cent of total carbon emissions come from the intensive agricultural production system.
- Soil management is an essential element of regenerative agriculture, which helps regeneration.

Intensive agriculture:

- It includes promotion of monocropping, regular and over-tillage and use of chemicals.
- Chemical fertilisers and pesticides reduce beneficial soil organisms, which are necessary for soil health, making it less productive, reducing its water retention capacity and making it more susceptible to erosion, according to estimates.
- A third of the world's soils are degraded.
- In India, around 29.7 per cent land is degraded, according to the ISRO Atlas published in 2021.
- Soil erosion and land degradation pose a major threat to global food security and to the achievement of the United Nations-mandated Sustainable Development Goals, compromising the well-being of at least 3.2 billion people around the world.
- The loss of a few inches of topsoil has the potential to lower crop yields by 50 per cent and it can take hundreds of years to rebuild the soil.

Soil carbon sequestration:

- Soil carbon sequestration is a process by which carbon dioxide is removed from the atmosphere and stored in soil, through processes like photosynthesis or the conversion of CO₂ found in air pockets in soil into inorganic carbonates.
- This is possible with regenerative agriculture, which may result in more SOM in the soil.
- In fact, nearly 80 per cent (2,500 gigatonnes) of all carbon in terrestrial ecosystems is found in soil.
- The Intergovernmental Panel on Climate Change indicated that carbon sequestration will be a critical part of the strategy to fight global warming.
- Organic matter increase can help with carbon sequestration, while also improving the soil's microbial population.
- This is possible through regenerative agriculture (organic or natural farming) — a low-cost approach to reducing greenhouse gas emissions.
- Organic farming does not use chemicals, but it does increase organic matter content, microorganism population and plant availability of both micro- and macro-nutrients.
- With only about 60 years of topsoil remaining under current practices, regenerative agriculture is the solution.
- Farmers' transition to adopt regenerative farming must include measures such as capacity building, incentives, seed and input availability as well as a mission-mode programme will have a long-term benefit for soil health and carbon sequestration

5.3 Plastic pollution

A report by Delhi-based think-tank, Centre for Science and Environment (CSE) was released at a one-day National Conclave in New Delhi.

It states that India only has itself to blame for having not been able to effectively implement policy to tackle plastic pollution.

Context:

- In India with the unceasing growth of consumerism throughout the nation, plastic pollution is rising.
- The CPCB Report (2019-20) states that 3.4 million metric tonnes of plastic waste are generated in India annually.
- Although, almost 60 per cent of the total plastic waste generated in India gets recycled, most of this plastic is down-cycled. At this juncture, India needs robust and stringent waste management tools to substantially improve the situation.

Current regulations:

- Plastic Waste Management Amendment Rules, 2021
- prohibiting identified single use plastic items by 2022.
- Thickness of plastic carry bags increased from 50 to 75 microns from 30th September, 2021 and to 120 microns with effect from the 31st December, 2022.
- Guidelines for Extended Producer Responsibility given legal force

Single-use plastics

- These include polystyrene, ear buds with plastic sticks, plastic sticks for balloons, plastic flags, candy sticks, ice-cream sticks, polystyrene or Thermocol for decoration, plates, cups, glasses, cutlery etc.
- Extended producer responsibility:
- Guidelines on Extended Producers Responsibility (EPR) on plastic packaging under Plastic Waste Management Rules, 2016
- on producers, importers, brand owners and plastic waste processors
- 4 categories of plastic: rigid plastic packaging, flexible plastic packaging, multi-layered and plastic sheets.

Challenges:

- Excessive amendments: The Plastic Life-Cycle noted that India, which released its current Plastic Waste Management Rules in 2016, has since amended it five times — in March 2018, August 2021, September 2021, February 2022 and July 2022.
- Misplaced welfare: Each of these amendments have been aimed at benefiting major producers, importers and brand owners.
- Legal loopholes: The 2016 Rules state that all non-recyclable multi-layered plastic (MLP) should be phased out in two years. The amendment introduced in March 2018 was aimed at stopping the phase out of MLPs.
- It said only those MLPs that were “non-recyclable or non-energy recoverable or with no alternate use” could be phased out.
- Industry orientation: The EPR has loopholes that benefit industry at the cost of the environment.
- The August 2021 amendment prohibited the production, sale and use of single-use plastic after July 1, 2022.
- But the February 2022 amendment exempted plastic packaging that accounts for 59 per cent of plastic waste in India from the single-use plastic ban.
- Lack of data: There was no information on the quantity of plastic material or waste a company generated. Not only was such data based on self-declaration, there was nothing available in the public domain to assess its accuracy.
- Lack of monitoring: Producers, Importers and Brand Owners (PIBO) were assigned a 25 per cent collection target for the plastic they put out on the market for 2021-22.
- But there has been no update on the performance of the companies by the Central Pollution Control Board (CPCB) for 2021-22.
- Governance issues: With an EPR target of 70 per cent, CPCB is struggling to even register all the PIBOs on its EPR portal.
- Lack of verification: There was no technology to verify the use of recycled content in plastic products.
- Thus any claim of use of recycled plastic cannot be verified
- This means that we have no option but to rely on the integrity, honesty and credibility of the

organisation's claim.

Suggestions for future:

- The entire life cycle of plastic — from source to disposal — must be considered together as the root cause of the pollution.
- NITI Aayog and United Nations Development Programme (UNDP) India launched a handbook to promote sustainable management of plastic waste in the country.
- Recycling or re-processing different categories of plastic waste into secondary material.
- Incineration of plastic waste – however it is expensive and causes pollution if not done using the right equipment.
- Technical model for plastic waste recycling and management – This component based on an integrated and inclusive approach by involving different stakeholders and their social benefits
- Development of a baseline system of plastic waste management at the city level.
- Systematic approach for promoting recycling of plastic waste at the city level.
- Stakeholder identification and partnerships
- Development of regulatory need-gap analysis and proposals for the holistic management of plastic waste.
- Material Recovery Facility (MRF) for improved plastic waste management implementation

Way forward:

- The recycling targets (under EPR) for PIBOs only start from 2024-25, which means that there is no mandate on recycling of the collected plastic waste till 2024-25.
- There is a need for more clarity on what will happen to the collected plastic waste — will it be stored, burnt or dumped?
- Plastic waste management needs to be equipped with processes and protocols which not only address dry waste management but also create a sustainable ecosystem for resource efficiency, environment compliances, basic amenities, health and safety and a socio-economic support system for key players such as waste pickers and recyclers.

5.4 Deforestation in amazon basin

Recently, a report released by the Amazon Network of Georeferenced Socio-Environmental Information in collaboration with MapBiomas shows that the Amazon region has lost 10% of its native vegetation in almost four decades. The forest area lost is mostly tropical rainforest and is roughly the size of Texas.

Key findings of the report:

- Widening Deforested area: From 1985 to 2021, the deforested area surged from 490,000 square kilometers to 1,250,000 square kilometers.
- Brazil accounted for 84% of all forest destruction in this period.
- Methodology: The deforestation numbers are calculated from an annual satellite monitoring.
- The satellite monitoring has been taking place in Bolivia, Peru, Ecuador, Colombia, Brazil, Venezuela, Suriname, Guyana and French Guiana since 1985.
- Brazil leads with highest loss: Brazil, which holds about two-thirds of the Amazon, also leads the destruction.
- In almost four decades, 19% of Brazil's rainforest has been destroyed.
- Almost half of Brazil's carbon emissions come from deforestation.
- The forest destruction is mainly due to cattle ranching expansion supported by the opening of roads.

Impact on Carbon Emissions:

- At least some 75 billion metric tons of carbon are stored across the Amazon.
- If all that carbon ended up immediately in the atmosphere, that would be about seven times global annual emissions.

About the Amazon Rainforests and Amazon basin:

Amazon Rainforests

- These are the world's largest tropical rainforests occupying the drainage basin of the Amazon River and its tributaries in northern South America.
- As of 2021, the Amazon had 74% of its area covered by tropical rainforests and 9% of other natural vegetation types.
- They are home to nearly a fifth of the world's land species and over 45 million people.
- The rainforest of the Amazon is home to 400–500 indigenous Amerindian tribes.
- It is the source of 20% of the oxygen used by the planet.
- Tropical forests are closed-canopy forests growing within 28 degrees north or south of the equator.
- They are very wet places, receiving more than 200 cm rainfall per year, either seasonally or throughout the year.
- Temperatures are uniformly high – between 20°C and 35°C.

The Amazon Basin

- The basin covers over 6 million square km, nearly twice the size of India.
- It is bounded by the Guiana Highlands to the north, the Andes Mountains to the west, the Brazilian central plateau to the south, and the Atlantic Ocean to the east.
- It comprises about 40% of Brazil's total geographical area.
- The basin produces about 20% of the world's flow of freshwater into the oceans.

