GEO IAS

MONTHLY CURRENT AFFAIRS MAGAZINE

APRIL 2022

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APRIL 2021

G.S PAPER I

1. GEOGRAPHY

1.1   IMD Forecasts

Why in news?

The India Meteorological Department (IMD) has forecast a 'normal' monsoon for this year, or 99% of the Long Period Average (LPA) of 87 cm.

What is IMD?

- India Meteorological Department established in 1875, is the National Meteorological Service of the country and the principal government agency in all matters relating to meteorology and allied subjects.

- IMD is under the Ministry of Earth Sciences (MoES).

- The headquarters of IMD was initilly in Calcutta but later shifted to Shimla, then to Pune and finally to New Delhi.

- **Objectives**

  o To take meteorological observations and to provide meteorological information for optimum operation of weather-sensitive activities

  o To warn against severe weather phenomena like tropical cyclones, norwesters, duststorms, heavy rains and snow, cold and heat waves, etc.,

  o To provide meteorological statistics required for agriculture, water resource management, industries, oil exploration and other nation-building activities.

  o To conduct and promote research in meteorology and allied disciplines.

- The IMD has a multi-stage monsoon forecast system.

What is the current forecast about?

- The April forecast is a general indicator and usually has little detail on rain expected during each of the monsoon months, and about its geographical distribution.

- The IMD usually shares this in late May or early June, just around the time the monsoon is imminent over Kerala.

- **El Nino**- El Nino is a climate pattern that describes the unusual warming of surface waters in the eastern equatorial Pacific Ocean.

- A normal monsoon forecast this year is predicated on the absence of an El Nino.

- **Indian Ocean Dipole**- Sustained changes in the difference between sea surface temperatures of the tropical western and eastern Indian Ocean is known as the Indian Ocean Dipole.

- During positive event, a sea surface temperature in the western Indian Ocean is warmer relative to the east bringing rainfall to India.

- The Indian Ocean Dipole has been forecasted to be 'neutral' by the IMD which seems unhelpful for the monsoon.

- **Definition of the LPA-** Long Period Average (LPA) is an indication of the average rainfall over a 50 year interval.

- As per the norms of the World Meteorological Organization(WMO) to which India is a signatory, LPA should be updated every 10 years.

- The LPA was 89 cm (the average monsoon rain from 1951-2000) until 2018, and it was updated to 88 cm (to reflect the average from 1961-2010) and now, the number is 87 cm (to count for the 1971-2020 interval).

The WMO is an intergovernmental organization that originated from the International Meteorological Organization (IMO). It was established in 1950 and later became the specialised agency of the United Nations. It is headquartered in Geneva with World Meteorological Congress as the supreme body.

What does the change in LPA indicate?

- While on the surface, it might look like India is losing just a centimetre of rainfall every decade, it must be remembered that this conceals wide shifts in rainfall when computed at the State and district levels as the monsoon rain is highly uneven.

- The IMD explains the loss of a centimetre every decade as part of a natural cycle of the monsoon where 30 years of less rain, or a 'dry' epoch, is followed by 30 years of a 'wet epoch'.

- India began a dry epoch in the 1970-80 decade and it is now in a neutral phase and will enter a wet epoch in 2030-2040.

1.2   Delhi Heatwave

What is the issue?

Delhi-NCR is in the midst of another heatwave, with the maximum temperature at some weather observatories likely to hit 45 degree Celsius.

What is a heat wave?

- Heat wave is a condition of air temperature which becomes fatal to human body when exposed.

- Quantitatively, it is defined based on the temperature thresholds over a region in terms of actual temperature or its departure from normal.

- **Criterion for declaring heat wave**

- Heat wave is considered if maximum temperature of a station reaches at least 40 degree C or more for plains and at least 30 degree C or more for hilly regions.

- **Based on Departure from Normal**

  o Heat Wave: Departure from normal is 4.5 degree C to 6.4 degree C

  o Severe Heat Wave: Departure from normal is >6.4 degree C

- **Based on Actual Maximum Temperature**

  o Heat Wave: When actual maximum temperature ≥ 45 degree C

  o Severe Heat Wave: When actual maximum temperature ≥47 degree C

- If above criteria met at least in 2 stations in a Meteorological sub-division for at least two consecutive days and it declared on the second day.

- **For coastal areas**- When maximum temperature departure is 4.5 degree C or more from normal, heat wave may be described provided actual maximum temperature is 37 degree C or more.

Warm night is considered only when maximum temperature remains 40 degree C or more.

What are the favorable conditions for Heat wave?

The heat index is the combination of air temperature and relative humidity, it measure of how hot it really feels when relative humidity is factored in with the actual air temperature.

- Transportation / Prevalence of hot dry air over a region (There should be a region of warm dry air and appropriate flow pattern for transporting hot air over the region).

- Absence of moisture in the upper atmosphere (As the

presence of moisture restricts the temperature rise).

- The sky should be practically cloudless (To allow maximum insulation over the region).

- Large amplitude anti-cyclonic flow over the area.

- It is occurring mainly during March to June and in some rare cases even in July but peak month of the heat wave over India is May.

What is the current forecast?

Heatwaves have killed over 6,500 people in India since 2010.

- The city recorded a high of 43.5 degrees Celsius on April 28 and 29 which was the highest maximum temperature on an April day in Delhi in 12 years.

- The weather department has issued an "orange" alert, warning people of a severe heatwave in many parts of Delhi.

- Power outages compounded the misery of millions of people wilting in a heatwave across India, with experts blaming climate change for an early onset of roasting summer temperatures.

- Many regions also reported falling water supplies.

G.S PAPER II

2. INDIAN POLITY

2.1   State of Denotified Tribes

Why in news?

A standing committee of Parliament has criticised the functioning of the development programme for de-notified, nomadic and semi-nomadic tribes.

Who are denotified, nomadic and semi-nomadic tribes?

It has been estimated that South Asia has the world's largest nomadic population. In India, roughly 10% of the population is denotified and nomadic.

- Denotified tribes (DNTs) are communities that were notified as being 'born criminal' during the British regime under a series of laws starting with the Criminal Tribes Act of 1871.

- They were denotified in 1952 when independent India repealed this act but the Habitual Offenders Act, 1952, kicked in soon after.

- Nomadic and semi-nomadic communities are defined as those who move from one place to another rather than living at one place all the time.

- A **National Commission for De-notified, Nomadic and Semi-Nomadic Tribes (NCDNT)** was was first set up in 2003 and later reconstituted in 2005.

- It was headed by Balkrishna Sidram Renke and estimated their population at around 10.74 crore based on Census 2001.

- A new Commission which was constituted in 2014 to prepare a state-wise list submitted its report in 2018 identifying 1,262 communities as de-notified, nomadic and semi-nomadic.

What is the standing committee report about?

- The Standing Committee on Social Justice and Empowerment tabled its 31st report in Parliament.

- The Committee noted that the Department could not spend even a single rupee in 2021-22 on the **Scheme for economic empowerment of DNT communities**.

- The budgetary allocation has been reduced to Rs 28 crore for 2022-23 against the budgetary allocation of Rs 50 crore for 2021-22.

- It also noted that the department has already delayed in formulation of the Scheme for welfare of denotified, nomadic and semi-nomadic communities.

- The Committee has found that the department has not been able to take any decision in placing these communities in SC, ST and BC categories till date.

What is DWBDNC?

- The 2014 commission that submitted report in 2018 had recommended the setting of up a permanent commission for these communities.

- However, the government set up the **Development and Welfare Board for De-notified, Nomadic and Semi-Nomadic Communities (DWBDNC)** under the Societies Registration Act, 1860.

- It was set under the aegis of Ministry of Social Justice and Empowerment for the purpose of implementing welfare programmes.

- The DWBDNC was constituted in 2019 under the chairmanship of Bhiku Ramji Idate.

- Also, a committee has been set up by the NITI Aayog to complete the process of identification of the DNCs.

- Ethnographic studies of DNCs are being conducted by the Anthropological Survey of India.

What is the history of deprivation faced by these communities?

- Many commissions and committees have referred to the problems of these communities. These include
    - Criminal Tribes Inquiry Committee, 1947
    - Ananthasayanam Ayyangar Committee, 1949
    - Kaka Kalelkar Commission, 1953
    - B N Lokur's Advisory Committee, 1965
    - B P Mandal Commission , 1980
    - National Commission to Review the Working of the Constitution ((chairmanship of Justice M N Venkatachaliah), 2002

- **Problems faced**
    - Marginalization from social and economic mainstream
    - Low human development index and high relative deprivation index
    - Large deprivation from the gains of planned development
    - Lack of empowerment
    - Carriers of social stigma

- This is partly because these communities are largely politically quiet that they do not place their demands concretely before the government.

- They lack vocal leadership and also lack the patronage of a national leader.

What welfare measures were taken by the government?

- **Dr. Ambedkar Pre-Matric and Post-Matric Scholarship for DNTs-** This centrally sponsored scheme was launched in 2014-15 for the welfare of those DNT students who are not covered under SC, ST or OBC.

- The income ceiling for eligibility is Rs 2 lakh per annum.

- **Nanaji Deshmukh Scheme of construction of hostels-** This centrally sponsored scheme was launched in 2014-15 to provide hostel facilities to those DNT students who are not covered under SC, ST or OBC to enable them to pursue higher education.

- The income ceiling for eligibility is Rs 2 lakh per annum.

- The Central Government provides a maximum of 500 seats per annum throughout the country.

- **Assistance to voluntary organization working for the welfare of OBCs**- From 2017-18, this scheme has been extended for DNTs and EBCs as Central Sector Scheme of Assistance for Skill Development of OBCs/ DNTs/ EBCs.

- **Scheme for Economic Empowerment of DNT Communities (SEED)**- It has four components
    - To provide coaching of good quality for DNT candidates to enable them to appear in competitive examinations

- o To provide health insurance to them
- o To facilitate livelihood initiative at community level

2.2   Tripura's Darlong Community in ST List

Why in news?

Darlong Community in Tripura was officially included in the list of Scheduled Tribes after the Lok Sabha passed the Constitution (Scheduled Tribes) Order (Amendment) Bill, 2022.

Who are Darlongs?

Tripura houses 19 tribal communities including Tripuri, Brus, Jamatia, Noatia, Uchoi, Chakma, Mog, Lushai, Kuki, Munda, Kour, Oram, Santhal, Bhil, Bhutia, Sermai, Garo, Khasi, Lepcha and Halam.

- Darlong is a tribal community of 11,000 people with a high prevalence of education, cultural activities serving in different high positions in the local administration.

- Darlongs, despite being Scheduled Tribes, were never given ST certificates.

- They were considered a generic tribe under the Kuki community, and were handed their tribal certificates as members of 'Kuki' community.

- The identity crisis among them culminated in the demand for a separate statutory identity of their own in 1995.

- A bill to include Darlongs in the list of STs as a sub-tribe of Kuki community was first placed before the Parliament in 2016.

What does the amendment entail?

As per Article 342 (1), the President may after consultation with the Governor specify the tribal communities as Scheduled Tribes.

As per Article 342 (2), Parliament may by law include in or exclude any tribal community from the list of Scheduled Tribes specified in a notification issued under clause (1)

- The Constitution (Scheduled Tribes) Order (Amendment) Bill, 2022 seeks to amend the Constitution (Scheduled Tribes) Order, 1950 for inclusion of certain community in the list of Scheduled Tribes in relation to the State of Tripura.

- The Bill proposes to include Darlong community as a sub-tribe of "Kuki" in the list of Scheduled Tribes.

Why is tribal identity a big issue in Tripura?

The Sixth Schedule of the Constitution provides for the administration of tribal areas in Assam, Meghalaya, Tripura, and Mizoram to safeguard the rights of the tribal population.

- Nearly 30 % of population in Tripura are tribals, who mostly live in areas under jurisdiction of the Tripura Tribal Areas Autonomous District Council (TTAADC)

- When the state was merged into the Indian Union, it saw tribals become minority due to arrival of East Pakistani refugees who fled their country.

- There have been rising demands for Tipraland – a proposed separate state for tribals.

- Greater Tipraland – a proposed separate state for Tiprasa or Tripuris (tribal and non tribal) living in the state is also witnessed.

What are the government's major tribal development plans?

- **NCST-** The National Commission for Scheduled Tribes (NCST) was established by inserting a new Article 338A in the Constitution through the Constitution (89th Amendment) Act, 2003.

- **Vanbandhu Kalyan Yojana (VKY) -** It aims at creating enabling environment for need based and outcome oriented holistic development of the tribal people.

- **Adi Adarsh Gram Yojana**- It was implemented for integrated development in tribal villages spanning from health, education and drinking water.

- **STC funds**- There have been gradual and a steady increase in Scheduled Tribe component (STC) funds since the last few years.

- The Ministry of Tribal Affairs had recently introduced a scheme of nearly Rs 7,000 crore to provide broadband and 4G connectivity in tribal hamlets under the STC funds.

- **Scholarships**- Under thescholarship schemes, around 30 lakh ST students are being covered for financial assistance through DBT mode

- **Eklavya Model Schools**-It was set up to impart quality education to ST children in remote areas in order to enable them to avail of opportunities in high and professional educational courses and get employment in various sectors.

- **Livelihood oppurtunities**- Several schemes have been introduced to support marketing and development of activities for livelihood such as

    o Institutional Support For Development And Marketing Of Tribal Products/Produce

    o Marketing Of Minor Forest Produce (MFP) Through Minimum Support Price (MSP)

    o The Van Dhan Scheme

2.3 Tamil Nadu Special Reservation Act of 2021

Why in news?

The Supreme Court has quashed the Tamil Nadu Special Reservation Act of 2021 on the ground that it was not based on updated quantifiable data.

What is the history of reservation in the state of Tamil Nadu?

- The **first BC Commission** (1969-70), headed by A.N. Sattanathan, talked of having a device for removing the top layers of the communities periodically (creamy layer concept).

- The **second BC Commission** headed by Ambasankar advocated compartmental reservation by grouping the BCs on the basis of backwardness.

- Up until 1971, Tamil Nadu's total reservation had stood at 41%.

- In 1989, a new category called MBC and DNC was carved out of the BCs and given 20% exclusively from the then quantum of 50%.

- In 2007, Muslims in the BCs were provided with 3.5% reservation.

- In 2009, 3% reservation was provided for Arunthathiyars out of 18% quota for the SCs.

How Tamil Nadu's reservation stands at 69% despite the 50% quota cap?

- In 1990, Tamil Nadu's overall reservation was taken to 69%.

- But the Indira Sawhney case judgement capped the total reservations within the 50% limit.

- The High Court of Madras and Supreme Court ruled that the reservation should not exceed 50% in the matter of admission to educational institutions.

- The Tamil Nadu government introduced the Tamil Nadu Backward Classes, Scheduled Castes and Scheduled Tribes (Reservation of Seats in Educational Institution and of appointments or posts in the Services under the State) Bill, 1993.

- The President's assent came which cemented the 69% reservation for Tamil Nadu.

- The Act was also brought under the Ninth Schedule of the Constitution.

Article 31B of the Constitution states that none of the Acts that are included under the Ninth Schedule shall be deemed to be void by any court or tribunal

What is the act about?

- The Tamil Nadu Special Reservation Act of 2021 or the Vanniyar quota law was introduced to meet the demand of Vanniyars, a caste that is classified among the Most Backward Classes (MBC).

- The law provided an internal reservation of 10.5% for the Vanniyar community in education and employment within the 20% quota for all MBCs and DNCs.

- The act was promulgated based on the recommendations of the Tamil Nadu Backward Classes Commission.

- The legislation was challenged before the High Court which held it unconstitutional.

- The court cited the **lack of adequate quantifiable data** on the socio-educational status of the Vanniyars with the State government before the introduction of the law.

- It also cited that the sub-classification done solely based on population data, in the absence of any objective criteria, is in violation of the constitution of India.

- Aggrieved by the judgment, Tamil Nadu had moved an appeal before the Supreme Court.

What is the Supreme Court's judgement?

- **Violation of fundamental rights**- The apex court upheld the Madras high court judgment, stating that the law violates Article 14, 15 and 16 of the constitution.

- Under Articles 14, 15 and 16 of the constitution, the government is allowed to make special laws to protect the marginalised classes of society.

- However, the same needs to be backed by quantifiable data on the socio-educational status of the class or community concerned.

- If there is enough data to prove that the class of persons are socially and economically backwards and need reservations, such reservation cannot go beyond 50% (Indira Sawhney case).

- In case the state exceeds the 50% limit, the same needs to be justified on valid grounds or else it will amount to giving preferential treatment from among the same class.

- **Absence of quantifiable data**- The Bench was of the view that caste can be the starting point for providing internal reservation, but the State Government has to justify it with adequate data.

- **No proper analysis**- The Court also pointed out that no analysis had been made of the relative backwardness and representation of other communities in the MBCs and DNCs.

Is it possible for States to make changes in the backward classes list?

- The **102nd Amendment to the Constitution** created the National Backward Class Commission and empowered the President to notify the backward classes list for each State.

- The Supreme Court had ruled, in the Maratha reservation case, that the Amendment took away the power of the States to notify or identify OBCs.

- Later, the **105th Amendment** made it explicit that the States could make changes in their lists.

- The Supreme Court also held that the State Government had the legislative competence to pass the Act.

2.4   The End of the Marital Rape Exception

Why in news?

The Karnataka High Court's order has refused to quash charges of rape against a man accused of forcibly having sex with his wife.

What is marital rape?

- The term marital rape (also referred to as 'spousal rape') refers to unwanted intercourse by a man on his wife obtained by force, threat of force or physical violence or when she is unable to give consent.

- The origin of the marital rape exception lies in the treatise on criminal law of England called the '**History of the Pleas of the Crown**' pronounced in 1736.

- The concept was that the husband cannot be guilty of a rape committed by himself upon his lawful wife due to their mutual matrimonial consent.

- This was translated into criminal codes, including the Indian Penal Code which India adopted.

- India is one the countries including Pakistan, Afghanistan, Bangladesh, Egypt, Algeria and Botswana that have not criminalised marital rape.

- In the United Kingdom, in 1991, the exception to marital rape was done away stating that law should declare that a rapist remains a rapist subject to the criminal law, irrespective of his relationship with the victim.

What are the provisions available in India regarding marital rape?

- **Section 375** of the IPC defines rape and provides for exceptions in the case of married couples.

- **Exception 2 of Section 375** states that sexual intercourse by a man with his own wife, the wife not being under 15 years of age, is not rape.

- **Section 376** of the IPC provides for punishment for rape.

- **The Justice Verma Committee**, set up in 2012 to reform criminal law has proposed that the exception for marital rape be removed.

- *The Constitution guarantees women the fundamental rights under Articles 14, 15, 19 and 21 the right to live with dignity, personal liberty, bodily integrity, sexual autonomy, right to reproductive choices, right to privacy, right to freedom of speech and expression.*

What is the High Court's view?

- **Case background**-A woman had filed a criminal complaint of rape against her husband due to the repeated acts of sexual assault she had to face.

- The police registered her complaint and the Sessions Judge took cognisance and framed charges under Section 376.

- The husband filed an application to drop the charge of Section 376 but the Sessions Judge rejected it.

- This led to the husband approaching the High Court seeking to quash the criminal proceedings.

- **High Court order**- The court refused to quash the charge of rape against the husband.

- It held that the exception to marital rape in the IPC violates women's right to equality which is the very soul of the Constitution.

- Also it amounts to discrimination because a wife is treated as subordinate to the husband.

- The court also stated that the exemption of the husband on committal of such assault cannot be so absolute that it becomes a licence for commission of a crime.

What were the earlier judgments?

- In *Independent Thought vs. Union of India*, 2017, the Supreme Court held that sexual intercourse by a man with his wife, who is below 18 years of age is rape.

- In 2021, Chhattisgarh High Court ruled that sexual intercourse or any sexual act by a husband with their spouse would not constitute rape even if it was forcible or against the consent of a legally wedded wife.

- The Constitutionality of the marital rape exception is also under challenge before the Delhi and Gujarat High Courts.

2.5   Reforming Death Penalty

What is the issue?

The Supreme Court has taken a suo moto cognizance to consider laying down guidelines for assessment of mitigating circumstances in death penalty cases.

What are the legal provisions available regarding death sentence?

- Despite a global moratorium against the death penalty by the UN, India retains the death penalty.

- Death penalty may be awarded under the provisions of criminal procedure.

- Death penalty can be awarded in case of the following offences

1. Waging was against the Government of India (Section 121)

2. Abetting mutiny actually committed (Section 132)

3. Giving or fabricating false evidence upon which an innocent person suffers death (Section 194)

4. Murder which may be punished with death or life imprisonment (Section 302)

5. Abetment of suicide of a minor on insane, or intoxicated person. (Section 305) (6)

6. Dacoity accompanied with murder. (Section 396)

7. Attempt to murder by a person under sentence of imprisonment for life if hurt is caused. (Section 307)

The POCSO Act was amended in August 2019 to introduce the death penalty for the non-homicide offence of penetrative sexual assault on children.

How are judges supposed to choose between life and death sentences?

- A framework was developed by the Supreme Court, after it upheld the constitutional validity of the death penalty in **Bachan Singh's case** in 1980, to decide on factors while choosing between life imprisonment and death sentence.

- The framework states that legislature in the Criminal Procedure Code (CPC) would consider life imprisonment as the default punishment.

- The judges would need to give "special reasons" if they wanted to impose the death sentence which means death penalty can be awarded in "**rarest of rare cases**".

- This framework also stated that the judges must consider both the mitigating and aggravating factors concerning crime and the accused while announcing death penalty.

- **Machhi Singh Vs. State of Punjab case** provided exceptions to the rarest of rare rule and death penalty can be invoked when

    o Murder is committed in extremely brutal manner so as to arouse extreme indignation of the community

    o Murder is committed by a motive which shows total depravity and meanness

    o The crime is enormous in proportion

What are the protections guaranteed under the constitution?

- **Article 21** - The *Maneka Gandhi case* held that Article 21 affords protection not only against executive actions but also against legislations.

- Thus, a person can be deprived of his life under capital punishment, only if there is a law which is just, fair and reasonable.

- **Article 72** - The President can pardon even death sentence, while the governor cannot under Article 161.

- Even when the pardon was denied to a death row convict, there is scope for judicial review if the presidential decision is arbitrary, irrational and discriminatory.

- **Article 134**- Right of appeal was provided from the High Court verdict to Supreme Court in any case where capital punishment was imposed on an accused in reversal of acquittal order.

What are the avenues available to a death-row convict?

- A criminal trial has two stages — the guilt stage and the sentencing stage.

- Sentencing happens after the accused has been found guilty of the crime and this is the stage where punishment is determined.

- Anything presented or said during sentencing cannot be used to reverse or change the finding of guilt.

- After a trial court awards the death penalty, the sentence must be confirmed by a High Court.

- The sentence cannot be executed till the time the High Court confirms it, either after deciding the appeal filed by the convict, or until the period allowed for preferring an appeal has expired.

- If the High Court confirms the death penalty and it is also upheld by the Supreme Court, a convict can file a review petition.

- If the review petition is rejected, the convict can file a curative petition

for reconsideration of the judgment.

What are the concerns?

The 'The Death Penalty in India: Annual Statistics' was published by Project 39A of National Law University (NLU), Delhi.

- Concerns have been raised that the death penalty has been awarded mainly considering the crime factor while overlooking the accused.
- Only the brutality factor of the crime was considered while awarding death sentence without sufficiently bringing in the circumstances of the accused.
- There has been widespread concern that the imposition of death sentences has been arbitrary.
- Similar concerns have been expressed by the Law Commission of India (262nd Report).
- **Reasons**
    - Sentencing information about the accused is very scarce
    - Vast majority of death row prisoners are economically vulnerable and very often receive poor legal representation
    - No real guidance on how judges must go about assigning weight to aggravating and mitigating factors

What is the Supreme Court's view on this matter?