Significance of Amazon Rainforests in the basin countries:

- Source of rich biodiversity: The Amazon forests are highly biodiverse and a wide range of flora and fauna species can be found in the Amazon than in any other terrestrial ecosystem in the world.
- It is estimated to contain up to 30 percent of all species.
- Precipitation and climate control: The Amazon rainforest produces between 50 and 75 percent of the world's precipitation through transpiration.
- Rainfall in the Western United States and Central America is influenced by moisture from the Amazon.
- The hydrological cycles that depend on the forests, the Amazon's canopy cover plays an important role in regulating temperature and humidity and is intricately linked to regional climate patterns.
- Carbon sink potential and a natural air purifier: Massive amounts of carbon are sequestered by about 350 billion trees that make up the Amazon rainforest.
- Over 85 billion tonnes of carbon are stored in forests which is more than a third of the carbon stored by tropical forests worldwide.
- Local and regional benefits: Millions of people in the Amazon Basin depend on the services provided by the forest and activities such as logging, collection of non-timber forest products.
- Medicinal values and food security: The Amazon provides 70% of the plants that are effective against cancer cells.
- Eighty percent of the different types of food we consume worldwide have their roots in the Amazon rainforest.

Concerns and threats to Amazon forests:

- Increased global temperatures coupled with El Niño Southern Oscillation (ENSO) have led to a significant impact on Latin American climate variability and experts predict that the rainforest will perish in just 100 years.
- Increased instances of forest fires, drought and unsustainable agriculture practices have led to massive loss of forest vegetation.
- Poaching, commercial fishing, bio-Piracy and Smuggling has led to decline in flora and fauna numbers rapidly. Many species have become extinct including Amazon River turtle "Paiche".
- Developmental activities, industrial and mining activities in large forested areas have been responsible for at least 10% of the total deforested area.
- Clearing forests for Soy oil and Cattle ranching has led to a significant amount of vegetation loss — 1.5

acres are lost every second.

Measures taken by the world at large:

- Germany and Norway: Germany and Norway had ceased the funds to programmes that aim to prevent deforestation of the Amazon rainforest.
- Both the countries had accused the Brazilian government of not taking the necessary steps to contain the forest fire.
- G7 Countries: The G7 countries have pledged to donate \$20 million to aid the Amazon countries to fight the wildfire.
- These countries have also agreed to launch a long-term global initiative to protect the Amazon rainforest.
- This plan would involve the reduction of the deforestation rate and promotion of afforestation of the Amazon rainforest.
- Both France and Ireland have threatened to block the EU trade deal with Brazil and three other Latin American countries if President Bolsonaro doesn't change his stance.
- The Brazilian president countered this threat by rejecting the G7 countries' offer of \$20 million assistance.
- However, despite these political tensions, many experts believe that funding from G7 is not sufficient to solve the immediate crisis.

Way Forward:

- If tropical forests' potential to operate as carbon sinks is to be preserved, fossil fuel emissions must be controlled, and temperature rises must be restricted.
- Zero deforestation policy by the Brazilian government's administration is in the spotlight, and it is being urged to implement a zero-deforestation policy to change the situation.
- Brazil was among a number of nations who promised to end and reverse deforestation by 2030 during the COP26 climate summit.
- Limit greenhouse gas emission to protect the Amazon forests.
- LEAF (Lowering Emissions by Accelerating Forest Finance) Coalition was announced at the Leaders' Summit on Climate, 2021.
- Emphasis on REDD+ initiatives which are climate change mitigation options in developing countries for conservation of forest carbon stock, sustainable management of forests and reducing emissions from deforestation and forest degradation.
- Create awareness among students and youths of the importance of trees to the Amazon ecosystem.
- The Amazon is on the verge of functional destruction; not just the Amazon rainforests, but other Southeast Asian forests have also turned into carbon sources in the last few years as a result of formation of plantations and fires. There is an imminent need to reverse the deforestation trends and save the planet which requires active participation of all stakeholders including governments, civil society, industries and corporations in a mission mode.

5.5 Commission for Air Quality Management in NCR and Adjoining Areas (CAQM)

Recently Commission for Air Quality Management in NCR and Adjoining Areas (CAQM) has revoked the Stage-3 of the Graded Response Action Plan in entire National Capital Region, NCR with immediate effect in view of the improvement in overall air quality.

About CAQM:

- Commission for Air Quality Management in National Capital Region (NCR) and Adjoining Areas (CAQM) was established by the CAQM Ordinance, 2020 and CAQM, Act 2021.
- The Act provides for the constitution of a Commission for better co-ordination, research, identification, and resolution of problems related to air quality in the National Capital Region (NCR) and adjoining areas.
- Adjoining areas have been defined as areas in the states of Haryana, Punjab, Rajasthan, and Uttar Pradesh adjoining the NCR where any source of pollution may cause adverse impact on air quality in the NCR.

- Apart from consolidating all agencies that monitored, investigated and planned mitigation of air pollution in the region, the commission has replaced the Supreme Court-appointed Environment Pollution (Prevention and Control) Authority (EPCA) which had been running for 22 years.

Powers of the CAQM:

- The rulings by the Commission on air pollution will override anything contained in any other law.
- The powers of the Commission will also supersede that of any other body in matters of air pollution.
- Therefore, in cases where conflict may arise between orders or directions issued by the other State governments, State Pollution Control Boards or even the Central Pollution Control Board, the orders of the Commission will prevail.
- The Commission will have the power to take measures, issue directions and entertain complaints “for the purpose of protecting and improving the quality of air in the National Capital Region”.
- It will also coordinate action taken by states on air pollution and will lay down parameters for air quality and emission or discharge of environmental pollutants.
- It will also have powers to restrict industries in any area, carry out random inspections of any premises including factories and be able to close down an industry or cut its power and water supply in case of non-compliance.
- It will also be monitoring the measures taken by the States to prevent stubble burning.
- Comprehensive policy formulated by CAQM: Commission for Air Quality Management in NCR and adjoining areas (CAQM) recommended a uniform pricing policy for natural gas in the region pointing out that with the key commodity being outside the purview of the GST, State taxes are making it costlier. As per the policy
- All thermal power plants located within 300 kilometre radius of Delhi will have to ensure compliance with emission standards as per the deadline set by the Ministry of Environment and Forest.
- phasing out diesel-run auto-rickshaws in Gurugram, Faridabad, Gautam Buddha Nagar and Ghaziabad by December 31, 2024 and
- The remaining districts in the National Capital Region (NCR) by December 31, 2026.
- Only Compressed Natural Gas (CNG) and electric autos will be registered in NCR from January 1, 2023.
- Fuels pumps in Delhi-NCR will not give fuel to vehicles not having a valid pollution-under-check certificate from January 1, 2023.
- Tax structure to be rationalised for the NCR sub-regions till the time GST reforms are possible to make gas more competitive and enable its rapid adoption to replace coal and other dirty fuels in the region.
- State governments have been asked to implement a scrappage policy for end-of-life vehicles that cannot be used anymore.
- The use of coal in the industrial application will be banned from January 1, 2023.
- To prevent stubble burning, Punjab and Haryana will have to utilise 6 million tonnes and 2 million tonnes of paddy straw industrial applications, respectively as well as thermal power plants, biomass power and production of bio-fuels by December 31, 2026.
- The policy also stressed the need to upscale the application of bio-decomposer solution, which decomposes paddy straw.
- For effective traffic management, the policy mandates the development of early warning systems to inform commuters and plan route diversions in Delhi, Gurugram, Faridabad, Gautam Buddha Nagar and Ghaziabad districts.
- It also focuses on strengthening the quality of air pollution data and filling gaps through sensor-based monitoring to cover rural and peri-urban areas.

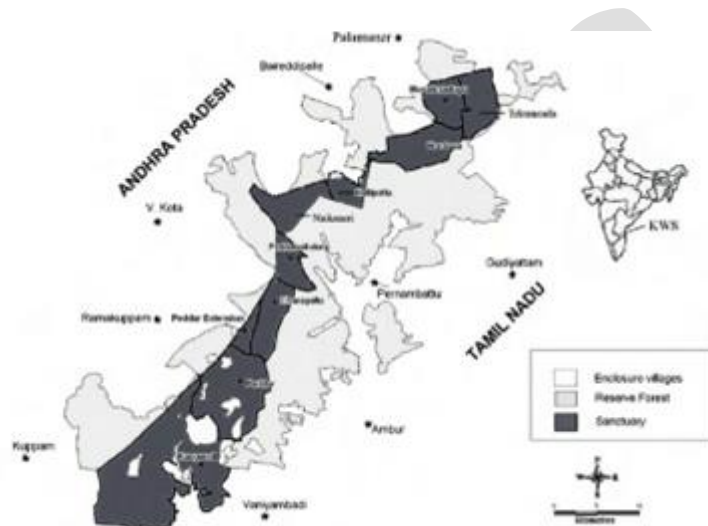
About Environment Pollution Control Authority (EPCA):

- EPCA was constituted with the objective of ‘protecting and improving’ the quality of the environment and ‘controlling environmental pollution’ in the National Capital Region. The EPCA also assists the apex court in various environment-related matters in the region.
- EPCA is Supreme Court mandated body tasked with taking various measures to tackle air pollution in the National Capital Region. It was notified in 1998 by Environment Ministry under Environment Protection

5.6 Koundinya Wildlife Sanctuary

18-member herd of all female elephants from the forests of Gudiyattam and Pernambattu of Tamil Nadu are currently on the prowl in the Koundinya wildlife sanctuary zone in Chittoor district, apparently “in search of mates”.