- The judgments in Santa Singh (1976) and Mohd Mannan (2019) have recognised that it is important to collect this complex interplay of information sentencing.
- It requires professionals other than lawyers to collect such information.
- The criminal justice system needs to ensure that systems are created for procedural fairness.
- The Supreme Court has now looked into setting guidelines for reviewing the procedure of awarding death sentences.

2.6   Laws that govern Tapping a Phone

Why in news?

Sanjay Raut, a political party leader has accused the Centre of protecting IPS officer Rashmi Shukla, under probe for tapping the phones of political leaders in 2019.

How are phones tapped in India?

- During the times of fixed-line phones, mechanical exchanges would link circuits together to route the audio signal from the call.
- When exchanges went digital, tapping was done through a computer.
- Authorities make a request to the service provider, which is bound by law to record the conversations on the given number and provide these in real time.
- **Competent authority to tap phones**- In the states, police has the power to tap phones.
- At the Centre, 10 agencies are authorised to do so including the Intelligence Bureau, CBI, Enforcement Directorate, National Investigation Agency, R&AW and Delhi Police Commissioner.
- Tapping by any other agency would be considered illegal.
- The competent authority must record reasons for tapping in writing.

What laws govern phone tapping?

- **Act**- Phone tapping in India is governed by the The Indian Telegraph Act, 1885.
- **Time**- Phone tapping can be done
    - On the occurrence of any public emergency
    - In the interest of the public safety
- **Conditions**- Phone tapping can be done by the Centre or States if they are satisfied it is necessary in the interest of

- o Public safety
- o Sovereignty and integrity of India
- o Security of the State
- o Friendly relations with foreign States
- o Public order
- o Preventing incitement to the commission of an offence

- **Exception**- An exception has been given for the press.

- The press messages of correspondents accredited to the Central Government or a State Government that is intended to be published in India shall not be intercepted, unless their transmission has been prohibited under this sub-section.

- **Authorisation-** Rule 419A of the Indian Telegraph (Amendment) Rules, 2007 talks about the authorising orders that has to be conveyed to the service provider in writing.

- Phone tapping orders is issued by
    - o The Secretary to the Government of India (Ministry of Home Affairs) in the case of Government of India
    - o The Secretary to the State Government in-charge of the Home Department in the case of a State Government

- **Emergency situations**- In unavoidable circumstances, such an order may be issued by an officer, not below the rank of a Joint Secretary to the Government of India, who has been authorised by the Union Home Secretary, or the State Home Secretary.

- If it is not feasible to get prior directions, a call can be intercepted with the prior approval of the authorised officers.

- The order has to be communicated within 3 days to the competent authority, who has to approve or disapprove it within 7 working days.

What are the checks against misuse?

Telephone conversation is an important facet of a man's private life. Telephone tapping would thus infract Right to Privacy under Article 21 of the Constitution.

- **Last resort** - Interception must be ordered only if there is no other way of getting the information.

- **Directions for interception**- The directions for interception remain in force, unless revoked, for a period not exceeding 60 days.

- They may be renewed, but not beyond a total of 180 days.

- **Review Committee**- Any order issued by the competent authority has to contain reasons, and a copy is to be forwarded to a review committee within seven working days.

- When the Review Committee is of the opinion that the directions are not in accordance with the provisions, it may set aside the directions and orders for destruction of the copies of the intercepted messages.

- **Destruction of records**- Records pertaining to such directions shall be destroyed every six months.

- Service providers are required to destroy records pertaining to directions for interception within two months of discontinuance of the interception.

- **Unauthorised interception**- In case of unauthorised interception, the service provider may be fined or even lose its licence.

3. GOVERNMENT ACTS & POLICIES

3.1   Draft Battery Swapping Policy

Why in news?

Amid several instances of Electric Vehicles (EVs) erupting into flames, Niti Aayog has released a draft battery swapping policy.

What is battery swapping?

- Battery swapping is an alternative which involves exchanging discharged batteries for charged ones and provides flexibility to charge them separately.

- This de-links charging and battery usage and keeps the vehicle in operational mode with negligible downtime.

- Battery swapping is generally used for smaller vehicles such as 2 wheelers and 3 wheelers with smaller batteries that are easier to swap**.**

- Battery swapping offers three key advantages relative to charging

    1. Time

    2. Space

    3. Cost efficient

What are the key proposals of the policy?

- The policy has proposals offering

    o Incentives to electric vehicles (EVs) with swappable batteries

    o Subsidies to companies manufacturing swappable batteries

    o A new battery-as-a-service business model

    o Standards for interoperable batteries

- **Rollout of the policy**

    o **Phase 1**- All metropolitan cities with a population of more than 40 lakh will be prioritised within 1-2 years of the draft policy getting finalised.

    o **Phase 2-** Other major cities with a population greater than 5 lakh will be covered under the second phase.

- **Applicability**- The policy will only support batteries using Advanced Chemistry Cells (ACC) that are equivalent or superior to EV batteries supported under the government's FAME-II scheme.

- **Tax reduction**- The draft policy has suggested that the GST Council consider reducing the differential across the tax rates on Lithium-ion batteries and electric vehicle supply equipment.

- Currently, the tax rate on the former is 18 %, and 5 % on the latter.

- **Incentives**- The policy also proposes to offer the same incentives available to electric vehicles that come pre-equipped with a fixed battery to electric vehicles with swappable batteries.

- The size of the incentive could be determined based on the kWh (kilowatt hour) rating of the battery and compatible EV.

- **Contract duration-** The government will specify a minimum contract duration for a contract to be signed between EV users and battery providers.

- This is to ensure that they continue to provide battery swapping services after receiving the subsidy.

- **Charging stations**- The policy requires state governments to ensure public battery charging stations are eligible for EV power connections with concessional tariffs.

- It proposes to bring such stations under existing or future time-of-day (ToD) tariff regimes, so that the swappable batteries can be charged during off-peak periods when electricity tariffs are low.

- **Nodal agency**- The Bureau of Energy Efficiency (BEE), the Central Nodal Agency responsible for the rollout of EV public charging infrastructure, will be responsible for the implementation of battery swapping networks across the country.

- **Authority**- Transport Departments and State Transport Authorities will be responsible for easing registration processes for vehicles sold without batteries or for vehicles with battery swapping functionality.

- Municipal corporations will be responsible for planning, zoning permissions and land allocation for battery swapping stations.

- **UIN**- The policy also proposes to assign a unique identification number (UIN) to swappable batteries at the manufacturing stage to help track and monitor them.

- Similarly, a UIN number will be assigned to each battery swapping station.

- **Data-sharing agreements-** Major battery providers will be encouraged to sign data-sharing agreements to provide information on battery health, performance, and to enable more flexibility to consumers through peer-to-peer roaming networks.

- **Grievance redressal**- Battery Providers shall be designated as the Point of Contact with EV owners and shall be responsible for grievance redressal.

- **Battery reuse and recycling**- To address the concerns related to battery life and resale value, BIS or other relevant organizations shall develop regulations.

- Battery Management Rules shall be released separately to cover the end-of-life handling of the batteries in detail and fix the Extended Producer Responsibility (EPR).

What is the battery-as-a-service model?

- Niti Aayog said battery swapping will fall under the battery-as-a-service (BaaS) business model.

- It involves users purchasing an EV without the battery and paying a regular subscription fee to service providers for battery services throughout the vehicle lifetime.

- BaaS is applicable for both fixed and removeable batteries and is the channel to implement swapping solutions.

- The business models would have to ensure interoperability between EVs and batteries for a successful mainstreaming of battery swapping as an alternative.

What does the draft policy say on EV safety?

- A rigorous testing protocol will be adopted to ensure a high level of protection (avoid any unwanted temperature rise) at the electrical interface.

- The battery management system, which is a software that controls battery functions, will have to be self-certified and open for testing to check its compatibility and capability to meet safety requirements.

- Batteries shall be tested and certified as per AIS 156 (2020) and AIS 038 Rev 2 (2020) standards for safety of traction battery packs.

- Swappable batteries have to be equipped with advanced features like IoT-based battery monitoring systems, remote monitoring and immobilisation capabilities for better protection of assets.

3.2   Jahangirpuri Eviction Drive

What is the issue?

Recently, a fleet of bulldozers descended on Jahangirpuri in Delhi to demolish buildings, petty shops, and the entrance gate of a mosque.

What is the Jahangirpuri eviction drive?

- Communal violence had broken out in the Jahangirpuri area on April 16 when a Hanuman Jayanti Shobha Yatra, which did not have police permission, clashed with Muslims as it went alongside the mosque.

- The demolition drive was initiated after a petition was given to North Delhi Municipal Corporation (NDMC) to demolish the illegal constructions of the rioters in Jahangirpuri.

- Soon after the demolitions started, the Supreme Court in an urgent hearing ordered that "status quo" be maintained until further orders.

- But the demolition continued for over an hour after the order was passed.

The Jahangirpuri drive comes in the backdrop of demolition drives carried out by the State governments in Khargone and Anand where bulldozers were used to raze encroached properties.

What are the major legal concerns of citing "illegal encroachment"?

- The actions of state and local authorities to bulldoze shops and homes in riot-hit Muslim neighbourhoods citing "illegal encroachment" raises major legal concerns

    1. Such actions show a disregard for the due process of law and established judicial precedents regarding evictions.

    2. It conveys the use of brute state power for collective punishment undermining the basic tenets of criminal law.

What is the case of illegal encroachment in Delhi?

- According to the Delhi Economic Survey 2008-09, about 24% of the city lived in planned colonies and the rest lived in informal or unplanned areas.

- The Draft Master Plan of Delhi, 2041 also acknowledges the informality that characterises Delhi.

- Since the 1970s, there have been many waves of regularisation of unauthorised colonies initiated by the state.

- The Union Government launched the PM-UDAY (Unauthorised Colonies in Delhi Awas Adhikar Yojana) scheme which confers property rights to residents of unauthorised colonies.

What protections are in place against eviction?

- *Section 343 of the Delhi Municipal Corporation Act, 1957, which allows the corporation to order the demolition of buildings, states that "no order of demolition shall be made unless a notice is served to the affected person for a reasonable opportunity".*

- Irrespective of the legal status of the settlement, no public authority can demolish buildings without giving the affected parties a chance to be heard.

- The Delhi High Court, in *Sudama Singh vs Government of Delhi* (2010), mandated that the state should comply with fair procedure before undertaking any eviction.

- This got crystalised in the Delhi Slum & JJ Rehabilitation and Relocation Policy, 2015.

- In *Ajay Maken vs Union of India* (2019), the Delhi High Court held that no authority shall carry out eviction without conducting a survey, consulting the population that it seeks to evict and providing adequate rehabilitation for those eligible.

- The court invoked the idea of the "Right to the City" and the "Right to Adequate Housing" from international law and held that slum-dwellers possess the right to housing and should be protected from forced and unannounced eviction.

- Given these precedents, before a public authority undertakes any action in Jahangirpuri, it should not only serve notice but also consult those that it seeks to evict.

What does this action signify?

- **Threat to minorities**- The bulldozer itself has now become a symbol of brute state power and a revolting mascot to intimidate minorities.

- It raises alarms on the establishment of a bulldozer state that dispenses majoritarian justice.

- **Authoritarian state**- The demolition activities seem to be purposefully done under full media glare to convey the unbridled power.

- **Arbitrary actions**- Under the new bulldozer state, even before any charges are framed, the executive arbitrarily imposes a form of collective punishment upon a whole neighbourhood.

- In the midst of such a majoritarian upsurge, the rule of law cannot be saved purely through judicial intervention and would need broader political struggles.

4. HEALTH

4.1   WHO's Suspension of Supply of Covaxin

What is the issue?

WHO has confirmed the suspension of supply of Covaxin (Bharat Biotech) through UN procurement agencies.

What is Covaxin?

- Covaxin is India's indigenous COVID-19 vaccine developed by Bharat Biotech in collaboration with the Indian Council of Medical Research (ICMR) - National Institute of Virology (NIV).

- The vaccine is developed using **Whole-Virion Inactivated Vero Cell** derived platform technology.

- It is an "inactivated" vaccine that uses the dead virus.

- It is incapable of infecting people but still able to instruct the immune system to mount a defensive reaction against an infection.

- It is a 2-dose vaccination regimen.
- It is a vaccine with no sub-zero storage and is stable at 2-8 ☐.
- The efficacy against COVID-19 disease is shown to be 81%.
- It has proven to neutralize the variants – Alpha, Gamma, Zeta, Kappa, Beta and Delta.

What are the stages of testing vaccines?

- Vaccines are meant to follow a testing process of four stages
- **Pre-Clinical**- In this phase medical professionals use cell or tissue culture systems and animal testing to determine whether the candidate vaccine will produce immunity.
- **Clinical Development-** Now, a sponsor, usually a private company, applies for approval of the vaccine.
- Once the proposal has been approved, the candidate vaccine needs to three trial stages of human testing.
  - o **Phase I**- A small group of people is injected with this candidate vaccine to determine how safe it is and to learn more about the responses it provokes among test subjects.
  - o **Phase II**- A group of more than hundreds of human test subjects are injected to determine more information about immunogenicity, safety, dose size, and immunization schedule.
  - o **Phase III**- In this phase, more than thousands of human test subjects are injected to determine rare side effects which sometimes don't appear in smaller groups.
- **Regulatory review and approval**- Once a vaccine passes all the phases, the vaccine developer submits a license application to the regulatory authority.
- **Quality control**- The firm has to continue monitoring the use of its vaccine on patients and submit post-marketing surveillance details, which checks for any long-term unintended adverse effects.

Why has the WHO taken this step now?

- Covaxin had got emergency use listing (EUL) from the WHO in November 2021 as it met the standards set by the WHO for protection against the coronavirus disease.
- The WHO's EUL is also a prerequisite for a vaccine to be part of supply under COVAX initiative
- The licence thus paved the way for Bharat Biotech to supply Covaxin to UN agencies including through COVAX.
- At the time the EUL for Covaxin was granted, however, the WHO had not done an inspection.
- The inspection was done in March 2022, based on which the WHO has announced the suspension of supply of Covaxin through UN procurement agencies.
- **Findings of WHO-** The data available to WHO indicate that Covaxin is effective and there is no safety concern.
- However, WHO has asked the company to address deficiencies in good manufacturing practice (GMP).
- When the company received emergency use authorisation from India's drug regulator, it repurposed its existing facilities, some of which were used for producing a polio virus vaccine, rabies vaccine and Japanese encephalitis vaccine.
- The WHO has asked the company to upgrade facilities specifically for manufacturing Covaxin.
- *COVAX is co-led by the Coalition for Epidemic Preparedness Innovations (CEPI), Gavi and the WHO, alongside key delivery partner UNICEF.*
- *Its aim is to accelerate the development and manufacture of COVID-19 vaccines, and to guarantee fair and equitable access for every country in the world.*

How does the order impact the supply of Covaxin?

- The company announced a temporary slowing down of production of Covaxin across its manufacturing facilities.
- The suspension does not impact the supply of Covaxin as
    - The company has not received any orders from UN agencies, including the GAVI-COVAX facility
    - The company has already fulfilled its supply commitments in countries where Covaxin has been given emergency use authorisation
    - The company has also stockpiled vaccines required for India's inoculation drive

4.2   Kerala's Mental Healthcare Model

Why in news?

Kerala has always boasted of European standards in healthcare but mental healthcare remains a blind spot.

What are the issues?

- In February 2022, an inmate was murdered by another at the mental health centre in Kozhikode.
- On the directions of the Kerala HC, the district judge conducted an inspection and reported many violations.
- Recently, a suo motu case was registered by the State Human Rights Commission on the inhuman treatment being meted out to patients at the Government Mental Health Centre in Thiruvananthapuram.

What did the inspection expose?

- The latest intervention exposed the deplorable conditions at the Thiruvananthapuram facility where patients were found locked up in cells with tin roofs and closed windows.
- Patients are being treated like prisoners and live amid dirt.
- There has been gross violation of patient rights guaranteed by the Mental Healthcare Act, 2017.
- Infrastructure inadequacies to insufficient number of staff were cited as the reasons of the pathetic conditions.
- Efforts to constitute review boards were initiated by the state mental health authority only this month.
- The authority which was formed in January 2021 met only once so far though the law mandates that the body should meet at least four times a year.

According to a survey by the Indian Council of Medical Research (ICMR) 7.5% of the total country's population is hit by mental illness.

What does the Mental Healthcare Act, 2017 provide for?

- The Mental Healthcare Act 2017 aims to provide mental healthcare services for persons with mental illness.
- It ensures that these persons have a right to live life with dignity by not being discriminated against or harassed.
- **New definition of mental illness**- Earlier, Mental illness was defined as any mental disorder and seldom as mental retardation but the new act provides a broader definition.
- **Rights for persons with mental illness**- It includes
    - Right to obtain mental health care
    - Right to live with dignity
    - Non-discrimination
    - Rights of confidentiality
    - Right to protection from barbaric and demeaning treatment
- **Advance directive-** A person with mental illness shall have the right to make an advance directive that states how he/she wants to be treated for the illness and who his/her nominated representative shall be.
- The advance directive should be certified by a medical practitioner or registered with the Mental Health Board.

- **Mental health authority-** The Bill provides power to the government to set-up the Central Mental Health Authority at national-level and State Mental Health Authority in each State.

- **Mental health treatment-** The Bill also specifies the process and procedure to be followed for admission, treatment and discharge of mentally-ill individuals.

- **Decriminalization of suicide-** This is a milestone judgement which annulled Section 309 IPC which punishes person attempting to perform suicide.

- **Abolishment the barbarous treatments-** It affirms that a person with mental illness shall not be subjected to electroconvulsive therapy (ECT) therapy without the application of muscle relaxants and anaesthesia.

- Electro-convulsive therapy for minors is prohibited.

- Chaining in any manner or method is banned.

- **Mental health review boards**- Section 73 of the Act mandates the constitution of mental health review boards.

WHO noted in a report in 2017 that there are less than two mental health professionals for every 100,000 people in the country.

What initiatives were taken regarding the mental health?

- **De-stigmatizing Awareness**- Organizations like The MINDS Foundation, Manas Foundation, The Banyan, Aasra, etc. are key in de-stigmatizing mental health in India.

- **NMHP**- The government of India launched the National Mental Health Programme (NMHP) in 1982 to focus mainly on increasing the reach of minimum mental health services for the poor.

- **The Mental Health Care Act**- It mandated affordable mental health care, the right to make decisions and informed consent, the right to live in a community and the right to confidentiality.

- **Tele-health Initiatives-** The Government of India has proposed to launch a National Tele Mental Health Program.

- **Community-based Approaches**- Sangath, an NGO provides affordable mental healthcare by strengthening state and private sector services by training the community.

- **MANODARPAN** is an initiative of the Ministry of Education to provide psychosocial support to students for their mental health and well-being.

- **Rehabilitation**- Ministry of Social Justice & Empowerment has launched the 24x7 Toll-Free Mental Health Rehabilitation Helpline "**KIRAN**" to provide relief and support to persons with Mental Illness.

What is the need of the hour?

- The inmates of mental hospitals are the most vulnerable section in the health sector.

- They are voiceless and they don't have voting rights.

- Sincere effort is needed from the state government to implement the act in its true spirit.

4.3   WHO's Approach on Excess Deaths during the Pandemic

What is the issue?

The WHO report estimates excess deaths during the pandemic period for which India has raised its objection.

What are the findings by the WHO?

- The WHO report (not yet released) is expected to show at least 4 million excess deaths in India, the highest such tally for any country in the world.

- The excess deaths approach considers the difference between the registered deaths before the pandemic and those during the pandemic period.

- This gives a robust estimate of the true impact of the pandemic.

- The findings are based on the estimates on all-cause mortality data from 17 States and one Union Territory in India.

- It uses mortality figures directly obtained from Tier I set of countries and uses a mathematical modelling process for Tier II countries (which includes India).

How are excess deaths measured?

- In most developed countries, death registration is full or nearly full and therefore, calculating excess deaths is relatively easier as deaths data are reliable and readily available.

- Countries such as the U.S., the U.K., Italy and Germany have near 100% registration of deaths with the cause of mortality known in every case.

- **India's case**- In India, registration of deaths stands at 92% (as per the Annual Report on Vital Statistics of India based on Civil Registration System-2019) and only 20.7% of the deaths are medically certified.

- Besides India witnesses several variations

    o Variation in registration and certification across States

    o Variation in the online availability of death registration numbers

    o Variation in the delay in registration of deaths across States

- The best way to calculate excess deaths in India is to individually calculate excess deaths for States with near 100% registration and to use suitable models to predict deaths from limited data in others.

Why is the Indian government dismissive of the WHO findings?

- India's basic objection has not been with the result but rather the methodology adopted for calculating COVID-19 toll.

- **One-size-fits-all approach**- The concern includes on how the models which are true for smaller countries like Tunisia is applicable to India.

- **Different estimates**- It also said that the model gives two highly different sets of excess mortality estimates when using the data from Tier I countries and when using unverified data from 18 Indian States.

- **Validity-** It raised concerns about validity and accuracy of such a modelling exercise.

- **Lack of scientific backing**- The model assumes an inverse relationship between monthly temperature and monthly average deaths, which does not have any scientific backing to establish such peculiar empirical relationship.

- **Variations**- Also, the variation in covid-19 positivity rate within the India was not considered for modeling purposes.

- **Quantification of containment measures**- Quantifying various measures of containment is nearly impossible as the strictness of such measures have varied widely even among the States and Districts of India.

- **Unverified data**- The Health Ministry also claims that the data published in the newspapers were unverified, though these were data that was accessed through Right to Information requests.

- **WHO's stand**- The authors of the WHO report emphasise that for India the global predictive covariate model is not used and so the estimates of excess mortality are based on data from India only.

5. BILATERAL ISSUES

5.1   India-Nepal Relations

Why in news?

The Nepal Prime Minister, Sher Bahadur Deuba, paid a long-awaited visit to India, his first bilateral visit abroad, in keeping with tradition.

What are the developments of India-Nepal relations over the years?

- **Diplomatic relations**- India-Nepal relations were founded on the age-old connection of history, culture, tradition and religion.

- The two countries established diplomatic relations on 17 June 1947.

- India's neighbourhood first policy signifies the importance of Indo-Nepal relations.

- **Political relations-** The frequent high level visits by the leaders of the two countries at different points of time and the interactions constitute the hallmark of the ties between the two countries.

- The recent visit of Nepal's PM to India reiterates the need for strengthening the existing bilateral mechanisms.

- **Economic relations-** India is Nepal's largest trading partner.

- Following the massive earthquakes in Nepal in 2015, India promptly offered helping hands.

- Nepal has escalating trade deficit with India. Nepal and India have concluded bilateral Treaty of Transit, Treaty of Trade and the Agreement of Cooperation to Control Unauthorized Trade.

- In the International Conference on Nepal's Reconstruction (2015), the Government of India pledged grants and soft loans.

- **Connectivity**- The 1950 Treaty of Peace and Friendship was sought by the Nepali authorities in 1949 to provide for an open border and for Nepali nationals to have the right to work in India.

- The BBIN Motor Vehicles Agreement (MVA) in which Nepal is a partner will permit the member states to ply their vehicles in each other's territory for transportation of cargo and passengers.

- **Multilateral and Regional Fora-** Both Nepal and India work in tandem in the United Nations, Non-aligned Movement and other international fora on most of the important international issues.

- Both the countries have been deeply engaged in the regional and sub-regional frameworks of SAARC, BIMSTEC and BBIN for enhancing cooperation for greater economic integration.

What are the positive outcomes of the Deuba regime?

- **Cross-border rail link**- The Rs 787 crore project of cross-border rail link (35km) from Jayanagar (Bihar) to Kurtha (Nepal) has been operationalised recently.

- The Konkan Railway Corporation will provide the necessary technical support initially.

- **Circuit transmission line**- The 90 km long 132 kV double circuit transmission line connecting Tila (Solukhumbu) to Mirchaiya (Siraha) has been inaugurated.

- It was constructed with an Exim Bank concessional loan of Rs 200 crore where a dozen hydroelectric projects were planned in the Solu corridor.