About Koundinya Wildlife Sanctuary:



- Kaundinya Wildlife Sanctuary is a wildlife sanctuary and an elephant reserve situated in Andhra Pradesh.
- It is the only sanctuary in Andhra Pradesh with a population of Asian elephants.
- The sanctuary has dry deciduous forests with thorny scrubs interspersed with trees.
- These forests have the Kaundinya and Kaigal tributaries of Palar River.
- Kalyana Revu Waterfalls (also called Kalyan Drive Falls) and Kaigal Waterfalls are located in the Koudinya Wildlife Sanctuary.
- The sanctuary is primarily an elephant reserve and is home to about 78 Indian elephants.
- The vulnerable yellow-throated bulbul is present in the sanctuary.

5.7 Green Tax

Efforts are being made by Governments, civil societies, corporates, businesses and even the common people towards net-zero emissions to nullify climate change and global warming. India is in the driver's seat in these efforts and can explore a new dimension of taxing emissions which will augment the government revenues.

About Green Tax:

- A Green Tax is a type of tax levied by the government for the purpose of environmental conservation.
- It is believed charging taxes on emissions that cause pollution will lower environmental impairment in a cost-effective manner by encouraging behavioural changes in households and firms that need to decrease their pollution.
- The revenue collected through such tax can be used to create green energy infrastructure, combat environmental pollution, afforestation and other such purposes which help in conserving the environment.
- In India, many state governments such as Goa and Gujarat have provision for green tax or cess.
- The Ministry of Road Transport and Highways (MoRTH) had introduced a similar tax called Green Tax / Eco Tax on older vehicles.

Need for a Green tax

- The government has been looking at different ways of augmenting its revenues because tax buoyancy cannot rely upon mere growth levels which can vary and abnormal situations (e.g., COVID-19) may affect them.
- (Tax buoyancy is an Economic theory concept that explains the relationship between the changes in the government's tax revenue growth and the changes in GDP. It refers to the responsiveness of tax revenue growth to changes in GDP.)
- Usually faulty taxing policies of governments led to existing taxpayers being taxed even more in the name of environmental taxes or otherwise.
- As the country goes digital and most business units are GST-registered, we have records of activities of each firm and we can consider taxing companies that pollute the environment.
- This universe of companies can serve as the taxable base on which a green tax can be levied.
- Even a rudimentary activity like farming causes pollution and this tax can be imposed at the mandi level, the official point of sale.

Potential of revenue generation through green taxing in India:

- India's top 4,000 odd companies had a combined turnover of roughly ₹100 trillion in 2021-22.
- Intuitively, if a small green tax is imposed on the sales of these companies linked to pollution it may fetch large revenues.
- For example an average green tax at 0.5% of the turnover will generate ₹50,000 crores annually for the government.
- This can be used to finance budget spending and it will complement the government's efforts of issuing green bonds for projects that are environmentally compliant.
- The green tax need not be uniformly applied, and its rate could vary from 0.1% to 2%, depending on the industry concerned.
- As the sales of these companies/ industries grow, they would automatically yield higher revenues to the government.
- Methods of calculating pollution emitted by individual business activity and taxing it: There are different ways of arriving at the amount of pollution emitted by every business activity.
- The current data shows that the industries/ sectors based on fossil fuels are most polluting such as manufacturing and construction, services, transport, chemicals and fertilizers etc.
- Services with no factories add to ecological atrophy with their buildings (fancy glass-front edifices of modern commercial complexes and cooling emissions) and servers that add to global warming.
- The Centre can commission research agencies to independently evaluate the emissions of all industries and set standards for the same.
- Once these standards are in place these industries can be taxed on the basis of the pollution caused by their business activity.

Using broad industry averages emission as the norm:

- Initially the companies can be slotted into industry groups based on how their production or sales are classified.
- A cut-off level of 50% of product sales or production can be used for classification.
- The product with the largest share in a company's overall production or sales can determine its industry assignment.
- Assessment of pollutant emissions can be reviewed periodically, as firms would be expected to do their utmost to induct new technologies and reduce their emissions over time.
- This would ensure that the businesses pay for the damage caused to the environment.
- Hence the Green Tax would be a levy based on the status of the company and defined by the industry to which it belongs.

Challenges of imposing Green Tax on all business:

- Assessing individual firm's emissions with accuracy and proportional tax rate is a difficult process and

presently there is no such robust technology in existence.

- Companies may pass the tax cost onto the customers which may lead to inflation and a rise in prices, such steps are not desirable for vulnerable sections.
- Lack of enforcement at the grassroots plagued by corruption may lead such initiatives to become just one more tax among the many.
- It may hamper the small and local industries, MSMEs as their costs will increase which will reduce their competitiveness.
- Some companies have been observed to indulge in 'greenwashing' just to meet CSR obligations and may find such loopholes for the Green taxing as well.

Way Forward:

- A Green Tax could be a right step on the lines of single taxing for emissions but it poses many challenges such as passing of costs onto the customers but it would not be very significant and can be absorbed. Moreover, consumers of products and services that are environmentally unfriendly would also be made accountable to the world at large. All in all the cost has to be borne by somebody but the government is sure to be a big beneficiary.

5.8 Wildlife protection

The expeditious passage of the Wild Life (Protection) Amendment Bill, 2021 (WPA) needs comment.

While the aspects of protecting species from the wildlife trade, in line with international standards, have received thoughtful scrutiny by civil society, the impact of the criminal legal framework adopted by the WPA is less known. Pitting wildlife species against communities as human-animal conflict has eluded the true cost of criminalisation under the WPA.

The Wildlife Protection Act (WPA), 1972

- It is the primary legislation protecting the country's unique flora and fauna.
- It has safeguarded numerous species of wild animals and plants by prohibiting all forms of hunting and, more importantly, creating inviolate areas where wildlife conservation may be carried out.

WPA (Amendment):

- It further invests in the conception of protected areas and species by bringing in newer species to be protected, augmenting the penal repercussions.
- Rationalising schedules: From 6 to 4 – removing schedule for vermin (V) and a new schedule for CITES listed species.
- Obligations under CITES: Central government to designate a: (i) Management Authority, which grants export or import permits for trade of specimens, and (iii) Scientific Authority, which gives advice on aspects related to impact on the survival of the specimens being traded.
- Invasive alien species: to regulate or prohibit the import, trade, possession or proliferation of the same.
- Better Management of Protected Areas: It provides for certain permitted activities like grazing or movement of livestock and Bonafede use of drinking and household water by local communities.
- Protection of Forest Lands: It is so critical because it equally inculcates the protection of rights of the people who have been residing there since ages.
- Section 43 of the act amended which permitted the use of elephants for 'religious or any other purposes'

Challenges to the Act:

- Social Injustice: A study by the Criminal Justice and Police Accountability Project (the CPA Project examined arrest records of the police and Forest Department in Madhya Pradesh and found that persons from oppressed caste communities such as Scheduled Tribes and other forest-dwelling communities form the majority of accused persons in wildlife-related crimes.
- Use of muscle: The Forest Department was found to use the threat of criminalisation to force cooperation,

apart from devising a system of using community members as informants and drawing on their loyalty by employing them on a daily wage basis.

- Pendency's in cases: Cases that were filed under the WPA did not pertain solely to the comparatively serious offence of hunting; collecting wood, honey, and even mushrooms formed the bulk of prosecution in PAs.
- Over 95% of the cases filed by the Forest Department are still pending
- Misplaced regulations: Hunting offences against lesser protected species formed over 17.47% of the animals 'hunted' between 2016-20.
- Animals hunted the highest, only one in top five belonged to Schedule I (peacock).
- Surprisingly, fish (only certain species relegated to Schedule I) formed over 8% of the cases filed.
- A whopping 133 cases pertaining to fishing (incorrectly classified as Schedule V species) were filed in the last decade in Madhya Pradesh.
- Forest Rights Act subservient to the WPA – due to natural overlap of recognising forest rights in intended-as-inviolable PAs, thereby impeding its implementation.
- Collective Forest Rights not recognised in buffer zones over usage of forest resources, fishing, and protecting forest resources.
- Criminalisation of Fishing – which forms an important part of subsistence for tribal communities
- Due to their occurrence in PAs, they become punishable by three to seven years.
- In a case from 2016 documented by the CPA Project, the catch weighed less than 500 grams, yet the accused were charged with causing damage to a wildlife habitat under a host of WPA provisions.
- Fear mongering is a crucial way in which the department mediates governance in protected areas, and its officials are rarely checked for their power.
- Criminal cases filed by the department are rarely compounded since they are meant to create a 'deterrent effect' by instilling fear in communities.
- Unchecked discretionary policing allowed by the WPA and other forest legislations have stunted the emancipatory potential of the FRA.