- Technical cooperation agreements providing technical cooperation were also signed such as the

    o In the railway sector

    o Nepal's induction into the International Solar Alliance

    o Between Indian Oil Corporation and Nepal Oil Corporation on ensuring regular supplies of petroleum products

- **Mahakali Treaty-** The Mahakali Treaty, signed in 1996 covers the Sarada and Tanakpur barrages as well as the Pancheshwar Multipurpose project.

- The ambitious $7 billion project needs political will to move it forward.

- The current joint vision statement on power sector cooperation recognises the opportunities for joint development power generation projects together with cross border transmission linkages and coordination between the national grids.

- **U.S. Millennium Challenge Corporation (MCC)-** The agreement provides a grant of 500 million dollars for building 318 km of high voltage transmission lines along with sub-stations and the maintenance of 300 km of the East-West highway.

- Recently, Mr. Deuba pushed through the ratification of the agreement with the (MCC), despite the reservations of his coalition partners and China.

Why is China's role in Nepal a matter of concern?

- **During monarchy-** China maintained a link with the Palace and its concerns were primarily related to keeping tabs on the Tibetan refugee community.

- **After monarchy-** China has shifted attention to the political parties and to institutions such as the Army and Armed Police Force and considers Nepal an important element in its growing South Asian footprint.

- **Recent years-** In 2016, the then PM, Mr. Oli visited Beijing to negotiate an Agreement on Transit Transportation.

- Later, a Protocol was concluded with China providing access to four sea ports and three land ports.

- China has overtaken India as the largest source of foreign direct investment.

- China is also engaged with airport expansion projects at Pokhara and Lumbini.

How to manage the growing differences?

- **The 1950 Treaty of Peace and Friendship**- This treaty is viewed as a sign of an unequal relationship, and an Indian imposition.

- The two Foreign Ministers should possibly acknowledge the report of the groups on the 1950 treaty publicly to kickstart Track 2 conversations.

- Many Nepali nationals who were legally entitled to hold Rs 25,000 of Indian currency (given that the Nepali rupee is pegged to the Indian rupee) were left high and dry due to demonetisation.

- **Boundary issue**- The boundaries had been fixed in 1816 by the British, and India inherited the areas over which the British had exercised territorial control in 1947.

- While 98% of the India-Nepal boundary was demarcated, two areas, Susta and Kalapani remain disturbing.

- In 2019, when India issued new maps following the division of the State of Jammu and Kashmir as Union Territories, Mr. Oli expanded the Kalapani area dispute by endorsing a new map of Nepal.

- To build upon the positive mood, it is necessary these issues be discussed, behind closed doors and at Track 2

- and Track 1.5 channels.

- India needs to be a sensitive and generous partner for the "neighbourhood first" policy to take root.

5.2   India and the U.K. Crafting a New Legacy

Why in news?

Recently, the U.K. Foreign Secretary had visited India and participated in the inaugural edition of India-U.K. Strategic Futures Forum, a Track 1.5 Dialogue, pushing the bilateral relationship on an upward trajectory.

What are the areas of cooperation between the two countries?

- **2030 Roadmap-** India and the UK adopted the ambitious 'Roadmap 2030' to elevate bilateral ties to a Comprehensive Strategic Partnership.

- **India's Indo-Pacific Oceans Initiative-** The U.K. will join India's Indo-Pacific Oceans Initiative and become a major partner on maritime security issues in Southeast Asia.

- The U.K. is a regional power in the Indo-Pacific as it possesses naval facilities in Oman, Singapore, Bahrain, Kenya, and British Indian Ocean Territory.

- **Defence cooperation-** India is a key strategic partner for the U.K. and was underscored by signing of Defence and International Security Partnership between India and the U.K. in 2015.

- **Joint cyber security programme-** A new joint cyber security programme is set to be announced to protect online infrastructure as both parties attempt to carry out joint exercises to combat threats from cyber criminals and ransomware.

- **Strategic Tech Dialogue-** India and the U.K. plan to hold the first Strategic Tech Dialogue, a ministerial-level summit on emerging technologies.

- **British International Investment funding-** The U.K. has confirmed 70 million euro of British International Investment funding to support the usage of renewable energy in India.

- **India–U.K. Free Trade Agreement**- In January, India and U.K. managed to conclude the first round of talks for an India–U.K. Free Trade Agreement.

- The negotiations reflected shared ambitions to secure a comprehensive deal between the fifth and sixth largest economies in the world as both sides covered over 26 policy areas.

What are the new areas of cooperation?

- The newer areas of cooperation include
    - o   Fintech
    - o   Market regulation

- o Sustainable and green finance
- o Cyber security

- The notable success of the collaboration with Oxford-Astra Zeneca and the Serum Institute of India in producing Covishield vaccines in India has been one of the instances of successful cooperation.

- The forthcoming visit of Mr. Johnson to New Delhi signifies the importance of India's role in the dynamically changing global order as New Delhi prepares itself to host the G20 presidency in 2023.

- As India seeks to carve out a new role for itself in the evolving global order as a 'leading power' and the U.K. recalibrates its strategic outlook post-Brexit, this is a unique moment in India-U.K. ties.

- New geopolitical realities demand a new strategic and it is time to seize the moment to lay the foundations of a partnership that can respond adequately to the challenges of the 21st century.

5.3 India-Sri Lanka Fisheries Issue

Why in news?

After a gap of 15 months, the India-Sri Lanka Joint Working Group (JWG) on fisheries held its much-awaited deliberations in virtual format.

What is the history of the issue?

- One of the major reasons complicating the issue is of **Kachchatheevu Island**.

- India ceded the uninhabited island to Sri Lanka in 1974 under a conditional accord.

- In 1976, through an exchange of letter, both India and Sri Lanka agreed to stop fishing in each other's waters.

- In 2009, the Sri Lankan government declared Kachchatheevu Island as sacred land owing to a Catholic shrine's presence on the piece of land.

- The Central government of India, according to the 1974 accord, recognises Sri Lanka's sovereignty over Kachchatheevu.

What is the recent issue?

The State government has control up to 12 nautical miles (NM) from the base line, while the rest is vested with the Union government.

- **Poaching in the territorial waters of Sri Lanka**- Recently, seven fishermen — five from Tamil Nadu and two from Sri Lanka have died in mid-sea clashes.

- As sections of fishermen from Tamil Nadu continue to transgress the International Maritime Boundary Line, cases of getting arrested and boats being impounded by the Sri Lankan authorities continue.

- The issue got aggravated when the impounded boats were auctioned despite a bilateral understanding on the matter.

Why is trawling a bone of contention between the two countries?

As per the Tamil Nadu Marine Fisheries Regulation Act, 1983, bottom trawling operations shall not be conducted within three nautical miles from the coast line.

- Bottom trawling is a method of fishing that involves dragging heavy weighted nets across the sea floor, in an effort to catch fish.

- The use of mechanised bottom trawlers by Tamil Nadu fishermen is an issue not just between the two states but is seen as an adverse activity affecting the marine ecology.

- The actions of the Tamil Nadu fishermen adversely affect their counterparts in the Northern Province who are also struggling to come to terms with life after the civil war.

- At the same time, the fishermen of Tamil Nadu experience the lack of fishing areas (full of rocks and coral reefs besides being shallow) consequent to the demarcation of the IMBL in June 1974.

- Under the Tamil Nadu Marine Fishing Regulation Act 1983, mechanised fishing boats can fish only beyond 3 NM from the coast pushing the fishermen to cross the IMBL frequently.

How can the issue be resolved?

- **Fisher-level talks**- The people of the two countries in general have common threads of language, culture and religion, all of which can be used purposefully to resolve any dispute.

- **Role of government**- The Tamil Nadu fishermen have to commit themselves to a swift transition to deep sea fishing or other alternative methods for which the government have to come forward as a guarantor.

- Whenever there is a genuine complaint about Tamil Nadu fishermen having damaged the properties of the counterparts, the Indian government can compensate this through proper channels.

- India's MoU with Sri Lanka for the development of fisheries harbours can be modified to include a scheme for deep sea fishing to the fishermen of the North.

- **R&D**- The JWG has agreed to have joint research on fisheries, which should be commissioned at the earliest.

- **Deep sea fishing**- India have to modify its scheme on deep sea fishing to accommodate the concerns of its fishermen so that they take to deep sea fishing without any reservation.

- The revised scheme has to absorb satisfactorily not only the unit cost of long liners but also the running cost.

- There is a need for the Central and State government to implement the Pradhan Mantri Matsya Sampada Yojana proactively to covers alternative livelihood measures including seaweed cultivation, open sea cage cultivation, and sea ranching.

- **Institutional mechanisms**- The two countries should explore the possibility of establishing a permanent multi-stakeholder institutional mechanism to regulate fishing activity in the region.

6. INTERNATIONAL ISSUES

6.1   Fifth BIMSTEC Summit – 2

Why in news?

In its 25th year, and at its fifth summit held in hybrid format in Colombo, the organisation adopted a charter which aims at providing greater coordination among the members.

What is BIMSTEC?

- BIMSTEC is a regional multilateral organization comprising 7 Member States lying in the littoral and adjacent areas of the Bay of Bengal.

- This sub-regional organization came into being on 6 June 1997 through the **Bangkok Declaration**.

- The seven Member States ae Bangladesh, Bhutan, India, Nepal, Sri Lanka, Myanmar and Thailand.

- It has its secretariat at **Dhaka, Bangladesh**.

- Initially, the economic bloc was formed with 4 Member States with the acronym 'BIST-EC' (Bangladesh, India, Sri Lanka and Thailand Economic Cooperation).

- BIMSTEC Centres

  - BIMSTEC Energy Centre
  - BIMSTEC Centre on Weather and Climate

What is the Colombo package of the fifth BIMSTEC

Summit?

- The process of re-defining its purpose and rejuvenating its organs and institutions was launched at the Leaders' Retreat convened by India in 2016.

- It gathered momentum in Kathmandu Summit in 2018 and the result is now seen in the package of agreements announced at the fifth summit.

- **BIMSTEC Charter**- It presents BIMSTEC as "an inter-governmental organization" and lists 11 items such as acceleration of economic growth and social progress in the Bay of Bengal region, promotion of multidimensional connectivity, etc.

- The grouping now views itself as a regional organisation whose destiny is linked with the area around the Bay of Bengal.

- **Sectors of cooperation-** It was decided to re-constitute and reduce the number of sectors of cooperation from 14 to 7.

- Each member-state will serve as a lead for a sector

  - trade, investment and development (Bangladesh)
  - environment and climate change (Bhutan)
  - security, including energy (India)
  - agriculture and food security (Myanmar)
  - people-to-people contacts (Nepal)
  - science, technology and innovation (Sri Lanka)
  - connectivity (Thailand)

- **Master Plan for Transport Connectivity**- It was devised and backed by the Asian Development Bank (ADB).

- It lists 264 projects entailing a total investment of 126 billion dollars applicable for 2018-2028.

- **Others**- The package also includes three new agreements signed by member states, relating to

  - mutual legal assistance in criminal matters
  - cooperation between diplomatic academies
  - establishment of a technology transfer facility in Colombo

Why is this Summit significant?

- **Edge over SAARC**- The new charter comes at a time when the need for an alternative regional-global organisation is increasingly being felt because of the declining nature of SAARC which has not met since 2014.

- **Security**- The Bay of Bengal borders the Strait of Malacca which is the main energy lane for the eastern and Southeast Asian nations.

- The security relevance of BIMSTEC has been growing especially after the Easter Sunday bombings in Sri Lanka in 2019.

- **Domestic problems aside-** BIMSTEC members like Myanmar and Bangladesh have challenges like the Rohingya crisis since 2017.

- As of now, the grouping included Myanmar in the summit indicating that it will not interfere in domestic political problems and provides scope for an inclusive meet.

What are the concerns?

- **Trade pillar-** The pillar of trade, economic and investment cooperation needs greater strengthening at a faster pace.

- A framework agreement for a comprehensive Free Trade Agreement (FTA) was signed in 2004.

- Of the seven constituent agreements needed for the FTA, only two are in place as of now.

- The need for expansion of connectivity was stressed by everyone but finalising legal instruments for coastal shipping, road transport and intra-regional energy grid connection remains unfinished.

- Deepening cooperation in security matters and management of Humanitarian Assistance and Disaster Relief (HADR) was achieved speedier.

- **Bilateral issues-** BIMSTEC members like Myanmar and Bangladesh have challenges like the Rohingya crisis that both sides have been dealing with since 2017.

How will this Summit prove beneficial to India?

- **Trade-** Having walked away from mega trade blocs such as the RCEP, India's willingness to explore an FTA within the framework of a near-home regional grouping may provide greater accommodation for multi-party interests.

- **Security-** India will steer the security pillar of BIMSTEC and is expected to coordinate region wide security cooperation.

- **Connectivity**- The BBIN connectivity project of Bangladesh, Bhutan, India and Nepal is expected to be merged with the port and infrastructure projects like the Sittwe port of Myanmar and Payra port of Bangladesh and Colombo of Sri Lanka.

- **Advantage over SAARC**- SAARC has been weighed down by issues between India and Pakistan while BIMSTEC appears to be an inclusive platform setting aside the bilateral problems.

6.2   Genocides

Why in news?

Washington and Kyiv are accusing Russia of genocide in Ukraine, but the ultimate war crime has a strict legal definition and has rarely been proven in court.

What is genocide?

- The 1948 Genocide Convention defines genocide as crimes committed with intent to destroy, in whole or in part, a national, ethnical, racial or religious group, as such.

- A genocide is a crime that can take place both in time of war as well as in time of peace.

- Criminal acts comprising genocide include killing members of the group, causing them serious bodily or mental harm, creating conditions calculated to destroy them, preventing births, or forcibly transferring children to other groups.

- Three cases so far have met international courts' threshold

    o   The Cambodian Khmer Rouge's slaughter of minority Cham people and Vietnamese in the 1970s

    o   The 1994 mass killing of Tutsis in Rwanda

    o   The 1995 Srebrenica massacre of Muslim men and boys in Bosnia

The Genocide Convention was the first human rights treaty adopted by the United Nations General Assembly in 1948 after the atrocities committed during the Second World War. India is a party to the Convention.

How to prove the genocide?

- To establish genocide, prosecutors must first show that the victims were part of a distinct national, ethnic, racial or religious group.

- This excludes groups targeted for political beliefs.

- Genocide is harder to show than other violations of international humanitarian law, such as war crimes and crimes against humanity, because it requires evidence of specific intent.

- **Acussation by Ukraine and the U.S.**- They accussed Russia of trying to wipe out the idea of being able to be Ukrainian.

- **Russia's stand**- Russia has called the attack against its smaller neighbour "a special operation" to halt genocide against Russian speakers in Ukraine.

What are the other cases of genocide?

The International Criminal Court (ICC) and The International Court of Justice (ICJ) has jurisdiction over genocide.

- **Past cases**- The International Criminal Tribunal for Rwanda convicted dozens of senior officials, all of them Hutus, of genocide against Tutsis.

- In 2018, a hybrid U.N.-Cambodian tribunal found two leaders of Cambodia's Khmer Rouge guilty of genocide.

- The International Criminal Tribunal for the former Yugoslavia convicted several key figures of genocide for their roles in the Srebrenica killings during the Balkan wars of the 1990s.

- **Present cases**- The ICC previously issued an arrest warrant on charges of genocide against former Sudanese President Omar al-Bashir, but his trial cannot begin until he is in custody in The Hague.

- The ICJ is hearing two cases
    - Claims that Myanmar has committed genocide against Rohingya Muslims.
    - Claims by Ukraine that Russia is using accusations of genocide as a false pretext for invasion.

Quick Facts

The International Residual Mechanism for Criminal Tribunals

- It was established by the Security Council through the adoption of resolution in 2010.
- It consists of two branches corresponding to the two tribunals.
- The International Criminal Tribunal for Rwanda (ICTR) branch is located in Arusha, Tanzania.
- The International Criminal Tribunal for the former Yugoslavia (ICTY) branch is located in Hague.

6.3   China-Solomon Islands Pact

Why in news?

China's government announced that it had signed a landmark security pact with the Solomon Islands, evoking concern from Australia and the U.S.

What is the agreement about?

- The agreement is the first of its kind that China has agreed with any country which is basically an inter-governmental framework agreement on security cooperation.
- Under the agreement, the two sides will conduct cooperation in areas such as maintenance of social order, protection of the safety of people's lives and property, humanitarian assistance and natural disaster response.
- It is unclear how China plans to support the Solomon Islands in maintaining social order and whether Chinese security forces will be deployed.
- But, according to a draft that was leaked last month, the Solomon Islands can request police and military personnel to assist in maintaining social order
- China can also make ship visits and use its ports for logistics.

What is the response of the Indo-Pacific countries?

- **Australia**- Australia is just 2000km south of the Solomon Islands and has seen years of escalating tensions with China.
- Australia was deeply disappointed and concerned about the lack of transparency with which this agreement has been developed, noting its potential to undermine stability in the region.
- **New Zealand**- New Zealand said the country was saddened that the Solomon Islands had made the pact.
- **The U.S. -** The US National Security Council official is due to arrive in the Solomon Islands for high-level talks.
- The US has said it will re-open its embassy in the Solomon Islands, which has been closed since 1993.

Why is this pact a cause of concern?

- **Regional security**- The significance of the pact extends beyond the immediate regional security concerns in the Pacific.
- **Military bases**- For decades, China insisted it would never open a military base abroad, but, in 2017, the PLA put into use its first foreign base in Djibouti.
- The Solomon Islands government said the agreement does not imply China will build a base there.
- **Interference**- Chinese media have mentioned China- Pakistan patrols in Pakistan-occupied Kashmir.
- Reports have suggested the deployment of security forces in Tajikistan near the Wakhan corridor that links Afghanistan

and Xinjiang.

- **Neglection of doctrines**- Key pillar of China's peaceful rise doctrine was popularised by Panchsheel — the "non-interference" in the internal affairs of other countries.

- China's past commitments on military bases and non-interference were intended to show the world Beijing would not seek to become a global supreme leader but its intention does not square with that idea.

9.1 The Kuril Island Dispute

What is the issue?

Japan's Diplomatic Bluebook for 2022 described the Kuril Islands as being under Russia's "illegal occupation".

What are the Kuril Islands/ Northern Territories?

- Japan calls the Kuril Islands as Northern Territories while Russia calls it as the South Kurils.

- These are a set of four islands situated between the Sea of Okhotsk and the Pacific Ocean near the north of Japan's northernmost prefecture, Hokkaido.

- The Soviet Union had seized the islands at the end of World War II and by 1949 had expelled its Japanese residents.

- Japan claims that the disputed islands have been part of it since the early 19th century.

What lies behind the dispute?

- **Japan's claim-** Japan's sovereignty over the islands is confirmed by several treaties like

    o The Shimoda Treaty of 1855

    o The 1875 Treaty for the exchange of Sakhalin for the Kuril Islands (Treaty of St. Petersburg)

    o The Portsmouth Treaty of 1905

- **Russia's claim**- Russia claims its sovereignity by quoting

    o The Yalta Agreement (1945)

    o The Potsdam Declaration (1945)

    o The San Francisco Treaty of 1951

- **Persisting differences**- Under Article 2 of the treaty, Japan had "renounced all right, title and claim to the Kuril Islands."

- However, Japan argues that the San Francisco Treaty cannot be used here as the Soviet Union never signed the peace treaty.

- Japan also refuses to concede that the four disputed islands were in fact part of the Kuril chain.

- The islands that Japan considers its own are named

    o Kunashiri (known in Russian as Kunashir)

    o Etorofu (Iturup)

    o Shikotan

    o Habomai islets

Have there been attempts at resolution?

- **Japan-Soviet Joint Declaration 1956**- The declaration restored diplomatic relations between the two nations.

- In 1956, it was suggested that two of the four islands would be returned to Japan once a peace treaty was signed.

- In 1960, Japan and the United States signed the Treaty of Mutual Cooperation and Security by which the US adopted the role of guarantor of Japanese security and laid the foundations for continued American military presence in the Pacific.

- The influence of the United hampered the signing of a peace treaty between Soviet and Japan.

- **Recognition of dispute**- The Soviet Union later hardened its position and only in 1991 it recognised that the islands were the subject of a territorial dispute.

- **Joint economic development**- Under the then Prime Minister Shinzo Abe's tenure, joint economic development of the disputed islands was explored.
Both countries agreed to do bilateral negotiations and Russia was even willing to give back the Shikotan Island and the Habomai islets to Japan after the conclusion of a peace treaty as per the 1956 declaration.

- But nationalist sentiments on both sides prevented resolution of the dispute.

What is the current issue and what lies ahead?

- Japan stresses that the Kuril Islands must be demilitarised if any serious proposals are to come to fruition.

- Soon after the Russian invasion of Ukraine, Japan made a statement that Russia had occupied the southern part of the Kuril Islands, thereby violating international law.

- Japan has been among the most loyal of Western allies in denouncing Russian aggression and punishing it with sanctions.

- Japan's Diplomatic Bluebook for 2022 describing the Kuril Islands as being under Russia's "illegal occupation" will further damage relations between the two countries.

- Japan might have felt that this is a good opportunity to further isolate Russia and paint it as a "habitual offender" of international law.

- Japan has also said that a constructive relationship with China is best for both parties purposefully not mentioning directly to the Senkaku Islands dispute.

- Japan's policy shift on the Kuril Islands might affect the bilateral relations with Russia while advancing the possibility of its two neighbours, China and Russia, coming together against it.

G.S PAPER III

7. ECONOMY

7.1 RBI's Monetary Policy Review

Why in news?

The Reserve Bank of India recently issued its monetary policy report and kept key lending rates (repo rate and reverse repo) unchanged.

What is the monetary policy?

- The monetary policy is a collection of financial tools and measures available with the RBI to safeguard and promote economic growth.

- Monetary policies basically control the overall supply of money available to commercial banks and, indirectly, to individual users and companies.

- The primary objective of a monetary policy is to maintain price stability while keeping in mind objective of growth.

What is the big picture emerging from the monetary policy review?

- **Accommodative stance**- The committee voted to keep the central bank's stance 'accommodative' so that it remains conducive for easier borrowing between the RBI and other banks.

- **Repo rate and reverse repo**- The repo and reverse repo rate were kept unchanged at 4 % and 3.35 % respectively.

- **Growth forecast**- RBI has slashed the growth forecast to 7.2% for fiscal 2022-23 from 7.8% projected earlier.

- **Retail inflation projection**- RBI has also increased the retail inflation projection from 4.5% to 5.7% in 2022-23.

- *Repo rate is the interest charged by the RBI when commercial banks borrow from them by selling their securities to the central bank.*

- *Reverse repo rate is the interest rate the RBI pays to commercial banks when they store excess cash reserves with the central bank.*

How has inflation moved of late?

- The RBI's objective is to achieve the medium-term target for consumer price index (CPI) inflation of 4% within a band of ±2%, while supporting growth.

- Provisional CPI data released by the NSO showed that headline CPI inflation for February 2022 edged up to 6.1%.

- Retail inflation rose to 5.59% cent in December 2021 from 4.35% in September.

- Reasons for rising inflation

    o The rise in oil and commodity prices

    o supply disruptions due to the war

What policy instruments has the RBI proposed to tackle this situation?

- The RBI's liquidity management is characterised by two-way operations

    o Variable rate reverse repo (VRRR) auctions of varying maturities- to absorb liquidity

    o Variable rate repo (VRR) auctions - to meet temporary liquidity shortages and offset mismatches

- **SDF**- In this review, the RBI has introduced the Standing Deposit Facility (SDF) for absorbing liquidity at an interest rate of 3.75%.

- Both the standing facilities - the MSF and SDF, will be available on all days of the week, throughout the year.
- The FRRR rate, retained at 3.35%, will remain part of the RBI's toolkit, and its operation will be at the discretion of the RBI for purposes specified from time to time.
- The FRRR along with the SDF will impart flexibility to the RBI's liquidity management framework.

What is SDF and how will it operate?

- The idea of an SDF was first mooted in the Urjit Patel Monetary Policy Committee report in 2014.
- In 2018, the amended Section 17 of the RBI Act empowered the Reserve Bank to introduce the SDF.
- The SDF will help the central bank in absorbing liquidity (deposits) from commercial banks without giving government securities in return to the banks (collateral).
- The main purpose of SDF is to reduce the excess liquidity and control inflation.
- The SDF is also a financial stability tool in addition to its role in liquidity management.
- The SDF will replace the fixed rate reverse repo (FRRR) as the floor of the liquidity adjustment facility corridor.
- The SDF rate will be 25 bps below the policy rate (Repo rate), and 50bps lower than the marginal standing facility (MSF).
- It would retain the flexibility to absorb liquidity of longer tenors as and when the need arises, with appropriate pricing.

Is a long-term tightening of money supply indicated?

- The RBI has now decided to focus on inflation over growth as inflation remains above the RBI's upper band of 6%.
- The RBI has said it will engage in a calibrated withdrawal of the accommodative stance over a multi-year time frame in a non-disruptive manner beginning this year.
- The gradual tightening of money supply is expected to push up interest rates.

7.2   The Care Economy

Why in news?

Care work is vital for economies in general and India needs to have a strategy and action plan for improved policies.

What is care economy?

- The care economy refers to the paid and unpaid labor and services that support caregiving in all its forms.
- Care work encompasses direct activities such as feeding a baby or nursing an ill partner, and indirect care activities such as cooking and cleaning.
- It also encompasses a range of sectors such as education, health, and social work involving teachers, nurses, community health workers, social workers, and domestic workers.

As per the ILO, India spends less than 1% of GDP on the care economy.

Why is there an increasing demand for care work?

- **Demographic transition**- Demographic transition in low- and middle-income countries will lead to a higher proportion of the elderly at the expense of the working-age population.
- **Urbanisation**- Urbanisation is changing the traditional joint-family structure to nuclear, single-parent, and transnational households, alienating them from community care bonds.
- **Climate change**- Climate change has caused water scarcity and rural food distress which increases care burden on women and children.

What is the significance of care economy?

- The importance of care work is covered in various international commitments such as the SDGs and the International Labour Organization (ILO)'s Centenary Declaration.
- **Work balance**- ILO's report highlights the importance of maternity, paternity, and special care leave, which help balance women's and men's work and family responsibilities throughout their lives.

- **Employment**- According to the International Trade Union Confederation (2019), an investment of 2 % GDP in care in India would create 11 million jobs, of which 32.5 % would be garnered by women.

- **Health outcomes**- Workplaces that provide time, income security and space for undertaking care services such as breastfeeding, enable positive nutrition and health outcomes.

- **Aging in dignity**- Nurturing elderly care services will deliver the benefits of aging in dignity and independent living as the population grows older.

What is the status of care services?

- **Maternity leave-** Maternity leave is a universal human and labour right.

- India offers 26 weeks of maternity leave, against the ILO's standard mandate of 14 weeks.

- But, this coverage extends to only a tiny proportion of women workers in formal employment in India, where 89% of employed women are in informal employment as given by ILOSTAT.

- Paternity leave is not provided in many countries, including India.

- Globally, the average paternity leave is 9 days, which further aggravates inequity.

- **Child care**- India has a long history of mandating the provision of creches in factories and establishments but there is limited information on its actual implementation.

- Though childcare and anganwadi workers undertake important work, they lack recognition as workers and do not have requisite access to workers' rights and entitlements in India.

- **Domestic workers**- Important developments such as Sexual Harassment of Women at Workplace (Prevention, Prohibition and Redressal) Act, minimum wage schedule in many States, etc. have been extended.

- However, domestic workers face challenges in accessing decent work.

- They became ad hoc care workers during the novel coronavirus pandemic without adequate social or health protection measures.

- According to the Government's 2019 estimates, 26 lakh of the 39 lakh domestic workers in India are female.

What is the need of the hour?

Women's unpaid work is valued at 3.1 % of GDP in India.

- **Action plan**- In consultation with the relevant stakeholders, the government needs to conceptualise a strategy and action plan for improved care policies, care service provisions and decent working conditions for care workers.

- **Public good**- Care work should be viewed as a collective responsibility and public good.

- **Investment**- Investing in a combination of childcare infrastructure and parental leave policies will have a higher maternal employment to population ratios.

- **Gender-inclusive economic growth**- Recognising AWWs, ANMs, ASHAs, domestic help, etc. as formal sector workers would allow their economic contribution to be counted in the GDP.

- ILO's 'Decent Work Agenda' principles emphasis on recognising the value of unpaid care work.

- **Reducing gender-based income inequalities**- India's average female daily wage was 59 % of the male wage in 1993-94 and improved to 72 %in 2018-19.

- **5R framework**- The ILO proposes a 5R framework for decent care work centred around achieving gender equality. It urges on

1. Recognition
2. Reduction of unpaid care work
3. Redistribution of unpaid care work
4. Rewarding care workers and decent work
5. Representation in social dialogue and collective bargaining.

7.3   World Bank Forecast for India

Why in news?

With reference to World Bank forecast, some headline indicators may be shining, but the recovery is still ragged and vulnerable.

What did the World Bank forecast?

- **Growth**- The World Bank reduced its 2022 growth projections for South Asian economies to 6.6% from an earlier estimate of 7.6%.

- India's GDP may now grow by 8% in 2022-23 before dropping further to 7.1% in 2023-24.

- The Bank's chief economist has said that their overall assessment is that GDP growth could actually be 1.3 percentage points lower, or 7.4%.

- **Fiscal deficit**- It further noted that even though countries like India and Maldives have seen their overall fiscal deficit fall in 2021 as compared to 2022, deficits are still higher than pre-pandemic levels.

- **Imports and Exports**- Imports and exports remained the fastest growing sectors in both Q3 and Q4, with higher growth in imports than in export contributing to current account deficits.

- It has emphasised that post-pandemic growth was already uneven and fragile before the Russia-Ukraine conflict triggered fresh challenges.

- The ripple effect of high oil and food prices that prevailed even before the war and were exacerbated since February 24 hitting people's real incomes.

- The unenthusiastic post-COVID recovery in India's household consumption will be further restricted by high inflation and incomplete labour market revival.

- India's recovery varies widely across sectors and manufacturing remains troubled due to weak demand and increasing input costs.

Why do the World Bank's predictions about India seem more optimistic?

- **ADB's prediction**- The Asian Development Bank expects India's GDP for the year to rise 7.5% with retail inflation of around 5.8%.

- **RBI's view**- The RBI reset growth hopes from 7.8% to 7.2%, while raising its inflation projection for the year from 4.5% to 5.7%.

- **Inflation**- Economists expect inflation to trend much higher, even above 7% in the first half of the year, and well over the comfort threshold of 6% over the full year.

What lies ahead?

- Monetary and fiscal policy mandarins need to address inflation more aggressively.

- There is a need to rethink growth engines as well - RCEP needs a revisit, as advised by key ally Japan.

- The farm sector that has so far been resilient through the pandemic's worst phases needs careful handling as the cost of inputs is rising sharply.

7.4   Higher Inflation in Rural India

What is the issue?

The retail inflation rate surged to 6.95% while the rural inflation surged to 7.66% this March.

How have urban and rural inflation trends differed over the past year?

Inflation is the rate at which the value of a currency is falling and, consequently, the general level of prices for goods and services is rising.

- Urban inflation has usually tended to be higher than rural inflation by an average of about 0.8 percentage points through 2021 except August and May 2021.

- The rural inflation surpassed the urban inflation by 0.2 percentage points in January 2022 and reached 6.38% in February even as urban inflation declined to 5.75%.

- In March 2022, the gap between the two has surpassed 1.5% with urban inflation at 6.12% and rural inflation hitting 7.66%.

What are the key drivers of higher inflation in the hinterland?

- **Food inflation-** Food has a higher weight in the Consumer Price Index (CPI) and food inflation was the key driver for the headline inflation rate jump in March.

- The food inflation in rural India reached 8.04% whereas food inflation in urban India was a full percentage point lower.

- The vegetable price trends have been most worrisome that reached 10.6% in March 2022.

- **Fuel inflation**- The inflation in fuel and light and clothing, were the key factors driving up rural prices.

- The fuel prices are higher in rural areas due to connectivity issues and prices of traditional fuel like firewood have also risen simultaneously.

- **Education**- A persistently higher inflation in education costs of about 1 to 1.5 percentage points was witnessed.

- **Labour shift**- This trend could also be explained by the shift of labour between urban and rural areas in the last two years, which has also injected volatility into demand dynamics.

- **Others**- The inflation rates for items such as oils and fats, clothing, footwear, fuel and light and personal care were higher than the urban counterparts.

Which sections are affected the most?

- **Sections affected**- While high inflation affects the poor the most in general, the fact that price rise in food is driving the current surge.

- Also, the food inflation is expected to rise along with both fuel and core inflation (excluding food and energy prices).

- The bottom 20% of the population in urban as well as rural India is facing the worst effects.

- The rural bottom 20% faced the highest inflation at 7.7% in March, while the upper 20% of the income segment in the rural experienced 7.6% inflation.

- **Reasons**- While food price risks have risen due to the Russia-Ukraine conflict, higher prices for farm sector inputs could further drive the food inflation.

- **Future prospects**- The cost of production is likely to increase by around 8-10% and the MSP should at least be

higher by around 12%-15%.

- With a normal monsoon anticipated this year, this would determine whether rural consumer demand will rebound or remain constricted in upcoming months.

7.5   Corporate Defence Mechanisms to prevent Hostile Takeovers

Why in news?

Publicly listed companies are most exposed to threats of a hostile takeover. However, with time, they have come up with varied defence mechanisms to prevent such takeovers.

What is the issue?

- Recently, billionaire Elon Musk now has said that he wants to buy Twitter outright, taking it private to restore its commitment to free speech.
- Elon Musk currently owns about 9% of Twitter shares.
- The company's board has resisted this and deployed the "poison pill" mechanism.

What is a 'Poison Pill' defence?

- A poison pill is officially known as a shareholder rights plan.
- A poison pill is a defense tactic utilized by a target company to prevent or discourage hostile takeover attempts.
- Poison pills allow existing shareholders the right to purchase additional shares at a discount, effectively diluting the ownership interest of a new, hostile party.
- Poison pills often come in two forms
  - **Flip-in strategy**- Allows the shareholders, except for the acquirer, to purchase additional shares at a discount.
  - **Flip-over strategy**- Allows the stockholders to purchase the shares of the acquiring company at a deeply discounted price if the hostile takeover attempt is successful
- The mechanism protects minority shareholders and avoids the change of control of company management.
- Poison pills also often open the door to further negotiations that can force a bidder to sweeten the deal.
- If a higher price makes sense to the board, a poison pill can simply be cast aside, clearing the way for a sale to complete.
- **Twitter's mechanism**- Twitter's plan works by imposing a significant penalty on any investor that builds up a stake of at least 15% in the Twitter without the board's approval.
- If Musk were to hit the 15% threshold, the Twitter board can grant shareholders the right to buy one-thousandth of a share of preferred stock for each common share they own, at a price of 210 dollars.
- That option makes it virtually impossible for anyone to buy Twitter.

What are the other corporate defence mechanisms to prevent hostile takeovers?

- **Greenmail Defence-** In this, the target company pays a premium, known as greenmail, to purchase its own shares back at inflated prices from a corporate raider.
- After accepting the greenmail payment, the raider generally agrees to discontinue the takeover and not buy any more shares for a specific time.
- **Crown jewel defence-** Crown jewels are the most profitable or valuable corporate units or assets that belong to the company.
- The Crown Jewel Defense strategy is when the target company of a hostile takeover sells its most valuable assets to reduce its attractiveness to the hostile bidder.

- **Pac-man defence**- It prevents a hostile takeover by initiating a reverse takeover.
- In a Pac-Man defense, the target firm tries to acquire the company that has made a hostile takeover attempt.
- The target company could make use of its 'war chest' or securing finances from outside for the reverse takeover bid.
- **White Knight defence-** A white knight is a hostile takeover defense whereby a 'friendly' company acquires a corporation at fair consideration when it is on the verge of being taken over by an 'unfriendly' acquirer.
- The unfriendly bidder is generally known as the "black knight."

7.6 States vs Centre on Fuel Taxes

Why in news?

The Centre and the states are at loggerheads over taxes and duties on petrol and diesel.

What is the issue?

- As fuel prices soared in November 2021, the Centre, for the first time in over three years, cut central excise duties on petrol by Rs 5 per litre and diesel by Rs 10 per litre.
- 21 states then cut VAT in the range of Rs 1.80-10 per litre for petrol and Rs 2-7 per litre for diesel.
- As per the RBI's State Finances report for 2021-22, the revenue loss to states due to this is estimated at 0.08% of GDP.
- The global oil prices have been at elevated levels since the time Russia invaded Ukraine due to which global oil supply halted.
- So, the relief measures that were provided were outweighed by a series of 14 price hikes in 16 days.
- The Centre feels that the states are not reducing VAT in line with the Centre's cut in excise duty.
- But the states have expressed concerns over their fiscal cushion, especially with the GST compensation regime due to end in June.

Value-added tax (VAT) is a consumption tax on goods and services that is levied at each stage of the supply chain where value is added, from initial production to the point of sale.

How significant is fuel taxes?

- Excise duty and VAT on fuel constitute an important source of revenue for both the Centre and the states.
- Excise duty on fuel makes up about 18.4% of the Centre's gross tax revenues.
- Petroleum taxes with states are shared out of basic excise duty.
- The Centre also levies additional excise duty and cesses on petroleum products.
- Of the revenue receipts of states, central tax transfers comprise 25-29%, and own tax revenues 45-50%.
- Central and state taxes currently account for about 43% and 37% of the retail price of petrol and diesel respectively in Delhi.

How fuel is taxed?

The tax on fuel does not fall under the Goods and Services Tax (GST).

- Taxes on petrol and diesel are split into multiple components at the state and central level.
- States apply an ad valorem VAT or sales tax on the base price, freight charges, excise duty and dealer commission on petrol and diesel.
- While state VAT collections have risen along with higher fuel prices and previous hikes in excise duties, the states' share of excise duties on fuel was reduced in the FY2022 Budget.
- **Changes introduced**
  - The Basic Excise Duty (BED) on petrol and diesel was cut by Rs 1.6 and Rs 3 per litre respectively
  - The special additional excise duty was cut on both by Rs 1 per litre
  - An Agriculture Infrastructure and Development Cess (AIDC) of Rs 2.5 per litre on petrol and Rs 4 on diesel was introduced

- It reduced the states' share as collections from cesses are not part of the shareable pool.

The Latin phrase ad valorem means "according to value." All ad valorem taxes are based on the assessed value of the item being taxed.

What is the reason for variation in fuel prices?

- **External factors-** Since, the retail prices of petrol and diesel in India are linked to the international prices of crude oil, global crude oil prices plays a key role.

- **Internal factors-** Taxes and dealers' commissions also impact the price of domestic petrol.

- **Inter-regional variation-** This difference in fuel retail prices is due to the different tax rates levied by the respective state governments on the same products.

- Freight charges depend upon the distance between the refining plant and the petrol pump; the farther is the petrol pump from the oil refining unit, the more is the freight charge.

- Because of this, the prices may vary from region to region.

8. INFRASTRUCTURE

8.1   India's Power Crisis

What is the issue?

Despite high coal production, thermal power plants in India are suffering from shortages.

Is India heading towards a power crisis?

Coal-based power generation accounts for about 53% of India's total power capacity as on March 2022.

- Several States across the country are expected to face coal shortages that might lead to power shortages in the coming weeks.

- India had faced a similar energy crisis in October 2021, but the crisis this around may be worse with peak power demand expected to rise higher due to increasing temperatures.

- Reasons for this crisis

    o   Depleting coal supplies at thermal power plants

    o   High global thermal coal prices (the prices of coal are over 350% higher year on year)

    o   Below normal imports

    o   Interruption in coal supply mainly due to heavy rains

    o   High demand for coal (Demand for coal has increased by 9% over the previous year)

    o   Temperature rise

How critical is the coal shortage?

- The situation at thermal power plants is deteriorating consistently and had reached critical levels.

- As per the National Power Portal, both imported coal-based (ICB) power plants and domestic coal-based power plants were facing critical stocks.

- As per the Central Electricity Authority report, of the total 173 thermal power plants in the country, 100 thermal power plants' coal stock situations are critical.

- The total stocks available were 23.17 million tonnes (MT) against a daily requirement of 2.76 MT.

- The stocks at this level will last for less than nine days.

- States like Gujarat and Maharashtra already declaring load shedding (the deliberate shutdown of electric power in a part or parts of a power-distribution system, generally to prevent the failure of the entire system when the demand strains the capacity).

What steps has the government taken to tackle this problem?

- **Revised coal stocking norms-** The government has issued revised coal stocking norms, which mandate the power plants to maintain sufficient stocks at all times

- **Constitution of Groups**- An Inter-Ministerial Sub Group with senior officials from Ministries of Power, Coal, Railways, CEA, CIL and SCCL meet regularly to take various operational decisions to enhance supply of coal to thermal power plants.

- **Imports**- Power Ministry has advised power plants to import about 36 MT coal for blending during 2022-23 with a view to build sufficient coal stock at power plants.

- **Monitoring**- The Ministry has a Core Management Team (CMT) to ensure close monitoring of coal stocks at thermal power plants.

- **Role of Coal India**- Coal India, the state-owned miner claims that it has ramped up supplies to thermal power plants by nearly 12% annually.

Why is this crisis recurring every year?

- **Lack of coordination**- The lack of coordination between various ministries involved in the process such as Power Ministry, Coal Ministry and Railways is the foremost reason.

- **Blaming game**- The Coal Ministry blames the Indian Railways for non-availability of adequate rakes.

- Similarly, the Railways has pointed out the mismanagement in loading and unloading of rakes by the Coal India.

- **Poor planning-** Despite high coal production and despatch miners, the supply at power plants has still not gone above 15 days in the last six months which implies poor planning.

While Karnataka is mixing renewable energy and non-renewable energy sources to wean dependence on thermal power plants, the long-term solution may be to start switching away from coal exploring sustainable solutions.

8.2   Smart Cities Mission

Why in news?

The government has announced that 80 of the 100 planned Integrated Command and Control Centres have been set up, with the rest to be completed by August 15.

What is the Smart Cities Mission?

India is urbanizing exponentially with the expected influx of over 400 million people over next 35 years.

- Smart city is defined as a one that makes optimal use of all the interconnected information available to better understand and control its operations and optimise the use of limited resources.

- Smart Cities Mission was launched in 2015 under the Ministry of Housing and Urban Affairs.

- The Mission is operated as a Centrally Sponsored Scheme.

- **Objective**- To promote cities that provide core infrastructure, clean and sustainable environment and give a decent quality of life to their citizens through the application of smart solutions.

- 100 cities have been selected to be developed as Smart Cities through a two-stage competition.

- **Area based development**- It includes city improvement (retrofitting), city renewal (redevelopment) and city extension (greenfield development).

- **Key focus areas**
  - ○ Construction of walkways, pedestrian crossings, cycling tracks
  - ○ Efficient waste-management systems
  - ○ Integrated traffic management and assessment

- **Assessment of indices**- It also assesses various indices to track urban development such as the Ease of Living Index, Municipal Performance Index, City GDP framework, Climate Smart Cities assessment framework, etc.

- **Fundamental principles of Smart Cities**
  - ▪ Community at the Core
  - ▪ More from less
  - ▪ Co-operative and Competitive Federalism
  - ▪ Integration, Innovation , Sustainability

- ▪ Technology as a means
- ▪ Convergence

What is an Integrated Command and Control Centre (ICCC)?

The ICCCs are envisaged to be the brain for city operation as it will act as a decision support system for city administration to respond to the real time events by consuming data feeds from different data sources and by processing information out of the data sets.

- The Smart Cities Mission includes setting up ICCCs for each smart city.

- **Monitoring**- These ICCCs are designed to enable authorities to monitor the status of various amenities (water, power supply, traffic movement, city connectivity and internet infrastructure, etc.) in real time.

- **Operations management**- The ICCC acts of a smart city acts as a "nerve centre" for operations management.

- **Data processing**- The ICCC is the nodal point of availability of all online data and information relating to smart services included in a smart city.

- **War rooms**- During the pandemic, they also served as war-rooms for Covid-19 management.

- **Link with CCTNS**- The ICCCs are linked to the CCTNS (Crime and Criminal Tracking Networks and Systems) network under the Ministry of Home Affairs.

What is the current status of the Smarts Cities Mission?

- The project had an initial deadline of 2021 for the first lot of 20 smart cities out of the 100 selected.

- The cities were selected over a period of two years between 2016 and 2018, each with a deadline of completion within five years from the time of their selection.

- On the recommendation of NITI Aayog, the timeline was extended last year until 2023 due to delays caused by the pandemic.

- According to Ministry data, the SCM has so far covered over 140 public-private partnerships, 340 smart roads, 78 vibrant public places, 118 smart water projects and over 63 solar projects.

- The Ministry noted that almost 100% of these projects have been work-ordered.

- Currently, the Centre is preparing a 60-point action plan.

- The Ministry of Housing and Urban Affairs has begun work to finalise its recommendation for providing ICCCs as a service to states and smaller cities.

- The Ministry is also aiming to finalise an ICCC model and implement a pilot project across 6 states — Uttar Pradesh, Maharashtra, Karnataka, Madhya Pradesh, Rajasthan and Tamil Nadu.

9. AGRICULTURE

9.2 India's Wheat Exports

Why in news?

Egypt which is one of the largest importers of wheat, had agreed to source the cereal from India.

What is the status of India's wheat exports?

Wheat is the second-most-produced cereal grain behind maize and India is the second largest producer next to China.

- Russia is the market leader for wheat exports (almost 15% share) and Ukraine is also a major producer.

- India expects to produce 112 million tonnes of wheat in the current season.

- The government requires 24-26 million tonnes a year for its food security programmes.

- With surplus wheat production, opportunities have opened up and this fiscal and exports in FY23 is set to beat the target of 10 million tonnes.

- Apart from Egypt and Jordan, countries in East Africa are also likely to source the food grain from India.

- **Reasons for high scope for India**
    - Competitive price
    - Acceptable quality
    - Availability of surplus wheat
    - Geopolitical reasons

What is being done to facilitate the exports?

The APEDA was established under the Agricultural and Processed Food Products Export Development Authority Act, 1985 under the Ministry of Commerce and Industry.

- The Agricultural and Processed Food Products Export Development Authority (APEDA) and Ministry of Agriculture are sending delegations to several countries to resolve market issues.

- The Commerce Ministry has put in place an internal mechanism to facilitate and get the paperwork ready for the related sanitary and phytosanitary applications to help facilitate shipments.

- The railways is providing rakes on priority to move the wheat.

- Testing laboratories are all geared up to complete the Pest Risk Analysis for countries to provide market access.

Pest Risk Analysis is the process of evaluating biological or scientific and economic evidence to determine whether an organism is a pest, whether it should be regulated, and the strength of any phytosanitary measures to be taken against it.

What is the future outlook?

- The government is optimistic about the long-term export opportunities not only for wheat, but for all cereals including millets and super foods.

- If Indian wheat prices remain competitive and geopolitical and weather conditions stay favourable, the scope is good for wheat exports.

- India has already won the confidence of markets such as Sri Lanka and Bangladesh but needs to establish itself in the new markets too.

9.3 Procurement of Parboiled Rice

What is the issue?

The Centre has said it will stop the purchase of excess parboiled rice, of which Telangana is a major producer.

What is parboiled rice?

- Parboiled rice refers to rice that has been partially boiled at the paddy stage, before milling.
- However, there is no specific definition of parboiled rice of the Food Corporation of India or the Food Ministry.
- **Suitable varieties**- Generally, all varieties can be processed into parboiled rice, but it is ideal to use long slender varieties to prevent breakage during milling.
- However, aromatic varieties should not be parboiled because the process can make it can lose its aroma.

What are the different processes used for parboiling rice?