Way forward:

- The need for criminal laws to assist wildlife conservation has remained unchallenged since its conception.
- From regulated hunting to complete prohibition and the creation of 'Protected Areas (PA)' where conservation can be undertaken without the interference of local forest-dwelling communities, State and Forest Department control over forests and the cattiest underpinnings of conservation would not have been possible without criminal law.

5.9 Carbon trading

Parliament passed the Energy Conservation (Amendment) Bill-2022 that enables the Union government to set up a carbon credit trading scheme and specify the minimum amount of non-fossil sources to be used by designated energy consumers.

Context:

- India had taken the lead when it came to energy transition.
- As per India's commitments under the UNFCCC as given by the PM at COP-26 last year, the goal is to cut emission intensity by 45% and achieve 50% of the installed capacity of electricity generation from non-fossil fuel sources.

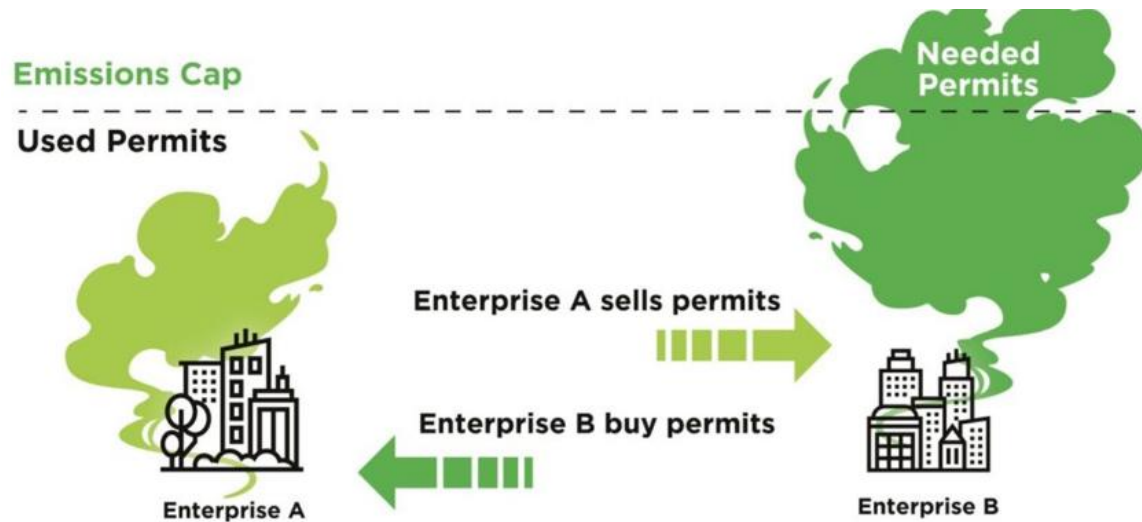
Energy Conservation (Amendment) Bill-2022

- The Bill amends the Energy Conservation Act-2001.
- The Central Electricity Regulatory Commission (CERC) would be the regulator and that the carbon price would be determined by the market.
- The Bill covers large buildings — those with connected load of 100 kilowatt and above — for compliance

with energy conservation and sustainability codes.

- States had been empowered to lower the threshold to include a wider section of buildings.
- The Bill did not make a provision for those under the 100KW threshold who want to voluntarily submit to the energy conservation mechanism.

What is carbon trading?



- Carbon trading is the process of buying and selling permits and credits that allow the permit holder to emit carbon dioxide.
- It is a market-based system aimed at reducing greenhouse gases that contribute to global warming, particularly carbon dioxide emitted by burning fossil fuels.
- An emissions trading scheme (cap-and-trade system) sets a regulatory ceiling or 'cap' on greenhouse gas emissions being regulated under the scheme.
- The right to emit a tonne of CO₂ is often referred to as a carbon 'credit' or carbon 'allowance'.
- There are broadly two types of carbon markets: compliance and voluntary.
- Examples – European Union's Emissions Trading System(ETS)
- The Clean Development Mechanism (CDM), adopted under the Kyoto Protocol in 1997.
- Emission-reduction projects in developing countries have generated carbon credits used by industrialized countries to meet part of their emission reduction targets.

Significance:

- Help achieve current and future climate ambitions by tapping existing markets.
- Bring about development co-benefits: improve air quality and health outcomes and ensure energy security.
- Trading in sulphur dioxide permits helping to limit acid rain in the US.
- Carbon trading is much easier to implement than expensive direct regulations, and unpopular carbon taxes.
- If regional cap and trade schemes can be joined up globally, with a strong carbon price, it could be a relatively pain-free and speedy method to help the worlds decarbonise.
- Boost competitive advantage of businesses by reducing risk of stranded assets.

Open low carbon opportunities for MSMEs through

- Technology transfer
- Spur clean innovation
- Provide liquidity to Indian credits
- Unlock climate finance

Challenges:

- Creating a market in something with no intrinsic value such as carbon dioxide is difficult.
- Need to promote scarcity – and you have to strictly limit the right to emit so that it can be traded.
- In the world's biggest carbon trading scheme, the EU ETS, political interference has created gluts of permits.
- On account of corruption, carbon credits have often been given away for free, which has led to a collapse in the price and no effective reductions in emissions.
- Another problem is that offset permits, gained from paying for pollution reductions in poorer countries, are allowed to be traded as well.
- The importance of these permits in reducing carbon emissions is questionable and the effectiveness of the overall cap and trade scheme is also reduced.
- Greenwashing – in which companies falsely market their green credentials, for example, misrepresentations of climate-neutral products or services
- Double-counting of GHG emission reductions

Suggestions:

- Carbon taxes – Taxes on energy content or production are in place in many European countries.
- Taxes exist in India, Japan and South Korea and they have been imposed then repealed in Australia.
- Direct regulations – Governments have tried to regulate their way to lower emissions.
- This approach is being tried in the US, where President Obama has imposed a Clean Power Plan on energy producers, designed to reduce emissions from this sector by 32% by 2030.

Way forward:

- As per latest IPCC report, developing countries will need up to US\$6 trillion by 2030 to finance not even half of their climate action goals (as listed in their Nationally Determined Contributions, or NDCs).
- Carbon finance will be key for the implementation of the NDCs, and the Paris Agreement enables the use of such market mechanisms through Article 6.
- 83 percent of NDCs state the intent to make use of international market mechanisms to reduce greenhouse gas emissions.

5.10 Asola Bhatti Wildlife Sanctuary

The Delhi Forest Department is in the process of procuring electric cycles and golf carts to enable visits to the Asola Bhatti Wildlife Sanctuary.

About Asola Bhatti sanctuary:

- Asola-Bhatti Wildlife Sanctuary covering 32.71 km² area on the Southern Delhi Ridge of Aravalli hill range on Delhi-Haryana border lies in Southern Delhi as well as northern parts of Faridabad and Gurugram districts of Haryana state.
- Biodiversity significance of Ridge lies in its merger with Indo-Gangetic plains, as it is the part of the Northern Aravalli leopard wildlife corridor, an important wildlife corridor which starts from the Sariska National Park in Rajasthan, passes through Nuh, Faridabad and Gurugram districts of Haryana and ends at Delhi Ridge.
- This protected area contains one of the last surviving remnants of Delhi Ridge hill range and its semi-arid forest habitat and its dependent wildlife.
- Once the whole Delhi Ridge was a forested area, but development has destroyed several parts of it.
- Historical place around sanctuary are Suraj Kund and Anangpur Dam (both in Haryana), Tughlaqabad Fort and Adilabad ruins (both in Delhi), Chhatarpur Temple (in Delhi).
- There are several dozen lakes formed in the abandoned open pit mines in and around the sanctuary. It is contiguous to the seasonal waterfalls in Pali-Dhuaj-Kot villages of Faridabad and the sacred Mangar Bani.

Biodiversity and important species:

- There are about 193 species of birds reported from Asola along with large number of medicinal plants, more than 80 species of butterflies, hundreds of other insects, mammals such as leopards, nilgai (blue bull, the largest antelope of the country), blackbuck (fastest land animal surviving in the wild in the country), black-napped hare, Indian crested porcupine, small Indian civet, golden jackal, and jungle cat.
- Delhi Ridge is the northernmost extension of one of the oldest mountain systems of the world, Aravalli range, which begin in the state of Gujarat near Great Rann of Kutch.
- Biogeographically it represents outlier of Aravalli Mountain Range among protected area in India.
- It has a high potential for establishing conservation education and nature interpretation programs.
- It is Delhi NCR's green lung, carbon sink, source of ground water recharge, and shelterbelt against advancing aridity.
- Plant species include butea monosperma (dhak or flame of forest), anogeissus (dhok), Wrightia tinctoria (inderjao), Indian elm, neolamarckia cadamba (kadamba), prosopis cineraria (jaand), tinospora cordifolia (giloi), etc.

5.11 Climate finance

The UN secretary general stated that the adaption finance needs of developing countries will gallop to \$340 billion annually.

While funding contours and future contributors remain unclear, least developed and vulnerable smaller island nations in need of assistance to tackle climate disasters are its likely beneficiaries.

Not only must India continue pushing rich nations to contribute additional monies for past excesses, but also mobilize more private capital finance on its own by co-creating an auxiliary funding mechanism.

What is climate finance?