- All processes generally involve three stages
    1. Soaking
    2. Steaming
    3. Drying
- After passing through these stages, the paddy goes for milling.
- **Common method**- The paddy is soaked in hot water 8 hours.
- The water is then drained and the paddy steamed for 20 minutes and it is sun-dried.
- **CFTRI method**- The Central Food Technological Research Institute (CFTRI), Mysuru, uses a method in which the paddy is soaked in hot water for 3 hours.
- The water is then drained and the paddy steamed for 20 minutes and it is dried in the shade.
- **PPRC method**- The Paddy Processing Research Centre (PPRC), Thanjavur follows a method known as the chromate soaking process.
- It uses chromate, a family of salt in which the anion contains both chromium and oxygen, which removes the odour from the wet rice.

Milling is a crucial step in post-production of rice that aims to remove the husk and the bran layers, and produce an edible, white rice kernel free of impurities.

What are the pros and cons of parboiling?

- **Pros of parboiling**
    o Parboiling makes rice tougher.
    o It reduces the chances of the rice kernel breaking during milling.
    o It increases the nutrient value of the rice.
    o Parboiled rice has a higher resistance to insects and fungi.
- **Cons of parboiling**
    o The rice becomes darker and may smell unpleasant due to prolonged soaking.
    o Setting up a parboiling rice milling unit requires a higher investment than a raw rice milling unit.

What is the new tussle now?

- The Telangana government has been demanding that the Centre procure paddy from the State at the minimum support price (MSP).
- According to the Food Ministry, the total stock of parboiled rice is 40.58 lakh metric tonnes (LMT) as on April 1, 2022.
- Out of this, the highest stock is in Telangana, followed by Tamil Nadu and Kerala.
- According to the Ministry, the demand for parboiled rice has come down in recent years.
- The Ministry said that the current stock of parboiled rice was sufficient to meet the demand for the next two years.
- So the Centre maintains that it can only procure raw rice and very less parboiled rice as per demand.
- Telangana, which is a decentralised procurement state (DCP) is demanding a uniform paddy procurement policy.

10.   ENVIRONMENT

10.1   Proposed ESZ in Neyyar and Peppara Wildlife Sanctuaries

Why in news?

The MoEFCC has issued a draft notification to declare an Eco-Sensitive Zone (ESZ) that will encompass large swathes of areas around the Neyyar and Peppara wildlife sanctuaries in Thiruvananthapuram.

What is the significance about Neyyar and Peppara wildlife sanctuaries?

- The Neyyar and Peppara wildlife sanctuaries form a part of the core area of the Agasthyamalai Biosphere Reserve in the Western Ghats.

- There are around 1000 species of flowering plants that belong to 132 families in the protected areas.

- They are known to sustain diverse fauna including 43 mammal species, 233 bird species, 46 reptile species, 13 amphibian species, 27 marine species and a wide variety of butterflies and odonates.

- The endangered Myristica swamps are also endemic to the protected areas.

Myristica swamps are a type of freshwater swamp forest that have adapted to inundation by way of stilt roots and knee roots. They are found in the Uttara Kannada district of Karnataka State, southern parts of Kerala and in Maharashtra's Sindhudurga district.

What is the notification about?

- The draft notification seeks to conserve and protect an area of 70.906 sq km.

- **Activities promoted in the ESZ-** The eco-friendly activities that will be encouraged include

    o   Rain water harvesting

    o   Organic farming

    o   Cottage industries

    o   Use of renewable energy and fuels

    o   Agro-forestry

    o   Eco-friendly transport

    o   Restoration of degraded forests

    o   Horticulture and herbal plantation

    o   Propagation of environmental awareness

- **Activities prohibited in the ESZ-** The draft notification chiefly proposes a blanket prohibition on 15 activities including

    o   All new and existing commercial mining, stone quarrying and crushing units

    o   New industries and expansion of existing polluting industries

    o   Setting up for major hydroelectric projects, solid waste disposal sites, large-scale commercial livestock and poultry farms, saw mills, other wood- based industrial units and brick kilns

    o   Use, production and storage of hazardous and explosives items, discharge of untreated effluents, s, commercial use of firewood, dumping of solid, plastic and chemical wastes in rivers and land areas, and encroachment of riverbanks

- **Activities strictly regulated in the ESZ**

    o   No constructions of any kind will be permitted within 1 km of the protected areas

    o   No trees can be felled without prior permission of a competent authority in the State government

    o   Regulation of

        ▪   collection of non-timber forest produce

- erection of electrical and communication towers, cable-laying
- infrastructure development including widening of existing roads and construction of new ones
- tourism-related activities
- night-time vehicular movement
- discharge of treated waste water and effluents
- commercial extraction of surface and ground water
- solid waste management

  o The local communities will be permitted to continue ongoing agriculture, horticulture, dairy farming and aquaculture under applicable laws.

What are the other provisions of the notification?

- **Zonal Master Plan**- The draft notification mandates the preparation of a Zonal Master Plan in consultation with various departments.
- A master plan for tourism will form a component of the Zonal Master Plan.
- **Monitoring committee**- A monitoring committee chaired by the District Collector will have to be constituted to monitor the ESZ.
- It will comprise the district panchayat president, a representative of a NGO involved in natural conservation, an expert in ecology and environment and a representative of the Kerala State Biodiversity Board.

What are the apprehensions of the local populace?

- **Affects infra development**- The restrictions are likely to hinder the ongoing infrastructure development projects including the Hill Highway project that is aimed at improving road connectivity in the high ranges.
- **Migration problems**- The residents fear such hindrances could stagnate the quality of life and eventually lead to a phased migration from the region.
- **Affects title deeds**- Numerous families who have been awaiting the disbursal of title deeds for occupied lands feared the notification could affect their hopes.
- **Impact on agriculture**- Farmers in Amboori where rubber cultivation accounts for nearly 90% of agricultural activities feels the regulations might create difficulties in chopping down trees for replanting.

What lies ahead?

- Human habitations and agricultural lands around the Thattekad bird sanctuary in Ernakulam were recently excluded from the proposed ESZ on the basis of the State government's proposal that followed widespread protests.
- The MoEFCC has provided 60 days to raise objections or suggestions on the proposals.
- The State government will be provided an opportunity to submit a revised proposal at a later stage.

10.2   Adapting Indian Agriculture

Why in news?

The Working Group III contribution to the Sixth Assessment Report, Climate Change 2022: Mitigation of Climate Change was released recently.

What are the IPCC reports?

- The objective of the IPCC is to provide governments at all levels with scientific information that they can use to develop climate policies.
- It was created in 1988 by the **World Meteorological Organization (WMO)** and the **United Nations Environment Programme (UNEP).**
- The Assessment Reports, the first of which had come out in 1990, are the most comprehensive evaluations of the state of the earth's climate.
- The first part report centred on the scientific basis of climate change.
- The second tranche of reports for the first time, made regional and sectoral level assessment of climate change impacts on ecosystems, biodiversity, and human communities.

What is the WG III report about?

- The WG III report places climate change firmly in the context of sustainable development, assessing wider risks and co-benefits.

- The report documents and explains recent developments in emission and mitigation efforts.

- It considers emission pathways and corresponding mitigation efforts over the 21st century.

- For the first time, the WG III AR6 report includes a chapter on social aspects of mitigation that covers factors shaping consumption patterns and opportunities to reduce emissions on the demand.

- The report also includes for the first time a chapter dedicated to innovation and technology.

How vulnerable is India's agriculture towards climate change?

- According to the Global Climate Risk Index 2021, India is among the top ten countries most affected by climate change.

- Several studies suggest that climate change already has evident effects on crop production, with associated consequences for local food supply disruptions and negative impacts on rural incomes and poverty.

- A Report by the Parliamentary Standing Committee on Agriculture, 2017 estimated that climate change related losses are about 4-9 % of the agricultural economy each year, which is an overall GDP loss of 1.5%.

- As nearly 86%of Indian agriculture is small-holder agriculture and a significant part of it is subsistence agriculture, adaptation is an issue of survival.

What activities should be prioritised?

- Agriculture being a State subject, planning and policy implementation falls within the purview of respective States and local institutions, with the Central government providing the broad policy framework and guidelines.

- It would be important to prioritise activities having both adaptation and mitigation benefits.

- As fragmented and small land size reduces farmers' adaptive capacity to climate change, it is essential to design policies and strategies especially focussing on small and marginal landholders.

- The development of State Action Plan on Climate Change (SAPCC) needs to be dynamic by revising it in lines with the post 2020 NDC goals and the SDGs.

- A pro-active adaptation approach in agriculture is needed, streamlining efforts and resources on climate and disaster resilience for preparedness in coping with disasters.

How should India equip itself to tackle natural disasters?

India is a signatory to the Sendai Framework for Disaster Risk Reduction 2015-2030 (Sendai Framework).

- India has well developed institutional arrangements for disaster management at the national, State and district level.

- Adaptation measures pertaining to impact of natural disasters in agriculture and allied sectors need to be embedded in the disaster management plans prepared at the district level.

- It is important to provide the supporting infrastructure including water supply, power and physical connectivity on which agricultural value chain depends.

- Areas affected by floods, hailstorms and drought need to be rebuilt better based on disaster management assessment.

- Mainstreaming of climate considerations across the development programmes as well as in the process of spatial planning are required.

- Adaptation to climate change in the sector requires not only large and continued financial investment, but also in terms of knowledge and human capacity.

11. SCIENCE & TECHNOLOGY

11.1 The Complete Human Genome

Why in news?

Scientists published the first complete human genome, offering new promise in the search for clues regarding disease-causing mutations and genetic variation.

What is human genome?

- A genome is defined as an organism's complete set of Deoxyribose Nucleic Acid (DNA), including all of its genes.

- It consists of all of the approximately three billion base pairs of deoxyribonucleic acid (DNA) that make up the entire set of chromosomes of the humans.

- **Non-uniformity**- Human genome is mostly the same in all people, but a very small part of the DNA does vary between one individual and another.

- Excepting identical (monozygous) twins, no two humans on Earth share exactly the same genomic sequence.

- **Non-static**- It is susceptible to certain changes.

How did the mapping of human genome evolve?

- **Human Genome Project-** The HGP was the international, collaborative research program for complete mapping and understanding of all the genes of human beings.

- It began in 1990 and was completed in 2003.

- It contained information from a region of the human genome known as the euchromatin where the chromosome is rich in genes and the DNA encodes for protein.

- The 8% was left out and was called heterochromatin and it does not produce protein.

- Heterochromatin was given lower priority because it was thought to be "junk DNA" while euchromatin contained more genes that were simpler to sequence with the tools available at the time.

- Now, a large team has accounted for that 8%, completing the picture of the human genome for the first time.

- The fully sequenced genome is the result of the efforts of a global collaboration called the Telomere-2-Telomere (T2T) project.

What is the significance of this mapping?

- Knowledge of the human genome provides an understanding of
    - the origin of the human species
    - the relationships between subpopulations of humans
    - the health tendencies or disease risks of individual humans

- The new reference genome, called T2T-CHM13, includes highly repetitive DNA sequences found in and around the telomeres (structures at the ends of chromosomes) and the centromeres (at the middle section of each chromosome).

- The new sequence is known to play important roles in evolution and disease.

- A complete human genome makes it easier to study genetic variation between individuals or between populations.

- Constructing a complete human genome can serve as a reference to understand which variations might be responsible for disease.

- The new T2T reference genome will complement the standard human reference genome, known as Genome Reference Consortium build 38 (GRCh38), which originated from the Human Genome Project.

What were the earlier projects regarding genome mapping?

- **Genome India Project**- It was spearheaded by Centre for Brain Research.

- It aims to build a grid of Indian reference genome to understand the type and nature of diseases and traits that comprise the diverse Indian population.

- **International HapMap Project**- It is a partnership of scientists and funding agencies from Canada, China, Japan, Nigeria, the United Kingdom and the United States.

- The goal is to determine the common patterns of DNA sequence variation in the human genome and to make this information freely available in the public domain.

- **1000 Genomes Project**- It began in 2008 and created a catalogue of common human genetic variation, using openly consented samples from people who declared themselves to be healthy.

- The International Genome Sample Resource (IGSR) maintains and shares the human genetic variation resources built by the 1000 Genomes Project.

11.2   Electric Vehicle Fires

What is the issue?

The recent incidents of fire involving electric two-wheelers (ETWs) have raised concerns over quality and safety of these vehicles.

What are EVs?

- EVs are vehicles that are either partially or fully powered on electric power.

- While some EVs used lead acid or nickel metal hydride batteries, the standard for modern battery electric vehicles is now considered to be lithium ion batteries.

What are lithium ion batteries, and how do they work?

- A Li-ion battery consists of an anode, cathode, separator, electrolyte, and two current collectors.

- The anode and cathode is where the lithium is stored, while the electrolyte carries positively charged lithium ions from the anode to the cathode and vice versa through the separator.

- The movement of the lithium ions creates free electrons in the anode, which creates a charge at the positive current collector.

- **Features**
    - Light weight
    - High energy density
    - Ability to recharge
    - Longer lifespan compared to a lead acid battery
    - More efficiency
    - Greater driving range

- Because of the high energy density, a battery management system (BMS) is applied to a Li-ion battery to make sure they operate safely.

- A BMS constantly measure the voltage, current flowing, charging and discharging rate, battery life cycle, and efficiency.

What are the pros and cons of EVs?

Pros of EV

- **Low running costs**- Electric vehicles have low running costs as they have less moving parts for maintaining.

- **Energy efficient-** EVs convert over 77% of the electrical energy from the grid to power at the wheels.

- **Environmentally friendly**- They also very environmentally friendly as they use little or no fossil fuels.

- **Reduced energy dependence**- Electricity is a domestic energy source.

- **Performance benefits**- Electric motors provide quiet, smooth operation and stronger acceleration and require less maintenance than internal combustion engines.

Cons of EV

- **Driving range-** EVs have a shorter driving range than most conventional vehicles.

- **Recharge time-** Fully recharging the battery pack can take 3 to 12 hours. Even a "fast charge" to 80% capacity can take 30 min.

- **Thermal runaway-** Even if few batteries malfunction and cause a short circuit, it can kickstart a chain

reaction resulting in a fire, given that a battery pack is tightly packed with a number of Li-ion cells.

Why did the EVs' batteries catch fire?

- The actual reasons behind the Ola and Okinawa EVs catching fire are currently unknown as the companies have said they are investigating the matter.

- Okinawa said that from its preliminary observations, the fire in its scooter was a result of short circuiting due to negligence in charging the vehicle.

- A number of reasons could result in these batteries becoming a fire risk, such as

    o Manufacturing defects (use of cheap knocked down kits and batteries)

    o External damage

    o Faults in the deployment in the BMS

    o Extremely high temperatures

    o Thermal runway

    o Prior accidents of a vehicle which may have damaged the battery pack

    o Overcharging

What is the need of the hour?

- **Addressing the lacunae**- The government too has been lax and has allowed ETWs with speeds of less than 25 km/hour to be sold without any serious certification.

- **Proper investigation**- The Ministry of Road Transport and Highways has ordered a probe into the vehicles catching fire abruptly.

- It has reached out to the Centre for Fire Explosive and Environment Safety (CFEES) to carry out investigations.

- **Alternative options**- Debates are mounting on whether battery swapping would be a better solution for electric scooter in India.

- When the user's vehicle battery is discharged fully or about to be discharged, manufacturers or a third-party provider just swaps it out with a fully-charged battery at a battery-swapping station.

- One of the key elements of EV, charging is in complete control of the swapping company and the customer never has to charge the battery.

- The other advantage of swapping is that there is always an extra pool of batteries giving ample time to charge the batteries.

- The government needs to act swiftly to frame stringent regulations and standards.

11.3   Geotagging of Payment System Touchpoints

Why in news?

Recently, the Reserve Bank of India issued a framework for geo-tagging of payment system touchpoints.

What is Geo-tagging of payment system touchpoints?

- Geo-tagging refers to the process of adding geographical identification to a media based on the location of smartphones or GPS-enabled electronic devices.

- Geo-tags can be applied to media such as photos, videos, websites, text messages and QR codes.

- Geo-tagging is said to capture the geographical coordinates (latitude and longitude) of payment touch points deployed by merchants to receive payments from their customers.

How does it work?

- The central bank has two categories of physical infrastructure through which digital payment transactions are carried out

    1. Banking infrastructure

    2. Payment acceptance infrastructure

- **Banking infrastructure**- It covers payment transactions made through bank branches, counters, ATMs and Cash Recycle Machines (CRMs), among others.

- **Payment acceptance infrastructure**- It includes PoS terminals, QR codes deployed by banks / non-bank Payment System Operators (PSOs), etc.

- The RBI framework mandates that banks and non-bank PSOs should maintain a registry with accurate location of all payment touchpoints across the country.

- The registry must contain merchant-related information such as the merchant name, ID, type, category, contact details as well as location details such as address and state, district.

- They can report information on payment touch points to the RBI through the Centralised Information Management System (CIMS).

- Any updates and changes about the existing payment touch points shall be reported within 7 calendar days from the date of updation.

Why is it important?

According to the National Payments Corporation of India (NPCI), UPI-led digital transactions crossed the highest-ever value of Rs 81-lakh crore in FY22, however, a large number of people, especially in the rural parts continue to use cash as the primary mode of transaction.

- **Deepen digital payments**- RBI's geo-tagging framework focusses on deepening digital payments and providing inclusive access to all citizens of the country.

- **Monitoring**- It will enable proper monitoring of availability of payment acceptance infrastructure like Points of Sale (PoS) terminals, QR codes, etc.

- It further monitors infrastructure density across different locations.

- **Distribution of payment infrastructure**- Such monitoring will support policy intervention to optimize the distribution of payment infrastructure.

- It identifies the scope for deploying additional payment touch points, and facilitates focused digital literacy programmes.

- **Devising intervention strategies**- Capturing the accurate location of payment touch points is essential to upscaling and chalking out intervention strategies.

- **Digital penetration**- It provides insights on regional penetration of digital payments.

11.4   Cryptos and CBDC

Why in news?

The central bank must note that a Central Bank Digital Currency (CBDC) can only be a fiat currency and not a crypto.

What are crypto assets?

- A crypto asset is a digital asset; but not all digital assets are crypto assets.

- The distinguish features of crypto assets:
  - uses cryptography
  - depends on distributed ledger technology
  - no need for a third party such as a bank to issue crypto assets
  - have three primary uses: as an investment, a medium of exchange, and to access goods and services.

- Crypto assets are commonly known as cryptocurrencies such as Litecoin, Ripple, Bitcoin, and Ethereum.

What is CBDC?

- A CBDC is a legal tender issued by a bank in a digital format.

- Also known as digital base money or digital fiat currencies, a CBDC is no different from hard cash, apart from the fact that they are in a digital or virtual form.

- It is not meant to replace hard cash but coexist as an additional form of payment method.

What were the different stands taken on cryptos?

- **Finance minister**- In the Budget session, it was said that Cryptocurrency will be discouraged via taxation and capital gains provisions.

- **RBI Governor**- The Governor of the RBI highlighted that private cryptocurrencies are a big threat to our financial and macroeconomic stability.

- Also he said that these cryptocurrencies have no underlying asset.
- **Deputy Governor of RBI**- A Deputy Governor of the RBI called cryptos worse than a Ponzi scheme and argued against legitimizing them.
- **Supreme Court**- The Supreme Court of India has asked the Government whether or not cryptos are legal.

How do cryptos become acceptable as tokens for exchange?

- A currency is a token used in market transactions.
- Historically, commodities (copper coins) have been used as tokens since they themselves are valuable.
- But paper currency is useless till the government declares it to be a fiat currency as it derives its value from state backing.
- Cryptos are a string of numbers in a computer programme and there is no state backing.
- Cryptos acquire value and can be transacted via the net which enables them to function as money.

Is it possible to ban cryptos?

- The total valuation of cryptos recently was upward of 2 trillion dollars which is more than the value of gold held globally.
- Cryptos which operate via the net can be banned only if all nations come together.
- Even then, tax havens may allow cryptos to function, defying the global agreement.

What are the concerns of CBDC?

- Blockchain enables decentralisation where everyone on the crypto platform has a say but, central banks want a fiat currency to be exclusively issued and controlled by them.
- Theoretically everyone can 'mine' and create crypto unlike the centrally controlled CBDC.
- Solving the 'double spending' problem and being a crypto (not just a digital version of currency) seems impossible.
- A centralised CBDC will require the RBI to validate each transaction.
- CBDCs at present cannot be a substitute for cryptos that will soon begin to be used as money. This will impact the functioning of central banks and commercial banks.
- *Double-spending is the risk that a cryptocurrency can be used twice or more. It occurs when someone alters a blockchain network and inserts a special one that allows them to reacquire a cryptocurrency.*

12.   INTERNAL SECURITY

12.1   Assam-Meghalaya Border Dispute Agreement

Why in news?

Assam and Meghalaya have partially resolved a 50-year-old border dispute in six of the 12 sectors.

How did the boundary dispute start?

- Meghalaya, carved out of Assam as an autonomous State in 1970, became a full-fledged State in 1972.
- It was based on the Assam Reorganisation (Meghalaya) Act of 1969
- The Meghalaya government refused to accept it because the Act followed the recommendations of a 1951 committee that defined the boundary of Meghalaya.
- Based on the panel's recommendations, areas of the present-day East Jaintia Hills, Ri-Bhoi and West Khasi Hills districts of Meghalaya were transferred to the districts of Assam.
- After claims and counter-claims, the dispute was narrowed down to 12 sectors on the basis of an official claim by Meghalaya in 2011.

How did the two governments go about handling the issue?

- In 1983 a joint official committee was formed to address the issue.
- The committee suggested that the Survey of India should re-delineate the boundary with the cooperation of both the States but there was no follow-up action.
- In 1985 an independent panel headed by Justice Y.V. Chandrachud was constituted.
- Meghalaya rejected the report as it was allegedly pro-Assam.
- In 1991 both the governments agreed to jointly demarcate the border with the help of the Survey of India.
- About 100 km of the border was demarcated by the end of 1991, but Meghalaya found the exercise unconstitutional and refused to cooperate.
- In 2011, the Meghalaya Assembly passed a resolution for central intervention and the constitution of a boundary commission.
- The Assam Assembly retaliated with a resolution to oppose the move.
- The Centre made the two governments appoint nodal officers to discuss the boundary dispute.
- In 2019, the Meghalaya government petitioned the Supreme Court to direct the Centre to settle the dispute but the petition was dismissed.

What about the current agreement?

- Both States formed three regional committees, one each for a district affected by the disputed sectors.
- The main objective is to end the boundary dispute between the two states in six of the 12 areas along their 885-km boundary.
- The committees, each headed by a cabinet minister, were given "five principles" for approaching the issue which includes
  - historical facts of a disputed sector
  - ethnicity
  - administrative convenience
  - willingness of people
  - contiguity of land preferably with natural boundaries such as rivers, streams and rocks
- Of the disputed territory (a little over 36 square kilometres), the two States will get a near equal share, enshrining the sharing principle by adopting a give-and-take approach.
- The agreement was signed by Assam Chief Minister Himanta Biswa Sarma and his Meghalaya counterpart Conrad Sangma, in the presence of Home Minister Amit Shah.
- There is a fear among non-tribal people that they could end up living in a region with no right.

What will be the impact of the settlement on other border disputes in North-East?

- Assam, the mother State from which other States were carved out in the northeast, currently has boundary disputes with Arunachal Pradesh, Mizoram and Nagaland.

- The agreement amplifies cooperative federalism and provides a road map for resolution of other boundary disputes between states.

- It is said that in the next six-seven months, the second phase of resolution would commence for the remaining sites.

- *From 2019 to 2022, many achievements in establishing peace in the North East have been seen - NLFT agreement (2019), Bru-Reang agreement (2020), Bodo agreement (2020), Karbi-Anglong agreement (2021), and today's Assam-Meghalaya border agreement.*

PRELIM BITS

13.   HISTORY, ART & CULTURE

'Battle of Pollilur' - The Painting

Titled 'The Battle of Pollilur', this is another work from the treasury of Tipu Sultan that was recently.