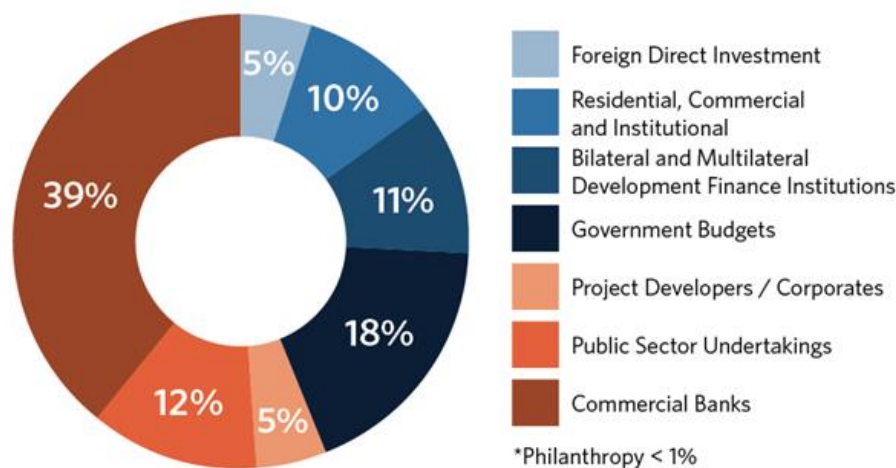
- It refers to the financial arrangements that are specific to the use for projects that are environmentally sustainable or projects that adopt the aspects of climate change.

It includes

- Production of energy from renewable sources like solar, wind, biogas, etc.
- Clean transportation that involves lower greenhouse gas emission
- Energy efficient projects like green building
- Waste management that includes recycling, efficient disposal and conversion to energy, etc.

Current situation:

- A glance at the OECD's climate finance trends report 2022 indicates that of the targeted \$100 billion aggregate climate funding, about \$83 billion was mobilized from developed nations via global agencies through 2020.
- Of this, bilateral and multilateral public climate finance from the developed West stood at \$68 billion, comprising concessional and non-concessional loans (71%), grants (26%) and equity (2%), while private climate finance and export credit extended via agencies comprised just \$15 billion.
- Experience suggests that depending solely on timely Western public funds, per current or post-2025 quantified agreements, will be unwise in times of geo-strategic competition and recessionary fears.
- Monies from rich countries are unpredictable, yet the allocation thereof by global agencies is predictably done among least developed and developing nations across Asia (42% of the 2020 total), Africa (26%) and Latin America (17%).



Challenges in India:

- High borrowing costs due to asymmetric information, higher risk perception and governance issues.
- Green-washing or false claims of environmental compliance

Plurality of green loan definitions

- Maturity mismatches between long-term green investment and relatively short-term interests of investors.
- Lack of adequate market infrastructure and policy framework
- Public sector orientation – Climate finance funds on concessional terms will largely be earmarked for select public sector projects or renewable energy mitigation and low-carbon transport systems planned under India's long-term Low Emissions Development Strategy (LEDS) for climate action.
- Presently, adaptation and mitigation financing for compact businesses, SMEs and local communities is not in focus.
- Fiscal incentives like production-linked incentive (PLI) schemes may work in drawing manufacturing mitigation investments for utility-scale solar or wind, however the same are not resilient and sustainable.

Suggestions:

- New financial instruments such as green bonds, carbon market instruments (e.g. carbon tax) and new financial institutions (e.g. green banks and green funds).
- A banking framework wherein Indian banks are nudged to lock in long-tenure, low-cost private climate capital from alternative sources, like overseas investor institutions, global pledge organizations, private philanthropy, CSR budgets, etc, and are incentivized to on-lend cheaper loans to diverse businesses.
- Arming banks with risk weight and priority sector incentives can help extend concessional low-coupon, shorter tenor sustainability financing to clients.
- This may also deepen funding liquidity for lower-rung entities and improve global forex inflows at a time of weak exports.
- Delineated projects of larger companies or well-rated special purpose vehicles (SPVs) that meet pre-set mitigation specifications should continue to be encouraged to raise funds through domestic financial institutions (DFIs), project financiers and private and sovereign green bonds.
- Impact funds, blended finance instruments and venture capitalists betting on new climate technologies need to be nurtured for the purpose.
- Fintech start-ups and digitization can play a big supporting role in connecting small clients with banks.
- Regulators and financiers need to evaluate various use-case scenarios before implementation.
- Decentralised approach – For instance, block-level wholesalers/transport operators or fertilizer and tractor sellers can be incentivized to arrange machinery for mulching crop stubble into farm fields or recycling waste for biofuels, with the objective of lowering husk-fire emissions and air pollution across the Indo-Gangetic plains.

- DFI funds and direct fiscal transfers by the government may only work partially.
- Low coupon sustainability-linked bank loans or overdraft facilities at the entity level would be a more practical adaptation solution for many across the rural and urban divide.

Way forward:

- As India lays out a G20 agenda, the government should set the direction for augmenting our private climate finance framework, too.
- As the country marches forward in its quest towards net-zero emissions powered by a people's movement as much as low-cost climate finance.
- Inclusive growth with relentless and resilient development ("Sahit Vikas, Satat Viksan") should be our mantra.

5.12 Orans

Residents from around 40 villages of Jaisalmer, Rajasthan have walked 225 kilometres to protect community-conserved sacred spaces known as 'orans'. Currently, the biodiversity hotspots are classified as wastelands.

About orans:

- 'Orans' are community forests that act as a store of biodiversity, enable effective water management and serve as a community based regeneration system, which also ensure sustainable extraction of Non-Timber Forest Produce (NTFPs) by villagers, in the world's oldest Aravali Mountain Range and in the Great Indian Desert of Rajasthan.
- Sacred groves have been live manifestations of historical, cultural and emotional attachment of human beings with forests.
- They unify rural communities religiously, culturally and socially. In due course, degradation and depletion of forests and forest resources have occurred due to several reasons—both natural and anthropogenic.(India).
- There are about 25000 orans in Rajasthan that cover more than 600,000 hectares and provide a much-needed lifeline and safeguard to their respective communities.
- Until two decades ago, orans have suffered widespread degradation due to neglect and misguided priorities, opposition from hostile actors such as profit-seeking corporations, the introduction of foreign flora and fauna that compromise biodiversity and from a changing climate, all of which led to a marked decline in the condition of orans.
- Founded to address the above challenges, KRAPAVIS, an organization of local people, has been working for 21 years to revive orans, both physically and conceptually, in the desert and Aravali regions.
- These orans are hotspots of biodiversity with trees and flowers like rohida, bordi, kumbhat, and desi babool in large numbers.
- There are different varieties of grasses like sevan and murath as well, making these grasslands home to more than 250 species of birds and animals, including the great Indian bustard, McQueen bustard, chinkara, Indian desert cat, desert fox, etc

About KRAPAVIS:

- Krishi Avam Paristhitiki Vikas Sansthan (KRAPAVIS), literally means "organization for the development of ecology and agriculture/livestock", works with a clear mission: the betterment of ecological, agricultural and livestock practices with a view to ensuring sustainable livelihoods for rural pastoral communities in Rajasthan.

5.13 Global Biodiversity Framework

Over 190 nations adopt landmark biodiversity pact to restore natural ecosystems

Aim:

- To restore natural ecosystems.
- countries agreed to protect 30 percent of the planet by 2030.
- Reducing pesticides use by half
- Raising annual international financial flows from developed to developing countries to at least 20 billion dollars by 2025, and to at least 30 billion dollars by 2030.
- To reduce harmful government subsidies worth 500 billion dollars annually, while vowing to identify subsidies that are harmful to biodiversity by 2025.

About Global Biodiversity Framework (GBF):

- Established at the UN Biodiversity Conference, COP15 in Montreal
- GBF is considered equivalent to the Paris Agreement on climate change in terms of its significance for protecting biodiversity.
- The countries pledged to achieve 23 targets to reverse ecosystem degradation under four overarching goals for the survival of the natural world.

Significance for India:

- The biodiversity plan gives India legroom on continuing farm subsidies and pesticide use.
- This has been a priority for India, which has been voluntarily pitching for natural farming in a big way

5.14 Biodiversity conservation

Month after the 27th Conference of the Parties to the UN Framework Convention on Climate Change (COP27) in Egypt, diplomatic retinue went into a contentious huddle again to save the planet — in Montreal, Canada, this time, and as the Convention on Biological Diversity (CBD).

What is Convention on Biological Diversity (CBD):

- It traces its origins to the Rio summit of 1992
- It is a multilateral treaty ratified by 196 countries for “the conservation of biological diversity, the sustainable use of its components, and the fair and equitable sharing of the benefits arising from the utilization of genetic resources.”
- Its overarching goal is to encourage actions that will lead to a more sustainable future.
- It includes – Cartagena Protocol and Nagoya Protocol

Importance of biodiversity:

- Economic stability – Biodiversity is source of income for many people. It provides raw material such as fibre, oil, dyes, etc., for industries. For the food producing industry, crops are the raw materials, which are biodiversity.
- Aesthetic importance – Biodiversity is also the source of refreshment and enhance recreational activity such as bird watching, trekking, fishing, etc.
- Source of food – Humans derive almost 80% of food supply from 20 kinds of the plants.
- Human health – it provides Ecosystem services which are necessary for the survival of the human beings
- Research and medicine – Study of wildlife, their anatomy, physiology and functioning leads to better understanding and development of the human medicine.
- Infectious disease – Microorganisms that cause the disease or the vectors that transmits them both are the part of the biodiversity. Patterns of the infectious disease hugely depends upon the interactions of biodiversity
- Climate change- Climate is an integral part of ecosystem functioning, human health is directly and indirectly affected by interaction between biodiversity. Longer term changes in climate affect the viability and health of ecosystems, influencing shifts in the distribution of plants, pathogens, animals, and even human settlements.

India's scenario:

- India covers 2.4% of the world's geographical area and accommodates 11.4% of the planet's plants (about 48,000 species) and 7.5% of its animal population (about 96,000 species), as per government data from 2011.
- India has lost about one-third of its natural wetlands—that are home to migratory birds and large numbers of plants and fish species—to urbanisation, agriculture and pollution over the past four decades.
- A crowdsourced data study by the Centre for Social and Environmental Innovation (CSEI) at ATREE, India Spend reported in March 2022, found that Bengaluru has lost at least 208 of its over 1,350 lakes.

Challenges to biodiversity:

- Unlike cyclones and melting glaciers that have become visual aids to bring home the climate crisis wrought by invisible gases, biodiversity loss continues to be largely invisible despite its victims being extremely visible.
- Extinction of species: UN reckons, an estimated 34,000 plant and 5,200 animal species, including one in eight of the world's bird species, face extinction.
- About 30% of breeds of main farm animal species are currently at high risk of extinction.
- Almost 50% of the world's birds are undergoing population decline.
- At least 97 mammals, 94 bird species and 482 plant species in India are threatened with extinction, as per the International Union for Conservation of Nature's red list of plant and animal species that have been endangered.
- Forest degradation: Forests are home to much of the known terrestrial biodiversity, but about 45% of the earth's original forests are gone, cleared mostly during the past century.
- Lack of accounting: Because much of this extinction is not finely accounted for as the rise in per capita carbon emissions or temperature swings, it fails to evoke the urgency it deserves.
- The 'Living Planet Report 2020' by World Wildlife Fund (WWF) identified land and sea use change and overexploitation of resources as the key drivers of biodiversity loss across the globe, along with other causes including invasive species, pollution and climate change.
- Freshwater biodiversity loss – According to a 2020 WWF factsheet, it is declining faster than that in oceans or forests around the world.
- Limited budgetary allocations – In India, the total funds for conservation of natural resources and ecosystems, including aquatic ecosystems, was decreased to Rs 58.50 crore from Rs 62 crore in 2021-22.
- The budget for biodiversity conservation was slashed from Rs 12 crore to Rs 8.5 crore.
- Population growth and increasing demands – Higher the population, more would be the exploitation of the biodiversity
- Climate change – It brings extremities in nature, some of which are irreversible.

Suggestions:

- Like climate conferences, establishment of differing levels of responsibility towards biodiversity conservation. This may require richer nations to be more generous funders of global conservation efforts.
- Measurable targets: "What cannot be measured, as the adage goes, cannot be understood or addressed" such as countries have agreed on preparing concrete road maps by 2024 and the richer ones, committing \$30 billion an annum by 2030.
- Area-based conservation is essential to safeguard nature's diversity.
- It comprises protected areas and other effective area-based conservation measures.
- In-situ monitoring techniques, remote sensing and open data infrastructures can fill data and information gaps for protected area planning and management.
- Adaptive management is an auspicious concept in the framework of systematic conservation planning to ensure the enduring effectiveness of protected areas despite unpredictable future developments.
- Habitat conservation such as wetlands, afforestation, national park, wildlife reserves and many more.
- Captive breeding and the seed bank, Avoidance of invasive species and creation of buffer zones
- Education and Awareness among the local people regarding the importance of the biodiversity is very important.

Way forward:

- MoU between India and Nepal in the field of biodiversity conservation to enhance coordination and cooperation in the field of forests, wildlife, environment, biodiversity conservation and climate change
- Countries must also engage in restoration of corridors and interlinking areas and share knowledge and best practices.

5.15 Compensatory Afforestation Fund Management and Planning Authority (CAMPA)

Recently, the Union government said that Funds from Project Tiger as well as the Compensatory Afforestation Fund Management and Planning Authority (CAMPA) were used to finance the project to bring African cheetahs to India.

About CAMPA Funds:

- Establishment in 2004, the Ministry of Environment and Forests constituted the Compensatory Afforestation Fund Management and Planning Authority (CAMPA) to oversee and manage the Compensatory Afforestation Fund (CAF) as directed by the Supreme Court.
- CAMPA Act or Compensatory Afforestation Fund Act is an Indian legislation that seeks to provide an appropriate institutional mechanism, both at the Centre and in each State and Union Territory,
- To ensure expeditious utilisation in efficient and transparent manner of amounts released in lieu of forest land diverted for non-forest purpose which would mitigate impact of diversion of such forest land.

Objectives of CAMPA:

- The Funds are meant to promote afforestation and regeneration activities as a way of compensating for forest land diverted to non-forest uses.
- National CAMPA Advisory Council has been established with the following mandate:
- Lay down broad guidelines for State CAMPA.
- Facilitate scientific, technological and other assistance that may be required by State CAMPA.
- Make recommendations to State CAMPA based on a review of their plans and programmes.
- Provide a mechanism to State CAMPA to resolve issues of an inter-state or Centre-State character.

About Project Tiger:

- It is a Centrally Sponsored Scheme launched in 1973.
- It has the aim of ensuring that the population of Bengal tigers is well-maintained in their natural habitats, this project continues to do everything possible to protect and save the tiger.

Tiger protecting force:

- The government has also set up a tiger protecting force that ensures there is no poaching of any kind or any human-tiger conflict.
- This invariably will help in preventing tigers from being extinct.

Increasing the number of tigers:

- In 2006, surveys suggested that the number of tigers was just 1,411 which was a cause of concern worldwide.
- In over a decade, India has seen a consistent rise in the number of tigers.

Tiger Reserves:

- There are 53 tiger reserves across 18 Tiger Range States in India.

Objectives of Project Tiger:

- To ensure that any factor leading to the reduction of tiger habitats is limited.

- Any damages done to these habitats should be repaired so that the ecosystem is balanced
- Maintain a viable tiger population.

Significance:

- Tiger is an umbrella species which ensures viable populations of other wild animals (co-predators, prey) and forest, thereby ensuring the ecological viability of the entire area and habitat, which also ensures the water and climate security of the region.
- India has 80 per cent of the world's tiger population.
- A viable tiger population is one which has 80-100 tigers with a minimum of 20 breeding females, with a sex ratio skewed towards females.

Notification of Tiger Reserves:

- Proposal is obtained from the State.
- In-principle approval is communicated from the National Tiger Conservation Authority, soliciting detailed proposals under section 38V of the Wildlife (Protection) Act, 1972.
- The National Tiger Conservation Authority recommends the proposal to the State after due diligence.
- The State Government notifies the area as a Tiger Reserve.

About Conservation Assured | Tiger Standards:

- CA|TS is a tool or a comprehensive system that will provide a reference point to evaluate the existing management effectiveness of tiger conservation within integrated landscape planning, and ensure that benefits from these efforts are optimised.

About Project Cheetah:

- The introduction of cheetahs in India is being done under Project Cheetah.
- It is the world's first intercontinental large wild carnivore translocation project.

Coexistence approach:

- India has opted for this approach.
- It is even more unique because this is the first-time cheetahs will be reintroduced in an unfenced protected area (PA).

Significance of Coexistence approach:

- The Coexistence approach is considered more favourable by social scientists.
- Fencing has proven to be a valuable tool in eliminating cheetahs' tendency to range over wide distances in South Africa and Malawi, thus allowing for population growth.
- The core conservation area of Kuno National Park is largely free of anthropogenic threats.

Challenges associated with Coexistence approach:

- Kuno National Park will be more challenging, as it is not enclosed / fenced.
- There have been no successful cheetah reintroductions into unfenced systems.
- Anthropogenic threats to cheetah survival include snaring for bush meat and retaliatory killings due to livestock depredation.
- This would place them at the risk of human-related mortality including snaring and retaliatory killings by livestock farmers.

Way Forward:

- CAMPA funds are meant for restoration of forests, particularly the ones that have been diverted for industrial purposes. There have been demands that this money should be given to Gram Sabhas so that they can be financially empowered to restore forests. Indigenous and forest-dwelling communities' country-wide are struggling for sustainable finance. Thus, these funds should be used to empower them.

6. Security issues

6.1 Addition of Tribes in ST list

Recently, government has approved the inclusion of certain communities in the lists of Scheduled Tribes in Chhattisgarh, Tamil Nadu, Karnataka, Himachal Pradesh and Uttar Pradesh, fulfilling long-pending demands from these states which led to debates in the Parliament.