- Known to be a patron of art, Tipu Sultan commissioned numerous significant paintings.

- Titled 'The Battle of Pollilur', the work is nearly 32-foot long monumental painting.

- It depicts the **victory of the Mysore army** led by Haidar Ali, the ruler of Mysore, and his son Tipu, against the British East India Company forces in the **Battle of Pollilur** or the Battle of Perambakam (**1780**).

- The work was commissioned by Tipu Sultan (the last ruler of Mysore), as part of a large mural for the newly built Daria Daulat Bagh in Seringapatam in 1784.

- Another memorabilia of Tipu is the "**Magic Box**".

Guru Tegh Bahadur

Prime Minister will participate in the celebrations of the 400th Parkash Purab (birth anniversary) of Guru Tegh Bahadur at Red Fort in New Delhi.

- Guru Tegh Bahadur is the 9th of 10 Sikh Gurus. He was also the father of the 10th Guru, Gobind Singh.

- His father gave him the title of "Tegh Bahadur", meaning **"Mighty of Sword"**, in recognition of his bravery.

- He sacrificed his life to protect religion and human values, ideals and principles in world history.

- He was executed for supporting the religious freedom of Kashmiri Pandits on the orders of Mughal ruler Aurangzeb.

- A loyal Sikh took the Guru's body back to his home and cremated it; a Sikh shrine, **Gurdwārā Rakābgunj**, marks the spot of the cremation.

Guru Nabha Dass

Punjab government announced gazetted holiday on the birth anniversary of Guru Nabha Dass, a 16th century saint, taking it out from list of restricted holidays.

- Guru Nabha Dass was born in 1537 at village Bhadrachalam on the bank of Godavari River in Khammam district, which is in Telangana.

- He belonged to Mahasha or doom or dumna community, which is one of the Schedule Caste communities.

- People from this community are also known as Nabhadassias, who are known for making baskets and grain storage containers with bamboo.

- Nabha Dass was 5 years old when his parents passed away.

- Two religious gurus - Agar Dass and Keel Dass - who were passing through his village took the orphan child to a temple at Ghalta Dham, which is now main pilgrimage of Nabhadassias, at Jaipur (Rajasthan).

- Since childhood Guru Nabha Dass, whose original name was Narayan Dass, had an inclination towards spirituality.

- Guru Nabha Dass wrote '**Bhagatmal**' in 1585. It has the life history of around 200 saints ranging from the Satyug to the Kalyug era.

- He died in 1643.

- **Connection with Punjab** - Guru Nabha Dass used to visit village Pandori in Punjab where people of Doom community live.

- Some gurus of the community also used to live there.

- Neighbouring Himachal Pradesh and Jammu states also have a sizeable presence of the community.

- Kullu Dussehra is celebrated for a week on the directions of Guru Nabha Dass.

Lingaraj Temple

The Ministry of Home Affairs has opposed Odisha's Lingaraj Temple Ordinance, 2020, saying that the proposed ordinance is in conflict with the Ancient Monuments and Archaeological Sites and Remains Act, 1958.

- Lingaraj temple of **Odisha** was constructed by **King Jajati Keshari** in the 10th century. and completed by **King Lalatendu Keshari** in the 11th-century.

- It is the **largest temple in Bhubaneswar** (Odisha), which was the cradle of the Kalinga School of Temple Architecture.

- **Bindusagar Lake** is located in the north side of the temple.

- On the western banks of Bindu Sagar, lies the beautiful garden of **Ekamra Van** (Forest of a single mango tree) named after the Hindu texts where Bhubaneswar was referred as Ekamra van.

- **Significance** - Historian James Fergusson said that the Lingaraj temple is one of the finest examples of purely Hindu Temple in India.

- Lingaraj is referred to as 'Swayambhu' (self-originated Shivling).

- This temple signifies the syncretisation of Shaivism and Vaishnavism sects in Odisha.

- The Shivling is known as Hari Hara. Perhaps the rising cult of Lord Jagannath which coincided with the completion of the Lingaraja Temple had a role to play.

- **Protection** - In 2019, the Odisha Government had announced a development plan for the temple and its peripheral area in Bhubaneshwar.

- The 66-acre "Ekamra Kshetra" development plan was launched to preserve the heritage and development of the 9 sites and their nearby areas at a cost of around Rs 700 crore.

Chennakeshava Temple

The recital of the Quran marks the beginning of the rathotsava (chariot festival) at the historic Chennakeshava temple in Belur, Karnataka.

- The 900-year-old Chennakeshava temple was consecrated by Hoysala **King Vishnuvardhana** in the **Vijayanagar style**.

- He built the temple to mark his victories in **1116 AD** against the Cholas in the Battle of Talakkad and called it the **Vijaya Narayana Temple**.

- This 12th-century temple was built using **soft soapstone** as they were found suitable for intricate carvings.

- The temple was built by master craftsmen - Dasoja and Chavana, a father and son duo, hailing from Balliganve, a centre of Kalyana Chalukya art.

- Shantaladevi, the queen of King Vishnuvardhana is the model for a sculpture in the Vavaranga - **Darpana Sundari** (lady with the mirror).

- The temples of Kappe Chennigaraya, Soumyanayaki, Andal and other Vaishnava manifestations surround this main temple.

Belur

- Beluru (also known as Velapuri, Velur and Belapur in olden times) is situated on the banks of Yagachi River.

- Belur was the first capital city of the Hoysalas.

- The city was so revered by the Hoysalas that it is referred to as "earthly *Vaikuntha*" (Vishnu's abode) and "*Dakshina* Varanasi" (southern holy city) in later inscriptions.

Cyclopean Wall

Bihar government has sent a fresh proposal to the Archaeological Survey of India (ASI) to get Cyclopean wall listed in the UNESCO World Heritage Site.

- Built before 3rd century BC, the 2,500-years-old Cyclopean Wall is among the oldest examples of cyclopean masonry in the world.

- The Cyclopean Wall of Rajgir is a 40 km long wall of stone which encircled the ancient city of Rajgir to protect it from external enemies.

- [The ancient city of Rajgir was the capital city of King Bimbisara and his son Ajatshatru who were contemporaries of the Buddha.]

- The Cyclopean Wall is believed to have been built in the pre-Mauryan era, using massive undressed stones.

- **Similarity** - The Cyclopean Wall at Rajgir is similar to "Frontiers of the Roman Empire" that runs through Germany, UK and Northern Ireland, which was included on UNESCO's world heritage list in 1987.

- The wall at Rajgir is also similar to Cyclopean Walls of Mycenae, an ancient city in Greece.

- Bihar is the home to two UNESCO World Heritage Sites. They are,

    1. Nalanda Mahavihara (Nalanda University) at Nalanda,

    2. Mahabodhi temple of Bodhygaya.

Indian National Calendar

According to the Indian National Calendar or the Saka calendar, this Year (2022) marks the start of the year 1944.

- The Indian National Calendar, based on the **Saka era**, is a one of the National Identity Elements.

- [**National Identity Elements** -National Flag, National Bird, National Flower, National Tree, National Anthem, State Emblem, National Calendar, National Animal, National Song, Currency Symbol]

- The Saka calendar was adopted as the national calendar in 1957 on the recommendation of a committee headed by Indian astrophysicist, and chairman of the Calendar Reform Committee, **Meghnad Saha**.

- The Indian National Calendar was adopted, along with the Gregorian calendar, on 22 March 1957 by the government.

- **History** - The calendar is based on the ascension of **King Shalivaahan** to the throne in 78 AD.

- The Saka calendar started being used from the year 79 AD.

- **About the Calendar** - Like the Gregorian calendar, the Indian National Calendar consists of 12 months, with 30-31 days in each month.

- The first month of the New Year is Chaitra, while the last is Phalguna. Chaitra lasts from 21/22 March (the day following the vernal equinox) to 20 April.

- The calendar follows the tropical zodiac signs, which are also used by Western astrologers.
- **Usage** - The national calendar is used along with the Gregorian calendar for all communications and calendars issued by the Indian government.
- The Saka calendar is also used in the Gazette of India as well as the daily morning broadcast of All India Radio.
- The Saka calendar still in use in states like Maharashtra and Goa. It is also used countries such as Nepal and Indonesia.

Banarasi Pashmina

The premium Pashmina products prepared by the highly skilled Khadi weavers of Varanasi were launched by Chairman of the Khadi and Village Industries Commission (KVIC).

- This is for the first time that Pashmina products are being produced outside the Himalayan highlands of Leh-Ladakh and Jammu & Kashmir.
- KVIC will be selling the "Made-in-Varanasi" Pashmina products through its showrooms, outlets and through its online portal.
- The journey of Pashmina production in Varanasi begins with collection of raw Pashmina wool from Ladakh and which is brought to Delhi for de-hairing, cleaning and processing.
- The processed wool, in the form of roving, is brought back to Leh where it is handspun into yarn by women Khadi artisans on modern Charkhas provided by KVIC.
- The finished yarn is then sent to Varanasi where it is woven by trained Khadi weavers into final Pashmina products.

Bhu Bhara

- 'Bhu Bhara' is a term used in the Devi Bhagavata Purana.
- It symbolises the burden borne by Goddess Earth.
- The 'Bhara,' burden, is not just any kind of physical heaviness; it is the subtle weight **arising from adharma and selfishness**.
- At the end of Dwapara Yuga when Kali Yuga is poised to take over, Mother Earth is unable to bear the tremendous pressure on her.
- Here it is shown that **earth derives the power to sustain only through dharma**.
- When dharma is overruled by adharma, the sustainability is lost.
- Goddess Earth meets Indra and explains how the asuras such as Jarasandha, Kamsa, and others are steeped in selfishness and have failed to protect the people and the earth. This has increased her burden.
- She is also terrified of her state as she foresees the advent of Kali in the near future when sin and adharma will thrive.
- She alludes to the time of early creation when the earth was not hard as it is today and was of a lighter consistency.

Kongu Chola-era Hero Stones

Archaeological enthusiasts have recently discovered three hero stones likely from the 11th or 12th Century CE, during the rule of Kongu Cholas, at Annur in Coimbatore district of Tamil Nadu.

- Of the three hero stones, one is a 'Thalaibali sirpam'. The hero is depicted as sacrificing himself with two swords as part of a ritual.
- In Tamil Nadu, hero stones are **memorials** erected for those who lost their lives in the battles and in cattle raids.
- As cattle were an important source of wealth, raiding cattle owned by adjoining tribes and clans was common practice in a pastoral society.
- During the **Sangam Age**, the Mullai landscape followed the pastoral way of life.
- Tradition of hero stones might have begun in the Iron Age or even before.

- **Sangam literature** describes such hero stones as objects of worship.

- Tholkappiyam describes the procedures for erecting hero stones.

- Hero stones of the Sangam Age were found with Tamil-Brahmi inscriptions. Those of the Sangam Age discovered till now do not have images or sculptures.

- Hero stones of the post-Sangam Age and the Pallava period occur in large numbers in pastoral regions. These hero stones have inscriptions and the images of warriors and names of heroes.

Kongu Cholas

- There is a hypothesis that the Kongu Cholas were the descendants of Kandaraditya (950-947 A.D.) the son of Parintaka Chola I of the **Imperial Chola line**.

- The identification of Kandaraditya with Kokkandan of the Rajakisari Peruvali inscription is the mainstay of this hypothesis.

- The first Kongu Chola ruler was Vira Chola 1 (942-980 A.D.).

Damascus Gate

Since the start of Ramadan 2022, Israeli forces have assaulted and arrested Palestinian residents in the Damascus Gate area.

- The Damascus Gate, or Bab al-Amud ('gate of the pillar'), has been a flashpoint between Palestinians and Israeli forces in occupied East Jerusalem for a long time.

- It is an Ottoman-era plaza, which has been in its current form since 1537.

- It is the largest of the 7 open gates to the wall of the Jerusalem's Old City, which lies in East Jerusalem.

- [The wall was built during the times of Sultan Suleiman the Magnificent from the 16th century.]

- A social, cultural, and political Palestinian landmark, Damascus Gate is one of the few open spaces available for residents to gather.

- The Damascus Gate has become a national symbol for Jerusalemites and for Palestinians more generally - a symbol that expresses the national identity in the city.

- **History** - Israel occupied the Palestinian-majority East Jerusalem during the 1967 war and annexed it in breach of international law.

- Israel declares all of Jerusalem its "complete and united" capital.

- But, the majority of countries around the world does not recognise Israeli sovereignty in East Jerusalem, consider it occupied territory.

Al-Aqsa Mosque

After a weekend of violence in and around Jerusalem's flashpoint Al-Aqsa mosque compound a rocket was fired into Israel from the Palestinian enclave of Gaza. It was shot down by Israel's anti-rocket defences.

- Al-Aqsa Mosque has been the most sensitive site in the Israel-Palestine conflict as both sides have made rival claims over it.

- The 35-acre Al-Aqsa Compound includes

    o The Dome of the Rock (An Islamic shrine),

    o The four minarets,

    o The historic gates of the compound, and

    o The mosque itself.

- The hilltop Al-Aqsa compound lies in the Old City of Jerusalem, a World Heritage site.

- Al-Aqsa is holy for 2 of the 3 monotheistic world religions - Islam & Judaism.

- **Islam** - The lead-domed Al-Aqsa mosque is the third-holiest site in Islam after Makkah and Medina.

- It is inside the Al-Aqsa compound, and it is referred to as al-Haram al-Sharif, or the Noble Sanctuary, by Muslims.

- According to the Islamic scripture, Masjid al-Aqsa, meaning the farthest mosque, is where Prophet Muhammad reached at the end of his night journey, or *Isra*, from the sacred mosque of Makkah.

- It is from the rock inside the Dome of the Rock that the Prophet is believed to have ascended to heaven.

- **Judaism** - Al-Aqsa is also referred to as Temple Mount by the Jews, the holiest place in Judaism.

- Temple Mount is the holiest site in Judaism as it is believed to be the site of the first and the second biblical temples.

- Jews can visit the Temple Mount but are not allowed to pray here.

- The **Western or Wailing Wall**, atop which the Al-Aqsa compound stands, is the only remaining part of the biblical temple, and this is where Jews from Israel and across the globe come to pray.

14.   GEOGRAPHY

Perumbakkam Wetland

- The Perumbakkam wetland is a feeding habitat for birds in Chennai, India.

- It is an extension of the Pallikaranai freshwater marsh wetland.

- Also, this wetland provides a peaceful environment for these birds.

- Perambakkam wetland is home to 132 species including the white-spotted garden skink, Russell's viper, dwarf gourami, chromide, windowpane oyster, mud crab and mullet.

Hattis

Hatti community of Himachal Pradesh has requested the Union Government for inclusion of their community in the list of Scheduled Tribes.

- 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 Hattis are cut off from Sirmaur by two rivers called Giri and Tons.

- The two clans of the Hattis have similar traditions, and inter-marriages are commonplace.

- There is a fairly rigid caste system among the Hattis - the Bhat and Khash are the upper castes, while the Badhois are below them.

- Inter-caste marriages have traditionally remained a strict no-no.

- Due to topographical disadvantages, the Hattis living in the Kamrau, Sangrah, and Shilliai areas lag behind in education and employment.

- The Hattis are governed by a traditional council called **Khumbli**, which like the khaps of Haryana, decide community matters.

- The Khumbli's power has remained unchallenged despite the establishment of the panchayati raj system.

Kwar Hydro Electric Project

The Cabinet Committee on Economic Affairs chaired by the Prime Minister has approved the investment for 540 Megawatt (MW) Kwar Hydro Electric Project located on river Chenab of Union Territory of Jammy and Kashmir.

- The project will be implemented by M/s. Chenab Valley Power Projects Private Limited (CVPPL).

- [CVPPL is a joint venture company between National Hydroelectric Power Corporation (NHPC) and Jammu & Kashmir State Power Development Corporation (JKSPDC) with equity contribution of 51% and 49% respectively.]

- The Power generated from the Kwar Hydro Electric Project will help in balancing of Grid and will improve the power supply position.

Chenab River

- The Chenab River in the northwestern India and northeastern and eastern Pakistan is also known as **Chandrabhaga River**.
- It originates from Baralacha Pass in Himachal Pradesh.
- It is formed by the confluence of two streams, Chandra and Bhaga, in the western (Punjab) Himalayas in Himachal Pradesh.
- It flows west through Jammu and Kashmir between the steep cliffs of the Siwalik Range (south) and the Lesser Himalayas (north).
- Turning southwest, it continues into Pakistan, descending from the uplands into the broad alluvial lowlands of Punjab province.
- After receiving the Jhelum River near Trimmu, the Chenab **empties into the Sutlej River**, a tributary of the Indus River.

Pranahita River

The mega river festival dedicated to worshipping the Pranahita river drew to a close on a grand note with hordes of devotees swarming Kaleshwaram.

- Pranahita River is the largest tributary of the Godavari.
- This river acts as border between Telangana and Maharashtra.
- **Origin** - Thumbidihatti, Asifabad, Telangana.
- It begins at the confluence of 2 rivers - Wardha and Wainganga.
- **Outflow** - Godavari River near Kaleshwaram
- **States** - Maharashtra, Telangana
- Kaleshwaram irrigation project, one of the two components of the redesigned Pranahita-Chevella project, was proposed across the Godavari after the tributaries - Pranahita and Indravati.

Attappady

Prehistoric relics were discovered along the banks of three rivers flowing through Attappady hills.

- Attappady Block came into being in 1962 and the Integrated Tribal Development Project (ITDP) in 1976.
- It situates in the Western Ghats in Kerala and Tamil Nadu.
- Main source of income of scheduled tribes living in this area is from agriculture and allied sectors and collection of minor forest produce.
- Major chunk of minor forest produce collected in Kerala is from Attappady.
- Lack of irrigation and deforestation are the serious constraints to Agricultural Development in this area.
- The main water sources are the river **Bhavani, Siruvani and Varagar**.
- Along with agricultural activities cattle, rearing is also the main source of income.

Status of India's Coastline

The Ministry of Earth Sciences informed the Lok Sabha about the status of the coastline of the Indian mainland.

- The National Centre for Coastal Research (NCCR) is monitoring shoreline erosion since 1990 using remote sensing data & GIS mapping techniques.
- [Chennai-based NCCR is an attached office of the Ministry of Earth Sciences (MoES). To know more about the NCCR.]
- About 6,907.18 km long Indian coastline of mainland has been analysed from 1990 to 2018.
- Of the 6,907.18-km-long coastline of the Indian mainland,
    a. 34% is under varying degrees of erosion,
    b. 26% is of an accreting nature, and

    c.   The remaining 40% is in a stable state.

- In terms of percentage, **West Bengal,** which is located on the eastern coast of the country with a 534.35-km-long coastline, suffered erosion along about 60.5% of the coast over the period from 1990 to 2018.

- This is followed by **Kerala** on the west coast, which has 592.96 km of coastline and 46.4% of it faced erosion.

- Tamil Nadu, with a coastline of 991.47 km, recorded erosion along 42.7% of it.

- Gujarat, with the longest coastline of 1,945.6 km, recorded erosion along 27.06% of it.

- In the Union Territory of Puducherry, with a 41.66-km-long coastline, about 56.2% of its coast recorded erosion.

Indian National Centre for Ocean Information Services (INCOIS), an organisation under the MoES, has prepared an atlas of Coastal Vulnerability Index (CVI) maps for the entire coastline of India at a 1:100000 scale.

Policy on Displacement

- The 15th Finance Commission had recommended the creation of a

    a.   National Disaster Risk Management Fund (NDRMF) and State Disaster Risk Management Fund (SDRMF) comprising a mitigation fund at the national and State levels (NDMF/SDMF) &

    b.   A response fund at the national and state levels for the award period from 2021-22 to 2022-26.

- The Commission has also made specific recommendations for 'Mitigation Measures to Prevent Erosion' under NDMF and 'Resettlement of Displaced People Affected by Erosion' under NDRF.

15.   POLITY

Look Out Notice

Journalist Rana Ayyub was stopped in Mumbai based on a look out circular (LOC), issued by the Enforcement Directorate (ED), that restrains her from leaving the country.

- A Look out notice (LOC) is issued to make sure that an individual who is absconding or wanted by law enforcement agencies is **not able to leave the country**.

- It is mostly **used at immigration checkpoints** at international airports and seaports by the immigration branch.

- The police can approach a court asking for the restriction of a person's movement outside the country, when a person is a suspect and the police apprehend that the person may not join the investigation at a later stage.

- The subject of an LOC can challenge the circular and get relief from a court.

- **Issuing an LOC** - An LOC can be initiated by a large number of authorised officers, including

    1.   An officer not below the rank of deputy secretary,

    2.   An officer not below the rank of joint secretary in the state government,

    3.   A district magistrate or superintendent of police,

    4.   Designated officers of various law enforcing and security agencies,

    5.   A designated officer of Interpol,

    6.   An officer not below the rank of additional director in the Serious Fraud Investigation Office, and the Ministry of Corporate Affairs.

- Since 2018, an officer not below the rank of chairman/managing director/chief executive of any public sector bank can make a request.

- An LOC can be modified/deleted/withdrawn by the Bureau of Immigration only on the specific request of the authorised originator on whose request the LOC was issued.

- **Does an LOC lead to arrest? -**Not necessarily. LOC is of many types.

- They can seek to merely stop a person against whom the circular has been issued from travelling outside the country, to prevent a person from entering the country, or inform the concerned investigation agencies.

- The proforma of the LOC also contains a request to detain the individual at the local police/investigation agency, which generally leads to arrest.

Water Adalat

Bangalore Water Supply and Sewerage Board (BWSSB) held a Water Adalat.

- Water adalat is a concept started by the **Bangalore Water Supply & Sewerage Board** (BWSSB).

- It was started to **resolve disputes** related to water billing, delay in provision of water supply, sanitary connection and conversion from non-domestic to domestic connection.

- It is arranged on every first Wednesday (Now, Thursday) of the month to solve the grievances of the public related to the mentioned water issues.

Darlong Community

Darlong community was officially included in the list of Scheduled Tribes after the Lok Sabha passed the Constitution (Scheduled Tribes) Order (Amendment) Bill, 2022.

- Darlong is one of the 19 tribal communities of Tripura. It is a small community of around 11,000 people.

- Darlongs, despite being Scheduled Tribes, were never given ST certificates.

- Since they were considered a generic tribe under the Kuki community, they were handed their tribal certificates as members of 'Kuki' community.

- This 2022 Amendment Bill was put forth to include Darlongs as a Kuki sub-tribe since people of same communities live in hilly terrains as different sub-tribes and were excluded from the ST list since long.

- **About** - Despite its small population, the community has a high prevalence of education, cultural activities, etc.

- The members of the community are serving in different high positions in the local administration.

- Traditionally, the Darlongs adopt Jhum cultivation/ shifting cultivators. But the Darlongs call it as '**Loi'**.

- Today, most of them have taken up agro-forestry and horticultural plantation or orchard development as their main livelihoods in addition to wet rice cultivation and seasonal vegetables cultivation.

- Traditionally, the Darlongs were under the hereditary village chieftains (called **lal**) but are now replaced by a democratic body called Village Council with an elected Village Chairman and representatives.

- The Village Councils are in turn linked to an apex council (known as Darlong Hnam Inzom or Darlong Peoples'Apex Council).

- Every Darlong must inculcate a compelling code of social ethics, known as Tlawminngaina or Tlawmngaihna stand for the common good of the community above self and to be charitable & humane in all dispositions.

Mother Nature - A 'Living Being'

The Madurai Bench of Madras High Court invoked the 'parens patriae jurisdiction', and has conferred juristic status to 'Mother Nature' as a 'living being' having the status of a legal entity.

- Declaring 'Mother Nature' a 'living being' will give the status of a legal person with all corresponding rights, duties and liabilities of a living person, in order to preserve and conserve it.

- The court observed that 'Mother Nature' was accorded the rights akin to fundamental rights, legal rights, constitutional rights for its survival, safety, sustenance and resurgence

  1. To maintain its status and

  2. To promote its health and well-being

- The State and Central governments are directed to protect 'Mother Nature' and take appropriate steps in this regard in all possible ways.

- The natural environment is part of basic human rights, of 'right to life' itself.

Extension of Tenure of Environmental Clearances

Union Ministry of Environment has extended the tenure of environmental clearances (EC) granted for existing or new projects.

- An Environmental Clearance (EC) is a long-drawn process that is mandatory for projects beyond a certain size.

- It often involves an environment impact assessment of a potential project and sometimes public hearings involving the local populace who might be affected by the project.

- It is mandatory for **39 types** of developmental projects including mining, hydro power and thermal power among others.

- The process for clearance is outlined by the Environmental Impact Assessment (EIA) notification of 2006.

Project	Extended Validity of the Environmental Clearances
River valley projects	13 years
Nuclear power projects, or those involving the processing of nuclear fuel	15 years
Projects and activities other than the mining and river valley projects	10 years

- Explaining its rationale to extend the validity of the projects, the Ministry said that nuclear power projects and hydropower projects had **high gestation period**.

- High gestation period is due to geological surprises, land acquisition, delays in forest clearance, local issues, rehabilitation & resettlement, etc.

- One of the conditions of an EC is that a project must begin construction in the period that it has been granted an EC and if unable, a fresh process must begin. This leads to projects being financially unviable.

- Mining leases are now granted for a period of 50 years but the Environment Clearance is valid for 30 years.

- The Central Government deems it necessary to align the validity of mining ECs, subject to review & appropriate environmental safeguards.

Exemption

- Environment Ministry also proposed to **exempt highway projects** that would serve India's strategic interests from the EC process.

- The notification further stated that instead, project proponents should comply with a **set of standards to safeguard the environment**.

- [In 2021, the National Board for Wildlife, which grants wildlife clearance, had also approved the construction of roads in border areas where there are wildlife sanctuaries for their "strategic importance".]
- The same notification also proposed that 15 MW thermal power plants should be allowed to increase their capacity to up to 25 MW without the clearance. There is a condition that these thermal power plants must,

    1. Primarily function on biomass and solid waste, and

    2. Use up to 15% of petrol, coal or lignite as an auxiliary fuel.

- It also sought to exempt the expansion of ports for fishermen who use boats with less pollution potential, as well as allow expansion of terminal buildings within airports, provided they do not usurp more land.

- This involves only incremental environmental impacts which can be catered by providing for environmental safeguards built into the project's Environmental Management Plan.

Weapons of Mass Destruction Bill 2022

The Weapons of Mass Destruction and their Delivery Systems (Prohibition of Unlawful Activities) Amendment Bill, 2022 has been unanimously passed in Lok Sabha.

- The Bill seeks to amend the Weapons of Mass Destruction and their Delivery Systems (Prohibition of Unlawful Activities) Act, 2005.

- The 2005 Act prohibited the manufacturing, transport, and transfer of weapons of mass destruction, and their means of delivery.

- It will be amended to provide against the financing of proliferation of weapons of mass destruction and their delivery systems in line with India's international obligations.

- **Definition** - India's 2005 WMD Act defines the Biological weapons and Chemical weapons.

- "Biological weapons" are

    1. Microbial or other biological agents, or toxins of types and in quantities that have no justification for prophylactic, protective or other peaceful purposes; and

    2. Weapons, equipment or delivery systems specially designed to use such agents or toxins for hostile purposes or in armed conflict.

- "Chemical weapons" are

    1. Toxic chemicals and their precursors except where used for peaceful, protective, and certain specified military and law enforcement purposes;

    2. Munitions and devices specifically designed to cause death or other harm through the toxic properties of those toxic chemicals; and

    3. Any equipment specifically designed for use in connection with the employment of these munitions and devices.

History of WMD

- The expression 'Weapon of Mass Destruction' (WMD) is usually considered to have been used first by the leader of the Church of England, the Archbishop of Canterbury, in 1937.

- It was used to refer to the aerial bombing of civilians in the Basque town of Guernica by German and Italian fascists in support of General Franco during the Spanish Civil War.

- It refers to something that is capable of inflicting mass casualties and/or destroying or rendering high-value assets as useless.

- While there is no single, authoritative definition of a WMD in international law, the expression is usually understood to cover nuclear, biological, and chemical (NBC) weapons.

Control over use of WMDs

- The use of chemical, biological, and nuclear weapons is regulated by a number of international treaties and agreements.

Treaties and Agreements	Purpose
Geneva Protocol, 1925	Banned the use of chemical and biological weapons
Biological Weapons Convention, 1972	Put comprehensive bans on the biological weapons
Chemical Weapons Convention, 1992	Put comprehensive bans on the chemical weapons
Nuclear Non-Proliferation Treaty (NPT)	Regulates the use and proliferation of nuclear weapons.
Comprehensive Test Ban Treaty (CTBT)	Regulates the use and proliferation of nuclear weapons.

- India has signed and ratified both the Biological Weapons Convention and Chemical Weapons Convention.

- There are very few non-signatory countries to these treaties, even though several countries have been accused of non-compliance.

3. GOVERNMENT INTERVENTIONS & SCHEMES
National Curriculum Framework

The Union Education Minister will be launching the Mandate Document of National Curriculum Framework (NCF).

- National Curriculum Framework (NCF) is a system of education that is developed keeping in mind the geographical and cultural diversity as well as social environment.

- The previous NCF was framed in 2005.
- NCF is being drafted through a collaborative and consultative process, starting from **district** to **state** level and then **National** level.

- The key goals of the National Curriculum Framework are:

    1. To promote a wholesome development of the child encompassing the academic, emotional, physical, and emotional aspects

    2. To enable the students to develop intellectual quotient by providing them varied opportunities

    3. To make the environment conducive to quality learning where the students would be encouraged to participate in various activities

    4. To foster creative thinking skills by facilitating different activities and giving the liberty to express individual thoughts within the class

    5. In response to multi-cultural attributes, the schools must ensure no student is discriminated against based on caste or religion, and social status

- As per the National Education Policy (NEP), 2020, following four NCFs will be developed:

    1. National Curriculum Framework for Early Childhood Care and Education (NCFECCE),

    2. National Curriculum Framework for School Education (NCFSE),

    3. National Curriculum Framework for Teacher Education (NCFTE),

    4. National Curriculum Framework for Adult Education (NCFAE).

- In this regard, a comprehensive strategy has been worked out jointly by the Ministry of Education (MoE) and NCERT.

- As per this strategy, at the State level- all states/UTs will first prepare their State Curriculum Frameworks (SCFs).

- For providing inputs for the development of the 4 NCFs, 25 themes based on the perspectives of the NEP, 2020 are identified under the three categories, viz.,

    1. Curriculum and Pedagogy

    2. Cross-cutting Issues

    3. Other important areas of NEP, 2020 focussing on systemic changes and reforms.

Digital India RISC-V

India launches the Digital India RISC-V (DIR-V) program for next generation Microprocessors to achieve commercial silicon & Design wins by December, 2023.

- Digital India RISC-V Microprocessor (DIR-V) Program aims to enable creation of Microprocessors for the future in India, for the world and achieve industry-grade silicon & Design wins by December'2023.

- DIR-V will see partnerships between Startups, Academia & Multinationals, to make India a

    1. RISC-V Talent Hub for the World,

    2. Supplier of RISC-V SoC (System on Chips) for Servers, Mobile devices, Automotive, IoT & Microcontrollers across the globe.

- **IIT Madras** director Professor V Kamakoti will be the Chief Architect of the DIRV-Programme while **C-DAC's** S Krishnakumar Rao will be the Programme Manager.

- The blueprint of the roadmap of design and implementation of the DIR-V Programme was unveiled with **SHAKTI Processor** by IIT Madras and **VEGA Processor** by C-DAC.

- Challenging the status quo, RISC-V Instruction Set Architecture (ISA) is witnessing a quantum leap and

unprecedented levels of processor innovation.

iRAD

Union Territory Adviser to the Administrator, has launched the Integrated Road Accident Database (iRAD) project in Chandigarh.

- iRAD is an initiative of the Ministry of Road Transport and Highways (MoRTH) and is funded by World Bank.

- Proposed in 2019, the iRAD has an objective to **improve road safety** in the country.

- It is an initiative to capture relevant details about the accident prone areas throughout India.

- The details include causes of road accidents, road engineering defaults, negligences on the part of individuals, pattern in accidents and to form a strategy to reduce the number of accidents.

- The main idea behind it is to create a **Centralised Accident Database** to host and access all accident related data by various departments/ stakeholders.

- **Working of iRAD** - iRAD is a feedback based system. Police, transport, road engineering/highway and health are stakeholders in this project.

- Every stakeholder and department has its defined work within the system.

    1. The police is responsible for visiting the spot, counting the number of accidents, etc., analysing the vehicle volume/pressure on a particular stretch is the task of the transport department.

    2. Road engineering wing will look after the engineering faults responsible for accidents.

    3. Health department will maintain a record of casualties including fatal, non-fatal in road accidents.

- With iRAD, any investigation officer visiting the spot of an accident will enter all details in the app.

- The data will further be used by all concerned departments to analyse cause of accidents and formulation of strategies.

Soil Health Card Scheme

- The Soil Health Card (SHC) is a printed report that a farmer will be handed over for each of his holdings.

- It is used to assess the current status of soil health and, when used over time, to determine changes in soil health that are affected by land management.

- It displays soil health indicators and associated descriptive terms.

- It will contain the status of his soil with respect to **12 parameters**,

    1. N, P, K (Macro-nutrients);

    2. S (Secondary- nutrient);

    3. Zn, Fe, Cu, Mn, Bo (Micro - nutrients); and

    4. pH, EC, OC (Physical parameters).

- Based on this, the SHC will also indicate fertilizer recommendations and soil amendment required for the farm.

- **Uses of SHC** - The card will contain an advisory based on the soil nutrient status of a farmer's holding.

- It will show recommendations on dosage of different nutrients needed.

- Further, it will advise the farmer on the fertilizers and their quantities he should apply, and also the soil amendments that he should undertake, so as to realize optimal yields.

- **Implementation** - The SHC scheme is promoted by the Department of Agriculture & Co-operation under the Ministry of Agriculture & Farmers' Welfare.

- It is being implemented through the Department of Agriculture of all the State and Union Territory Governments.

- **Cycle** - The SHC will be made available once in a cycle of 3 years, which will indicate the status of soil health of a farmer's holding for that particular period.

- The SHC given in the next cycle of 2 years will be able to record the changes in the soil health for that subsequent period.

- The sampling is done by the State Government through the staff of their Department of Agriculture or through the staff of an outsourced agency.

Health Star Rating

Over 40 global experts in a letter to Union Health Minister has claimed that the "Health Star Rating" system failed to alter buyer behaviour, while arguing that "warning labels" have been most effective in many countries.

- The Food Safety Standards Authority of India (FSSAI) has adopted by the "Health Star Rating" system for **packaged foods and beverages**.
- The decision was based on the recommendations of a study by the IIM Ahmedabad the FSSAI had commissioned in September 2021.
- This **5-star** rating system plans to adopt in order to help consumers reduce their intake of unhealthy foods is "**not evidence-based**".
- It gives a product **1/2 a star to 5 stars**, in its draft regulations for front of package labelling (FOPL).
- The food regulator has **exempted milk and dairy products** from the proposed FoPL.
- The FSSAI has decided **4-year voluntary** implementation of FoPL from 2023 and a transition period of 4 years for making it mandatory.
- At present, countries such as the UK, Chile, Mexico, New Zealand, and Australia have FoPL.

Coastal Economic Zones

Under the National Perspective Plan of the Sagarmala Programme, 14 Coastal Economic Zones (CEZ) were envisaged including 3 in the state of Tamil Nadu.

- Ministry of Ports, Shipping and Waterways is exploring the possibility of developing a CEZ, on a pilot basis for enabling Port Led Industrialization and incentivize employment generation, with land available with the Major Ports.
- Coastal Economic Zone (CEZ) refers to designated coastal areas with special economic regulations such as tax incentives and lower tariffs to make it friendly for foreign direct investment.
- It is similar to Special Economic Zone (SEZ) but focuses on coastal development projects such as

    1. Development of port-proximate industrial clusters,
    2. Promoting port-led development,
    3. Reduction of logistics cost and time for movement of goods.

- It consists of a group of coastal districts or districts with strong linkage to ports in the region to utilize the synergies with planned industrial corridor projects.
- CEZ will be developed as part of the plan for developing 14 such industrial clusters to promote manufacturing and generate jobs.
- Port-led industrialization through the CEZ under Sagarmala Programme are expected to provide impetus to the "Make in India" initiative of the Government of India.

InTranSE -II Program

The indigenous Intelligent Transportation Systems (ITS) Solutions for Indian Traffic Scenario was launched under the InTranSE -II Program.

- The InTranSE Phase-II program (2019-2021) is an extension of the InTranSE Phase-I program funded earlier (2009-2012) by the MeitY.
- Under ITS Endeavor for Indian Cities Phase-II initiative of Ministry of Electronics and Information Technology, the following initiatives has been launched

    1. Onboard Driver Assistance & Warning System (ODAWS),
    2. Bus Signal Priority System and
    3. Common SMart iot Connectiv (CoSMiC) software.

- **ODAWS** (Indigenous) incorporates vehicle-borne sensors to monitor driver propensity and vehicle surroundings to deliver acoustic and visual alerts for driver assistance.

- It involves the development of sub-modules such as the navigational unit, driver assistance console, and mmWave radar sensor.
    1. Using mmWave radar sensors, the positional and dynamic characteristics of surrounding vehicles are probed.
    2. Navigational sensor provides a precise geo-spatial orientation of the vehicle as well as trends in driving behaviour.
- **Bus Signal Priority System** is an operational strategy that modifies normal traffic signal operations to better accommodate in-service public buses at signal-controlled intersections.
- Unlike a blind priority that is given for emergency vehicles, here it is a conditional priority, which is given only when there is an overall reduction in delay for all vehicles.
- It will enable to minimize person delay by providing priority to public transport buses, either through Green extension or Red truncation, considering all vehicles approaching a signalized intersection.
- **CoSMiC** is a middleware software providing standard based deployment of IoT adhering to oneM2M based global standard.
- It provides an end-to-end solution for the seamless connection of IoT devices and applications.
- CoSMiC common service layer is used to interface any vendor specific standards and for increasing interoperability with smart city dashboard.
- It provides Interworking Proxy Entity (IPE) APIs for connecting non-oneM2M (NoDN) devices or third-party applications to get connected to the CoSMiC platform.

Pradhan Mantri Jan Vikas Karyakram

Pradhan Mantri Jan Vikas Karyakram has been revised for implementation w.e.f from 2022-23 onwards in all Districts of the country including all the Aspirational Districts.

- The erstwhile Multi-sectoral Development Programme (MsDP) has been restructured and renamed as Pradhan Mantri Jan Vikas Karyakram (PMJVK) for effective implementation since 2018.
- PMJVK is a **Centrally Sponsored Scheme** that seeks to provide better socio-economic infrastructure assets and basic amenities to the minorities mainly in the field of education, health & skill development.
- This which would further lead to lessening of the gap between the national average and the minority communities with regard to backwardness parameters.
- In 2018, the restructuring was done to be implemented in 1300 **identified Minority Concentration Areas** (MCAs) of the Country.
- MCAs include Minority Concentration Blocks (MCBs), Minority Concentration Towns (MCTs) and Minority Concentration District Headquarters (MCD Hqrs).
- **Beneficiaries** - The communities notified as minority communities under Section 2 (c) of the National Commission for Minorities (NCM) Act, 1992 would be taken as Minority Communities under PMJVK.
- At present 6 communities namely Muslims, Sikhs, Christians, Buddhists, Zoroastrians (Parsis) and Jains have been notified as Minority Communities under Section 2 (c) of the NCM Act, 1992.
- **Special focus by earmarking funds -** 80% of the resources under the PMJVK would be earmarked for projects related to education, health and skill development.
- 33 to 40% of resources under the PMJVK would be specifically allocated for women centric projects.

'Tour of Duty' Scheme

The Department of Military Affairs has finalised the "Tour of Duty (ToD)" scheme - a radical proposal for future recruitment to the armed forces.

- Under this scheme, the youngsters will be recruited as soldiers only for **3 to 5 years** in the backdrop of the urgent need to curb the ballooning salary & pension bills that are badly impacting military modernization.
- The 12-lakh strong **Army** was finalizing the radical ToD proposal for both officers and jawans, which would **not entail any pensionary benefits** being given to them.
- The scheme, which was being pushed by the late Chief of Defence Staff General Bipin Rawat, is likely to be applicable to the **Indian Air Force (IAF) and Indian Navy** as well.

- But entry at the officer-level under the ToD scheme is not on the cards as of now.

- ToD scheme, which is likely to be called the "**Agnipath**" recruitment, is likely to be launched on an experimental basis first. But eventually, all soldiers could be recruited under this model.

- While 25% of them would serve for three years and 25% for five years, the remaining 50% would serve for the full term till they reach the retirement age.

17.   INTERNATIONAL RELATIONS

India Elected to Four UN ECOSOC Bodies

India got elected to four key United Nations Economic and Social Council (UN ECOSOC) Bodies.

- The four UN ECOSOC bodies include
    1. Commission for Social Development,
    2. Committee on NGOs,
    3. Commission on Science & Technology for Development and
    4. Ambassador Preeti Saran gets re-elected to Committee for Economic, Social and Cultural Rights.
- Earlier in 2021, India got elected to three UN ECOSOC bodies which include,
    1. Commission on Crime Prevention and Criminal Justice,
    2. Executive Board of UN Women, and
    3. Executive Board of the World Food Programme.
- Also, India handed over contribution of US$ 200,000 to support critical areas of investigations of the UN Investigative Team to Promote Accountability for Crimes by Da'esh/ ISIL (UNITAD) i.e.,
    1. Development and use of chemical and biological weapons by Islamic State of Iraq and the Levant (ISIL) and
    2. ISIL crimes against cultural heritage in Iraq.

United Nations Economic and Social Council

- The UN Economic and Social Council (ECOSOC) is one of the six principal organs of the UN System.
- It was established by the UN Charter in 1945.
- It consists of 54 members of the UN elected by the General Assembly.
- It serves as the central platform for fostering debate and creative thinking, forging consensus on ways forward, and coordinating efforts to achieve internationally agreed goals.
- It is also responsible for the follow-up to major UN conferences and summits.

Commission of Social Development

- It is the key body of the UN which is in charge of the follow-up and the implementation of the Copenhagen Declaration & Programme for Action.
- It advises the ECOSOC on social policies of a general character, and in particular on all the matters in the social field that are not covered by specialized inter governmental agencies.

Committee on Non-Governmental Organisations

- It is a standing Committee of the Economic and Social Council which was established in 1946.
- Its main tasks are the consideration of applications for consultative status and requests for reclassification submitted by the NGOs.

UN Commission on Science and Technology for Development

- It is a subsidiary body of the Economic and Social Council which holds an annual intergovernmental forum for the discussion on timely and pertinent issues affecting technology, science, and development.

- Outcomes of this Commission include providing the UNGA and ECOSOC with high-level advice on the relevant science and technology issues

Committee on Economic, Social and Cultural Rights

- The Committee on Economic, Social and Cultural Rights (CESCR) is a body of 18 independent experts.

- It monitors the implementation of the International Covenant on Economic, Social, and Cultural Rights by its State Parties.

- CESCR enshrines the rights to adequate food, adequate education, health, housing, water and sanitation, and work.

State Sponsor of Terrorism

Ukraine's President Volodymyr Zelenskyy has asked the US President Joe Biden to designate Russia as a "state sponsor of terrorism", which would activate the harshest suite of US sanctions against the Russian government.

- The **US Secretary of State** (minister in charge of foreign relations) has the power to designate countries that have repeatedly provided support for acts of international terrorism as "State Sponsors of Terrorism".

- **Statutes -** There are currently 3 statutes that authorize the US Secretary of State to designate a foreign government for repeatedly providing support for acts of international terrorism:

Statute	Purpose
Section 620A of the Foreign Assistance Act, 1961	It prohibits the transfer of most aid.
Section 40 of the Arms Export Control Act (AECA)	It prohibits exports, credits, guarantees, other financial assistance, and export licensing overseen by the State Department.
Section 1754(c) of the Export Controls Act of 2018	It regulates exports.

- Of these three statutes, only the AECA identifies objectionable activities as part of the definition.

- **Sanctions** - The US can place four categories of sanctions on countries that are on this list:

  1. Restrictions on US foreign assistance;
  2. A ban on defence exports and sales;
  3. Certain controls over exports of dual use items; and
  4. Miscellaneous financial and other restrictions.

- Sanctions can also be placed on countries and persons that engage in certain trade with designated countries.

- Among other restrictions, a country's designation as a State Sponsor of Terrorism will make its citizens ineligible for some immigration benefits like automatic revalidation of visas after travel solely to contiguous territory.

- **Countries on the list** - As of now, there are four countries on the list of state sponsors of terrorism.

- They are Syria (1979), Iran (1984), North Korea (2017) and Cuba (2021).

- Countries can be put and taken off the list from time to time.

- A country can be de-listed if it is deemed by the US to have reformed its behavior & returned to complying with the requirements of international law and conduct, or if it has undergone a change of leadership.

Bucha Massacre

Ukrainian President accused Russian troops of committing "the most terrible war crimes" since World War II in Bucha, Ukraine.

- More than 300 bodies have been found in Bucha, a Kyiv suburb, some with their hands bound, flesh burned, and shot in the back of the head.

- Bucha is a town located about 25 km to the northwest of Kyiv.

- The discoveries have drawn comparisons with the killings of civilians in this area during World War II.

- Between the 1st Battle of Kyiv (1941) and the 2nd Battle of Kyiv (1943) when the Red Army started to push back the Germans from Ukraine, the area around the Ukrainian capital saw the "Holocaust by bullets".

- Both the expressions 'genocide or war crimes' have been used freely in outraged Ukrainian and Western descriptions of the atrocities in Bucha.

- Whether these incidents fit those definitions is important because of the international community's obligation to respond to them.

18. ECONOMY

Marketing Mix

- The marketing mix refers to the set of actions, or tactics, that a company uses to promote its brand or product in the market.

- A marketing mix includes multiple areas of focus as part of a **comprehensive marketing plan**.

- A marketing mix often refers to E. Jerome McCarthy's **four Ps** - Product, Price, Placement, and Promotion.

- However, nowadays, the marketing mix increasingly includes several other Ps like Packaging, Positioning, People and even Politics as vital mix elements.

- **Importance** - All the elements of the marketing mix influence each other.

- They make up the business plan for a company and handled right, can give it great success.

- But handled wrong and the business could take years to recover.

- Marketing mix needs a lot of understanding, market research and consultation with several people, from users to trade to manufacturing and several others.

Peer-to-Peer Lending

- Peer-to-peer (P2P) lending is a form of **direct lending of money** to individuals or businesses without an official financial institution participating as an intermediary in the deal.

- Due to some unique characteristics, peer-to-peer lending is considered as an **alternative source of financing**.

- It is also known as "social lending" or "crowd lending."

- P2P lending has only existed since 2005, but the crowd of competitors already includes Prosper, Lending Club, Upstart, and StreetShares.

- **P2P lending websites** are platforms that purely act as an intermediary or marketplace that connects borrowers and lenders.

- The site sets the rates and terms and enables the transactions.

- **P2P lenders** are individual investors who want to get a better return on their cash savings than a bank savings account or CD offers.

- **P2P borrowers** seek an alternative to traditional banks or a better rate than banks offer.

- **Loans provided** - P2P lending offers both secured & unsecured loans.

- However, most of the loans in P2P lending are unsecured personal loans.

- Secured loans are rare for the industry and are usually backed by luxury goods.

- **Advantages** - Higher returns to the investors, More accessible source of funding, Lower interest rates, etc
- **Disadvantages** - High credit risks, No insurance/ government protection, etc
- Some jurisdictions do not allow P2P lending or require the companies that provide such services to comply with investment regulations.