Some MPs sought clarity from the government about the list of communities that were recommended in 2014 for inclusion in the ST lists on a priority by a government appointed Panda Task Force.

Of the Taskforce recommended communities, nine are in Odisha, 26 are part of the tea tribes in Assam, eight are in Chhattisgarh, and a few are in Andhra Pradesh and Tamil Nadu.

About newly added tribal groups:

- Narikoravan and Kurivikkaran (Tamil Nadu): Nomadic tribes like the Narikuravas and Kuruvikaras (jackal catchers and bird eaters) pride themselves on their traditional occupations of hunting and gathering.
- Gond Community (Uttar Pradesh): The Cabinet approved a proposal to bring the Gond community residing in 13 districts of Uttar Pradesh, under the ST list from the Scheduled Caste list.
- This includes the five subcategories of the Gond community (Dhuria, Nayak, Ojha, Pathari, and Rajgond).
- 'Betta-Kuruba' (Karnataka): The ST status granted to the Betta-Kuruba community as a synonym of Kadu Kuruba of Karnataka.
- Betta-Kuruba community has been demanding to include in the ST category for the last 30 years.
- Hatti Tribe (Himachal Pradesh): The Hattis are a close-knit community who got their name from their tradition of selling homegrown vegetables, crops, meat and wool etc. at small markets called 'haat' in towns.
- The community has been making the demand since 1967, when tribal status was accorded to people living in the Jaunsar Bawar area of Uttarakhand, which shares a border with Sirmaur district.
- Their demand for tribal status gained strength because of resolutions passed at various maha Khumbliis over the years.
- Binjhia (Chhattisgarh): The Binjhia in Chhattisgarh were listed as ST in Jharkhand and Odisha but not in Chhattisgarh.
- The Binjhia are non-vegetarians and agriculture is the mainstay of their economy. They do not eat beef and pork but consume alcoholic drinks including the handia (rice beer).

Process of inclusion in the ST list:

- The process to include tribes in the ST list begins with the recommendation from the respective State governments, which are then sent to the Tribal Affairs Ministry, which reviews and sends them to the Registrar General of India for approval.
- This is followed by the National Commission for Scheduled Tribes' approval before the list is sent to the Cabinet for a final decision.

Status of Scheduled Tribes in India

- As per 1931 Census, Schedule tribes are termed as "backward tribes" living in the "Excluded" and "Partially Excluded" areas.
- There is no defined criteria in the Constitution for recognition of Scheduled Tribes and hence the 1931 Census definition was used in the initial years after independence.

Constitutional provisions:

- Article 366(25) of the Constitution provides a process to define Scheduled Tribes—"Scheduled Tribes means such tribes or tribal communities or parts of or groups within such tribes or tribal communities as are deemed under Article 342 to be Scheduled Tribes for the purposes of this Constitution."

- Article 342(1) empowers the President of India (in consultation with Governor of the state) to notify tribes or tribal communities or part of or groups as a Scheduled Tribe in relation to that State or Union Territory.
- The Fifth Schedule of the Constitution lays out provision for Administration and Control of Scheduled Areas and Scheduled Tribes in states other than Assam, Meghalaya, Tripura and Mizoram.
- The Sixth Schedule deals with the administration of the tribal areas in Assam, Meghalaya, Tripura and Mizoram.

Legal Provisions:

- Protection of Civil Rights Act, 1955 provides protection against preaching and practice of Untouchability in tribal groups.
- Scheduled Tribes (Prevention of Atrocities) Act, 1989 counters the caste discrimination practices in tribal communities.
- Provisions of the Panchayats (Extension to the Scheduled Areas) Act, 1996 empowers the tribal communities through political autonomy at Gram Panchayat level.
- Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006 recognizes rights of locals and tribal people on the minor forest produce.
- Recommendations by the Panda Task force: The Taskforce identified the specific communities based on many factors such as
 - A few of them being subsets of communities already categorized as ST and few being phonetic variations of existing tribes.
 - Some were left out when States were bifurcated and some were omitted inexplicably such as the Pulayan community of Tamilnadu and Konda Kumari community of Andhra Pradesh.
 - A few more were lost out on categorisation because they were forcibly taken away from their homelands as indentured labour to other States or were displaced due to industrialisation.
- Kandha Kumbhar, Jodia, Chuktia Bhunjia, Saara, Mankidia, Porja, Banda Paraja, Durua, and Paharia communities are the ones in Odisha.
- Based on the principle that 'indentured labourers' are not the same as 'voluntary migration' and recommended 26 tea tribes of Assam who were forcibly taken as indentured labourers from states like Bihar, Jharkhand, Odisha.
- These communities are Mal Paharia, Bedia, Saora, Shabar, Kharia, Gond, Munda, Bonda, Mahli, Paraja, Chik Baraik, Kol, Khond (Kandha), Chero, Koya, Birhor, Bhumji, Halba, Majwar, Dhanwar, Baiga, Lodha, Nagasia, Bhil, Oraon, and Santal.
- Similarly, it recommended for inclusion tribal communities of Maharashtra, Gujarat and Madhya Pradesh that had been displaced on account of the Narmada Dam Project.
- Inclusion of various Devnagri versions of tribes in the ST list of Chhattisgarh, such as Bharia, Pando, Gadaba, Bhuihar, Nagasia, Dhangad and Kond.

Major issues involved with the recognition new communities as STs:

- Cumbersome and time-consuming process of inclusion:
- The process of inclusion of communities into STs is cumbersome and time-consuming which delays it for years.
- Even the Panda task force flagged the current procedure and criteria for inclusion in ST lists and had recommended changes to both.

Strict Criteria of identification:

- Currently, the criteria for defining communities as STs based on their characteristic traits which have been followed since the 1960s is quite strict and obsolete.

Political reasons:

- Political reasons have always been a hurdle and defeated the Constitutional agenda for affirmative action and inclusion of communities.
- For example— The Union government has not notified communities into ST list even after the State

government recommended to include as many as 160 communities in Odisha's ST list since the 1970s.

Way Forward:

- There is need to bring a comprehensive Bill to include all eligible communities into the ST list that had been left out of ST lists over the years. Need to Revisit the procedure and criteria of inclusion of the communities into the ST lists and make changes based on more rational methods and present circumstances.

6.2 Cyberattacks

Recently, the premier medical institute in the country, the All India Institute of Medical Sciences New Delhi (AIIMS) was crippled by a major cyberattack.

About Cyberattacks:



- Cyberattacks are unwelcome attempts to steal, expose, alter, disable or destroy information through unauthorized access to computer systems.
- Typically, such forms of attacks to keep networks from functioning after encrypting data, are carried out by ransomware-seeking entities and organisations are sent demands which are often negotiated and paid without informing law enforcement.
- Cyberterrorism: It is often defined as any premeditated, politically motivated attack against information systems, programs and data that threatens violence or results in violence.

Reasons for increasing Cyber Attacks in India

- Increasing dependency on technology: As we grow faster, more and more systems are being shifted to virtual space to promote access and ease of use.
- However, the downside to this trend is the increased vulnerability of such systems to cyber-attacks.
- For e.g., there is a concern of widespread damage and huge loss if hackers are able to intrude into the nuclear, financial or energy systems of a country.
- Growing digital reliance in the post-COVID era has exposed digital disparities which must be bridged through capacity building.
- There's a sophisticated use of cyberspace by terrorists to broaden their propaganda and incite hatred.
- Lack of robust law enforcement mechanisms: India's approach to cyber security has so far been ad hoc and unsystematic.
- Despite a number of agencies, policies and initiatives, their implementation has been far from satisfactory.
- Adverse relations with China: China is considered one of the world leaders in information technology. Therefore, it is expected to have capabilities to disable or partially interrupt the information technology

services in another country.

- Combined with the recent border standoff and violent incidents between the armies of the two countries, the adversity in relations is expected to spill over to attacking each other's critical information infrastructure.
- Asymmetric and covert warfare: Unlike conventional warfare with loss of lives and eyeball to eyeball situations, cyber warfare is covert warfare with the scope of plausible deniability, i.e., the governments can deny their involvement even when they are caught.
- Similarly, even a small nation with advanced systems and skilled resources can launch an attack on a bigger power, without the fear of heavy losses.
- Therefore, cyber warfare has increasingly become the chosen space for conflict between nations.
- Lack of International Coordination: International cooperation and consensus is missing in this field.
- Low digital literacy among the general public and digital gaps amongst nations create an unsustainable environment in the cyber domain.
- It is often reported that people are duped easily by click-baiting them into clicking interesting content, which often has malware attached to itself.

Suggestive measures to mitigate cyberattacks:

- Cyber readiness: That strategy will be a guiding document to motivate and monitor the preparedness of cyber readiness of institutes and also enhance capacity on many fronts including forensics, accurate attribution and cooperation.
- Budgetary preference: Significant budgets have to be allocated by various ministries to ensure that cyber security measures don't remain the last priority.
- Need of the national cyber security strategy: This incident is a wake-up call for organisations across sectors to shore up cyber security measures, it is also important to push and announce the national cyber security strategy.
- Capacity enhancement: The capacity enhancement for the National Critical Information Infrastructure Centre (NCIIPC) and CERTIn has to be undertaken to address the emerging sophisticated nature of threats and attacks and sectoral CERTs have to be set up for many areas including health.
- International cooperation: International cooperation on countering cyber-attacks has to gain more teeth beyond the Group of Governmental Experts (GGE) meetings and the US-led Counter Ransomware Initiative (CRI) of 37 countries and the European Union.

Major Government Initiatives for Cyber Security:

- CERT-In: It is an organisation of the Ministry of Electronics and Information Technology with the objective of securing Indian cyberspace.
- Cyber Surakshit Bharat Initiative: It is an initiative from the Ministry of Electronics and Information Technology (MeitY) that aims at creating a robust cybersecurity ecosystem in India. This program was in association with the National e-Governance Division (NeGD).
- National Critical Information Infrastructure Protection Centre: NCIIPC is a central government establishment, formed to protect critical information of our country, which has an enormous impact on national security, economic growth, or public healthcare.
- Indian Cyber Crime Coordination Centre (I4C): The MHA launched this I4C Indian Cyber Crime Coordination Centre program to combat cybercrime in the country, through a coordinated and efficient method.
- Cyber Swachhta Kendra (Botnet Cleaning and Malware Analysis Centre): It is an installation under the Ministry of Electronics and Information Technology (MeitY).
- Information Technology Act, 2000: IT Act of 2000 came into effect in India on 09 June 2000. IT Act states in its preamble that the purpose of the legislation is to provide legal recognition to electronic transactions.

Way Forward:

- Human resource is crucial and there is an urgent need to create an informal Indian team of Cyber Warriors. The critical infrastructure managers should also be well trained in cyber warfare and well

equipped with all the technologies for isolating viruses and attacks.

- There should be a reward for white hackers who can highlight their shortcomings. The managers and Common mass must be made aware. There is also a need to enhance the general awareness levels of the government installations as well as the general public to counter such threats.
- Separate wing under Army or Navy as Cyber Command on lines of US is required to establish along with a futuristic National Cyber-Security Policy which allocates adequate resources and addresses the concerns of the stakeholders. Similarly, there is a need for quicker up-gradation of the existing infrastructure as information technology is a fast-evolving field and there is a need to stay ahead of the competition.

6.3 National cyber security strategy

The National Security Council Secretariat (NSCS) has formulated a draft National Cyber Security Strategy which looks at addressing the issue of security of national cyberspace.

About National Security Council:

- The National Security Council (NSC) of India is an executive government agency tasked with advising the Prime Minister's Office on matters of national security and strategic interest.
- It was established by the former Prime Minister of India Atal Bihari Vajpayee on 19 November 1998, with Brajesh Mishra as the first National Security Advisor.
- Prior to the formation of the NSC, these activities were overseen by the Principal Secretary to the preceding Prime Minister.

Members:

- Besides the National Security Advisor (NSA), the Deputy National Security Advisors, the Ministers of Defence, External Affairs, Home, Finance of the Government of India, and the Vice Chairman of the NITI Aayog are members of the National Security Council.
- Prime Minister can chair the meeting of NSC (for e.g. – PM chaired the meeting of NSC Post Pulwama to discuss heightened tension with Pakistan). Other members may be invited to attend its monthly meetings, as and when it is required.

Organisational structure

- The NSC is the apex body of the three-tiered structure of the national security management system in India.
- The three tiers are the Strategic Policy Group, the National Security Advisory Board and a secretariat from the Joint Intelligence Committee.

About National Cyber Security Strategy:

- Aim: It proposes a separate legislative framework for cyberspace and the creation of an apex body to address threats, responses and complaints.
- The policy will focus on both threat assessment and response.
- Need: The existing legal and regulatory frameworks do not address the evolving threat scenarios or processes to combat the cyber incidents.
- There is no dedicated body to look after cyber security at present and no one that you can hold accountable.
- Currently, the response to cyber security threats can be taken under the information technology act and the Indian Penal Code.

Other provisions:

- It aims to create a comprehensive system with both state-owned and private companies having to comply with cybersecurity standards.
- It provides for a periodic cyber audit and recommends annual reviews by the apex body that will be

created.

- A centre of excellence will also be set up in Bangalore to further innovations in the area.

Key facts:

- Till November 2022, a total of 12,67,564 cyber security incidents were reported.
- In 2021, the authorities had recorded 14,02,809 such events compared to 11,58,208 in 2020 and 3,94,499 in 2019.
- Ransomware attacks jumped 51% in 2022. Maharashtra was the most targeted state in India facing 42% of all ransomware attacks.
- Cyber thieves also exploited legitimate tools like “AnyDesk” used for remote administration.

Reasons for increasing Cyber Attacks:

- Adverse relations with China: China is considered one of the world leaders in information technology.
- Therefore, it is expected to have capabilities to disable or partially interrupt the information technology services in another country.
- Combined with the recent border standoff and violent incidents between the armies of the two countries, the adversity in relations is expected to spill over to attacking each other’s critical information infrastructure.
- Asymmetric and covert warfare: Unlike conventional warfare with loss of lives and eyeball to eyeball situations, cyber warfare is covert warfare with the scope of plausible deniability, i.e., the governments can deny their involvement even when they are caught.
- Similarly, even a small nation with advanced systems and skilled resources can launch an attack on a bigger power, without the fear of heavy losses.
- Increasing dependency on technology: As we grow faster, more and more systems are being shifted to virtual space to promote access and ease of use.
- However, the downside to this trend is the increased vulnerability of such systems to cyber-attacks.

Issues with Cyber Security:

- Vulnerable points in the system: sometimes the third-party apps have built-in back door entry or may have malware attached to their installation file. Such issues can be addressed by effective user account control and careful monitoring of the system.
- State-sponsored Cyber Attacks: The problem with such state-sponsored attacks is the unlimited funding received by the hackers to break into the foreign systems.
- Low digital literacy among the public: While India is considered the world leader in the technology industry, the general level of awareness in India about internet etiquette is low.
- It is a continuous process: Cyber-attacks, by their very nature, are innovative and creative. They continue to evolve, and the next attack is more advanced than its previous version.
- Novel issues: Because of the ever-changing and fast evolving nature of technology, new issues keep creeping up in the IT sector.
- Steps taken by the Government: The government aims at ensuring an open, safe, trusted and accountable Internet for the users.
- The Indian Computer Emergency Response Team (CERT-In) issues alerts and advisories regarding latest cyber threats/vulnerabilities and countermeasures to protect computers and networks on an ongoing basis.
- CERT-In operates the Cyber Swachhta Kendra (Botnet Cleaning and Malware Analysis Centre) to detect malicious programmes and free tools to remove the same, and to provide cyber security tips and best practices for citizens and organisations.
- Security tips have been published for users to secure their desktops and mobile phones and to prevent phishing attacks.
- CERT-In and the Reserve Bank of India [RBI] jointly carry out a cyber security awareness campaign on ‘Beware and be aware of financial frauds’ through the Digital India Platform.
- The Indian Cyber Crime Coordination Centre (I4C) under the Ministry of Home Affairs (MHA) has been

designated as the nodal point in the fight against cybercrime.

- Pursuant to the United Nations General Assembly resolution 75/282: an ad-hoc committee to elaborate a 'Comprehensive International Convention on Countering the Use of Information and Communications Technologies for Criminal Purposes' was established with all the member states.
- India being the member of the committee has proposed criminalisation of cyber terrorism under the said Convention.
- The MHA has issued National Information Security Policy and Guidelines to the Central Ministries as well as State governments and Union Territories with the aim of preventing information security breaches and cyber intrusions in the information and communication technology infrastructure.

Way Forward:

- The need of the hour is to come up with a futuristic National Cyber-Security Policy which allocates adequate resources and addresses the concerns of the stakeholders.
- Similarly, there is a need for quicker up-gradation of the existing infrastructure as information technology is a fast-evolving field and there is a need to stay ahead of the competition.
- There is a need to enhance the general awareness levels of the government installations as well as the general public to counter such threats.
- Often the private sector is seen as a key innovator and their help can be crucial in securing cyberspace.

7. Social issues

7.1 Kangaroo court

A kangaroo court headed by the Dravida Munnetra Kazhagam (DMK) union secretary for the Bargur South constituency in Thogarapalli panchayat, Tamil Nadu subjected a couple to fine for their love marriage.

About kangaroo court:

- Oxford Dictionary defines it as “an unofficial court held by a group of people in order to try someone regarded, especially without good evidence, as guilty of a crime or misdemeanour”.
- It is used to refer to proceedings or activities where a judgement is made in a manner that is unfair, biased, and lacks legitimacy.
- Why the word ‘kangaroo’ is used is also not clear, but there are several theories.
- Some dictionaries say the association with the animal could have a relation to Australians, though the term probably originated in America.
- The Collins Dictionary argues that it could be to evoke a sense that “justice progresses by leaps and bounds” in case of kangaroo court verdicts.
- Another theory relates to both the animal’s peculiar hopping movement, and the historical aspect.

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