Account Aggregator

Around 2.5 lakh accounts were linked to Account Aggregator (AA) System, and nine banks go live on the AA System.

- **Account aggregation** or financial data aggregation is a process whereby data from several or all of an individual's or household's financial accounts are collected in one place.
- Account aggregating allows customers to aggregate data on all their financial assets within a single financial institution.
- In terms of online banking, the user may be provided with a service that curates a home page on which account holders can see information from all of their checking, savings, CDs, and brokerage accounts.
- The data is then stored in the account aggregation software, allowing access to balance information and transaction records.
- **Account Aggregators** (AAs) are personal finance software, apps, and online services that provide account aggregation services.
- They allow individuals to share and access data from one financial institution to another in the consolidated networks of AAs.
- These aggregators have received approval to access and share data by the Reserve Bank of India (RBI).
- **Structured as NBFCs**, account aggregators would disrupt the borrowing system from institutionalized financial institutions that make money on having custody of the borrower's financial data.
- With the launch of this mechanism to make credit availability easy, the big business of packaging, analyzing, and selling financial information would be disrupted, just as UPI disrupted the e-wallet business.
- **Benefits** - The borrower can avail services such as access to loans and access to money management if their banks join the AA network of data sharing.
- Account aggregators act as facilitators of small credit.

Legal Entity Identifier

- The Legal Entity Identifier (LEI) is a **20-digit** alpha-numeric code used to uniquely identify parties to financial transactions globally.
- LEI code is based on the ISO 17442 standard developed by the International Organization for Standardization (ISO).
- It connects to key reference information that enables clear and unique identification of legal entities participating in financial transactions.
- Each LEI contains information about an entity's ownership structure and thus answers the questions of 'who is who' and 'who owns whom'.
- LEI was conceived as a key measure to **improve the quality and accuracy of financial data systems** for better risk management post the global financial crisis.
- The publicly available LEI data pool can be regarded as a global directory that greatly enhances transparency in the global marketplace.
- **Recently**, the Reserve Bank of India (RBI) has extended the guidelines on LEI to large borrowers of Non-Banking Financial Companies (NBFCs) and Primary (Urban) Co-operative Banks (UCBs).
- It also advised that non-individual borrowers enjoying aggregate exposure of ₹5 crore and above from banks and financial institutions (FIs) shall be required to obtain LEI codes as per the given timeline.
- As per the timeline, the borrowers having exposure of ₹25 crore are required to obtain LEI by April 30, 2023.
- Borrowers who fail to obtain LEI codes from an authorized Local Operating Unit (LOU) shall not be sanctioned any new exposure nor shall they be granted renewal/enhancement of any existing exposure.

- However, departments/agencies of Central and State Governments (not PSUs registered under Companies Act or established as Corporation under the relevant statute) shall be exempted from this provision.

Latest Monetary Policy Review by the RBI

In its latest bi-monthly monetary policy review, the Reserve Bank of India (RBI) has decided to prioritise its focus on inflation over growth, retain its accommodative stance while gradually withdrawing it, among others.

- **Focus** - The RBI has decided to focus on inflation over growth by sucking out money from the system in a multi-year time- frame.
- It has decided to remain accommodative while focusing on withdrawal of accommodation stance, which has been there since 2019.
- **Rates** - For the eleventh time in a row, the RBI has decided to keep the repo rate unchanged at 4%.
- Marginal standing facility (MSF) rate & bank rate remain unchanged at 4.25%.
- The RBI also introduced a [Standing Deposit Facility](#) (SDF) at 3.75%, aimed at liquidity management.
- With this, the RBI has restored the LAF corridor with SDF at the base at 3.75% and MSF at 4.25%.
- The Fixed Reverse Repo Rate has been kept at 3.35% and along with SDF will impart flexibility to RBI's liquidity management.
- In the wake of the rise in crude oil and commodity prices and the impact of the Russian invasion of Ukraine, the RBI has **slashed the growth forecast to 7.2%** for fiscal 2022-23 from 7.8% projected earlier.
- **Factors** - Even though the Russia's war won't impact India directly, it could potentially impede the economic recovery of India through elevated commodity prices & global spill-over channels.
- The other factors that pose downside risks to the outlook are,
    1. Financial market volatility induced by monetary policy normalisation in advanced economies,
    2. Renewed Covid-19 infections in some major countries,
    3. Augmented supply-side disruptions and protracted shortages of critical inputs such as semiconductors and chips.
- The RBI has also **increased the retail inflation projection** from 4.5% to 5.7% in 2022-23.
- **Factors** - The spike in international crude prices since end-February poses substantial upside risk to inflation through both direct and indirect effects.
- Sharp increases in domestic pump prices could trigger broad-based second-round price pressures.
- A combination of high international commodity prices and elevated logistic disruptions could aggravate input costs across agriculture, manufacturing, and services sectors.
- Their pass-through to retail prices warrants continuous monitoring and proactive supply management.

Standing Deposit Facility

While retaining the Fixed Reverse Repo Rate at 3.35%, the Reserve Bank of India (RBI) introduced the Standing Deposit Facility (SDF) at an interest rate of 3.75% to absorb excess liquidity to control inflation.

- The Standing Deposit Facility (SDF) is introduced nearly 8 years after the **Patel Committee** propagated an independent, transparent, non-collateralized concurrent offering.
- It will allow the banks to park their excess funds but without **any collateral** from RBI.
- It will be set at 25 basis points below the policy rate (Repo rate).
- The SDF will **replace the Fixed Rate Reverse Repo** (FRRR) as the floor of the Liquidity Adjustment Facility corridor.
- **No collateral** - In 2018, the amended **Section 17 of the RBI Act** empowered the RBI to introduce the SDF - an additional tool for absorbing liquidity without any collateral.

- By removing the binding collateral constraint on the RBI, the SDF strengthens the operating framework of monetary policy.

- Since the SDF comes with the conditionality of no collateral of G-secs to be given by the RBI to banks, it will free up securities from Statutory Liquidity Ratio (SLR) holdings of banks.

- This will thus result in lowering of excess SLR holdings and will lead to an increase in demand for bond

- **Role of SDF -** The main purpose of SDF is to reduce the excess liquidity of Rs 8.5 lakh crore in the system, and control inflation.

- It will be **applicable to overnight deposits** at this stage.

- It would, however, retain the flexibility to **absorb liquidity of longer tenors** as and when the need arises, with appropriate pricing.

- The SDF is also a financial stability tool in addition to its role in liquidity management.

- With the Marginal Standing Facility (MSF) at the upper end of the policy corridor at 4.25%, the SDF will make up the duo of standing facilities – one to absorb and the other to inject liquidity.

SBI Increased MCLR

The State Bank of India (SBI), India's largest commercial bank, raised the marginal cost of funds-based lending rates (MCLR) by 10 basis points (bps) across tenures to 7.1%.

- **MCLR**, which RBI instituted with effect from April 1, 2016, is the lowest interest rate that a bank or lender can offer.

- It is applicable to fresh corporate loans and floating rate loans taken before October 2019.

- **EBLR** - The RBI then switched to the external benchmark linked lending rate (EBLR) system where lending rate is linked to benchmark rates like repo or Treasury Bill rates.

- Banks linked their EBLR to the RBI's repo rate, which declined from 5.40% to 4% since October 2019.

- When the RBI hikes the repo rate, EBLR will go up and vice versa.

- The share of EBLR loans in total advances was 39.2% in December 2021.

- **Raising MCLR** - The SBI raising the MCLR signals that the soft rates regime that has prevailed since 2019 may be over.

- The lending rate revision by SBI is likely to be followed by other banks in the days to come.

- MCLR-linked loans had the largest share (53.1%) of the loan portfolio of banks as of December 2021.

- As a result of the increase in MCLR, borrowers who have taken home, vehicle, and personal loans will find their **equated monthly instalments** (EMIs) **rising** in the coming months.

- With the RBI set to withdraw the accommodative policy (the willingness to expand money supply to boost economic growth), lending rates are expected to rise further in the coming months.

- **Banks expect a hike repo rate -** the main policy rate - as the RBI seeks to suck out liquidity from the system to rein in inflation.

- Indicating upward pressure on interest rates, the yield on 10-year benchmark government bonds has reached 7.15%.

- On the other hand, the cost of funds is set to increase, prompting banks to hike lending rates.

- **Deposit rates will also rise** meaningfully over the next 1-2 months.

- This means a fixed deposit holder is sitting on a negative return, as there is high inflation now.

Fincluvation

India Post Payments Bank (IPPB) announced the launch of Fincluvation.

- Fincluvation will be a permanent platform of IPPB to co-create **inclusive financial solutions** with participating Fintech Start-ups.

- It is an **Industry first initiative** to create a powerful platform to mobilize the start-up community towards building meaningful financial products aimed at financial inclusion.

- Fincluvation will allow the start-ups to work together with IPPB and DoP experts to develop solutions and conduct pilots using the postal network and IPPB's technology stack.

- It invites startups to Participate, Ideate, Develop and Market intuitive and tailored products and services that can be taken to the customers.

- Startups are encouraged to develop solutions aligned with any of the following tracks-

    1. **Creditization** - Develop Innovative & Inclusive credit products aligned with the use cases of target customers and take them to their doorsteps through Postal network.

    2. **Digitization** - Bring convenience by converging traditional services with the Digital Payment Technologies like making usual Money Order service as Interoperable Banking service.

    3. **Any Market-led solutions** that can help solve any other problem relevant to IPPB and/or DoP in serving the target customers

- **Fincluvation mentors** will work closely with the startups to tweak products to the customer needs and align the go-to-market strategies with operating models of IPPB and DoP.

India Post Payments Bank

- India Post Payments Bank (IPPB) has been established in 2018.

- It comes under the Department of Posts (DoP), Ministry of Communication with 100% equity owned by Government of India.

- The bank has been set up with the vision to build the most accessible, affordable and trusted bank for the common man in India.

- The fundamental mandate of IPPB is to remove barriers for the unbanked and under-banked and reach the last mile leveraging a network comprising 160,000 post offices (145,000 in rural areas).

- IPPB's reach is built on the key pillars of India Stack - enabling Paperless, Cashless and Presence-less banking in a simple and secure manner, through a CBS-integrated smart phone and biometric device.

- IPPB's motto - Every customer is important; every transaction is significant, and every deposit is valuable.

Pyramid Schemes and MLM Model

The Enforcement Directorate (ED) attached ₹757.77 crore worth of assets of direct-selling company Amway India Enterprises Private Limited, accusing it of running a Multi-level Marketing (MLM) pyramid scam.

Pyramid Scheme

- A pyramid scheme is an unsustainable business model in which original investors make money by recruiting others rather than by selling actual products or services.

- In a pyramid scheme, an entity promises participants payment or services primarily for enrolling other people into the scheme, rather than supplying a product or service to the public.

- As the new participants rope in fresh recruits, money keeps flowing up the chain eventually making an ever-increasing pyramid or hierarchy.

- These are also called money circulation schemes.

- This scheme becomes unsustainable after a sizable number of people have been roped in, as profits minimise when the acquired money is being circulated amongst the group.

MLM Model

- There is a thin line between a pyramid scheme and an MLM model.

- MLMs are similar in nature to pyramid schemes but differ in that they involve the **sale of tangible goods**.

- The focus on the sale of more products as a **compensation model** rather than commissions for recruiting more members is what differentiates an MLM model from a pyramid scheme.

- Unlike indirect sales companies that use a network of wholesalers, distributors, and retailers to sell their products, MLM companies **rope in members of the public to directly sell their products**.

- These members, while not being employees of the company, recruit more people to join the product selling network, thus putting in place a mechanism that expands this web and revenue.

Laws governing these schemes in India

- In 2021, the Centre released new guidelines for direct selling companies like Tupperware, Amway, and Oriflame, banning them from promoting pyramid or money circulation schemes.

- With the **Consumer Protection (Direct Selling) Rules, 2021**, direct selling companies were for the first time brought under the ambit of the Consumer Protection Act.

- The new Rules were introduced to make these companies liable for the grievances arising out of the sale of goods or services by its direct sellers.

- The rules said that direct selling entities and direct sellers would be prohibited from

    1. Promoting a pyramid scheme or

    2. Enrolling any person on such scheme or

    3. Participating in such arrangement in any manner whatsoever in the garb of doing direct selling business.

- Another legislation banning such activities is the **Prize Chits and Money Circulation Schemes (Banning) Act, 1978**.

- This bans prize chits and money circulation schemes or enrolment as members or participation therein.

New Investment Policy-2012

The Cabinet Committee on Economic Affairs has approved the proposal of the Department of Fertilizers for extension of applicability of New Investment Policy (NIP)-2012 for the 3 units of Hindustan Urvarak & Rasayan Ltd.

- The New Investment Policy of 2012 was proposed by the Department of Fertilisers, Ministry of Chemical & Fertilizers.

- In 2013, the Government of India approved this policy to **facilitate fresh investments in urea sector** and to make India self-sufficient.

- The policy lays down guidelines to fix gas prices and also other roadmaps for attracting investment in the urea sector.

- It provides a **structure of a floor price and a ceiling price** for the amount payable to Urea units, which will be calculated based on the delivered gas price (inclusive of charges & taxes) to respective urea units.

- The floor and ceiling price of each urea unit shall be operative with respect to the computed Import Parity Price (IPP).

- **IPP** defined for urea under the investment policy of 2008 is the average C&F price without any applicable custom duties and handling and bagging charges at the port.

    1. If the computed IPP (payable) is between the floor and the ceiling price for that gas cost, it is the IPP (payable) which will be used.

    2. If the IPP is above or below the ceiling or the floor respectively, it is the ceiling or floor price that will be acceptable as the case may be.

Guidelines on Capital Requirements for NBFCs-UL

The Reserve Bank of India (RBI) issues guidelines on capital requirements for NBFCs-Upper Layer (NBFCs-UL).

- This follows a circular for Scale Based Regulation for NBFCs. This circular is applicable to all NBFCs identified as NBFC-UL, except core investment companies (CICs).

- The NBFCs-UL must maintain, on an on-going basis, Common Equity Tier 1 (CET1) ratio of at least 9% of risk weighted assets.

- Elements of the CET-1 capital will comprise of

    1. Paid-up equity share capital issued by the NBFC,

    2. Share premium resulting from the issue of equity shares,

3. Capital reserves representing surplus arising out of sale proceeds of assets,

4. Statutory reserves and

5. Revaluation reserves arising out of change in the carrying amount of an NBFC's property, consequent upon its revaluation in accordance with the applicable accounting standards may, at the discretion of the NBFC, will be reckoned as CET1.

6. Other disclosed free reserves, if any.

7. Balance in Statement of Profit & Loss Account after allocations and appropriations i.e. retained earnings at the end of the previous financial year. Accumulated losses shall be reduced from CET 1.

8. Profits in current financial year may be included on a quarterly basis if it has been audited or subject to limited review by the statutory auditors of the NBFC.

- **Loans and advances under ₹5 crore** - In a separate set of guidelines on loans and advances by NBFCs, the RBI has spelt out regulatory restrictions for NBFCs in the Middle and Upper Layer.

- Unless sanctioned by the board of directors or committee of directors, NBFCs shall not grant loans and advances aggregating ₹5 crore and above to the,

    1. Directors (including the Chairman/MD);

    2. Relatives of directors;

    3. Any firm in which any of director or their relative is interested as a partner, manager, employee or guarantor; or

    4. Any company in which any director their relative is interested as a major shareholder, director, manager, employee or guarantor.

- **In the real estate sector**, while appraising loan proposals, NBFCs must ensure that the borrowers have obtained prior permission for the project from government,local government/ other statutory authorities.

- To ensure that the loan approval process is not hampered on account of this,

    1. The proposals may be sanctioned in normal course,

    2. But the disbursements shall be made only after the borrower has obtained requisite clearances from the government or other statutory authorities.

Time Banking

- Time banking is a bartering system for various services, where people exchange services for labor-time based credits as a unit of account, rather than money.

- Labor-time units can be credited to a person's account in the time bank and redeemed for services from other members of the time bank.

- The term "Time Banking" was coined by American lawyer Edgar Cahn, who advocated its use to supplement government social services.

- It is an intermediate system between a system of monetary indirect exchange and a reciprocal gift economy with some of the pros and cons of each.

- Time banking can be considered a **form of community currency**.

Time poverty

- Time poverty is defined as "not having enough time" to pursue interests beyond unpaid domestic /care work.

- Unpaid labour is not considered 'real work' and is often devalued by the men and society, who directly benefit from it.

- The situation leads to emotional strain and combined with the time poverty, the costs often outweigh the benefits.

- Often, women do not find enough time or motivation to participate in activities outside the household.

- Time poverty has a direct bearing on the ability of women to contribute to or participate in the labour market and / or public or political life.

- In 2020, female labour force participation rate declined compared to 2019 in 58 of the 66 countries surveyed by the UN Department of Economics and Social Affairs.

19.   AGRICULTURE

Digitisation of J form

The Punjab government decided to provide digital J-Forms to the farmers across the state from April 1, 2022. This move will benefit the farmers who will be looking to sell their crop (wheat) at MSP in mandis.

- **'J form'** is the sale receipt of a farmer's agricultural produce in mandis (grain market).

- These forms were earlier issued manually by arthiyas (commission agents) because in Punjab, a majority of farmers sell their crops through such agents only.

- Also, this form is an income proof for a farmer who sells his crop.

- Before digitisation of the J form, several arhtiyas had the habit of keeping these forms with themselves, instead of providing it to the farmers, which was their right.

- Hence, many farmers ended up having no record of their income after selling their crops.

- But by getting digitised J form, farmers will now have a clear record of the crop sold and income received in lieu of that.

- **Punjab Mandi Board** will send these forms directly to the farmer's WhatsApp number immediately after a sale is confirmed on the system by the arthiyas and buyers.

- JForms in DigiLocker are legally at par with original physical documents in line with Rule 9A of the Information Technology (Preservation & Retention of Information by Intermediaries providing Digital Locker facilities) Rules, 2016.

- **Benefits** - The 'J form' can be used by the farmers for raising finance from financial institutions, IT waivers, subsidy claims, and farmer's insurance.

- It can also help farmers get admission for their wards in educational institutes abroad.

- Apart from this, this move will stop the theft of grains by some arhtiyas.

- The government too will benefit because some landowners (not involved in farming) show their income under farming to evade Income Tax payments.

National Bee Board

- In 2005, Beekeeping has been included as a supplemental activity under National Horticulture Mission (NHM) for promoting cross pollination of Horticultural Crops.

- Formed as a Registered Society under Societies Registration Act, XXI of 1860 in 2000 & promoted by the Small Farmers' Agri-Business Consortium (SFAC).

- In view of the tremendous scope for increasing productivity due to cross pollination and increase in income through Apiculture, the National Bee Board (NBB) was reconstituted in **2006**.

- The main objective of this Board is **overall development of Beekeeping** by promoting Scientific Beekeeping in India to

  1. Increase the productivity of crops through pollination and

  2. Increase the Honey production for increasing the income of the Beekeepers/ Farmers.

- Funds flow to the Board from the National Horticulture Mission and the Horticulture Mission for North East and Himalayan States Scheme.

Parboiled Rice

The Centre will stop the purchase of excess quantity of parboiled rice, of which Telangana is a major producer.

- Parboiling of rice is not a new practice, and has been followed in India since ancient times.

- It refers to partially boiling the rice at the paddy stage, before milling.

- However, there is no specific definition of parboiled rice of the Food Corporation of India or the Food Ministry.
- **Processes** - All processes for parboiling rice generally involve three stages - soaking, steaming and drying.
- After passing through these stages, the paddy goes for milling.
- The more common method is to soak the paddy in hot water for 8 hours. Then the paddy is boiled and sun-dried.
- There are also methods were the paddy is soaked in hot water for 3 hours, steamed for 20 minutes and then dried in the shade.
- The Paddy Processing Research Centre (PPRC), Thanjavur follows a method known as the chromate soaking process.
- It uses chromate, a family of salt in which the anion contains both chromium and oxygen, which removes the odour from the wet rice.
- **Rice variety used -** Generally, all varieties can be processed into parboiled rice, but it is ideal to use long slender varieties to prevent breakage during milling.
- However, aromatic varieties should not be parboiled as the process can make it can lose its aroma.
- **Benefits** - Parboiling makes rice tougher. This reduces the chances of the rice kernel breaking during milling.
- Parboiling also increases the nutrient value of the rice.
- Parboiled rice has a higher resistance to insects and fungi.
- **Disadvantages** - The rice becomes darker and may smell unpleasant due to prolonged soaking.
- Besides, setting up a parboiling rice milling unit requires a higher investment than a raw rice milling unit.

Scheme on Fortified Rice

The Union Cabinet Committee on Economic Affairs approved a scheme to distribute fortified rice under government programmes by 2024.

- The Union Cabinet chaired by the Prime Minister has accorded its approval for supply of fortified rice throughout
    1. Targeted Public Distribution System (TPDS) under the National Food Security Act (NFSA),
    2. Integrated Child Development Services (ICDS),
    3. Pradhan Mantri Poshan Shakti Nirman - PM POSHAN [erstwhile Mid-Day Meal Scheme (MDM)] and
    4. Other Welfare Schemes (OWS) of Government of India in all states and union territories (UTs) in a phased manner.
- The entire cost of the scheme of Rs.2,700 crore will be borne by the Centre until it is fully implemented by June, 2024.
- The initiative will be implemented in 3 phases.

Phase	Coverage	Implementation Target
1	Anganwadi centres under ICDS and PM POSHAN	March 2022, but is still under implementation
2	TPDS and other welfare schemes in all 291 aspirational districts as well as districts with high burden of stunting	March 2023
3	The remaining districts of the country	March 2024

- Food Corporation of India and the state agencies have already procured 88.65 LMT (lakh tonnes) of fortified rice for supply and distribution.

- A pilot for distribution of fortified rice through PDS was implemented for a period of three years from 2019-2020 across 11 States.

Fortification

- Food Safety & Standards Authority of India (FSSAI) defines fortification as **deliberately increasing** the content of essential **micronutrients** in a food so as
    1. To improve the nutritional quality of food and
    2. To provide public health benefit with minimal risk to health.

- **Technologies** - Various technologies are available to add micronutrients to regular rice, such as coating, dusting, and 'extrusion'.

- The last mentioned involves the production of fortified rice kernels (FRKs) from a mixture using an 'extruder' machine.

- Considered to be the best technology for India, it involves blending fortified rice kernels with regular rice to produce fortified rice.

- **Working of Extrusion Technology -** Dry rice flour is mixed with a premix of micronutrients, and water is added to this mixture.

- The mixture is passed through a twin-screw extruder with heating zones, which produces kernels similar in shape and size to rice.

- These kernels are dried, cooled, and packaged for use. FRK has a shelf life of at least 12 months.

- **Guidelines -** As per guidelines of the Ministry of Consumer Affairs, Food and Public Distribution, the shape and size of the fortified rice kernel should "resemble the normal milled rice as closely as possible".

- According to the guidelines, the length and breadth of the grain should be 5 mm and 2.2 mm respectively.

- 10 g of FRK must be blended with 1 kg of regular rice.

- **FSSAI Norms** - According to FSSAI norms, 1 kg of fortified rice will contain the following: iron (28 mg-42.5 mg), folic acid (75-125 microgram), and vitamin B-12 (0.75-1.25 microgram).

- Rice may also be fortified with zinc (10 mg-15 mg), vitamin A (500-750 microgram RE), vitamin B-1 (1 -1.5 mg), vitamin B-2 (1.25 -1.75 mg), vitamin B-3 (12.5 -20 mg) and vitamin B-6 (1.5 -2.5 mg) per kg.

20. ENVIRONMENT

Coral Reefs & Coral Bleaching

The management authority of Australia's Great Barrier Reef confirmed that the reef is experiencing a mass coral bleaching event.

Coral reefs

- Coral reefs are the largest living structures on the planet.

- They are large **underwater ecosystem** composed of the skeletons of colonial marine invertebrates called coral.

- **Each coral is called a polyp** and thousands of such polyps live together to form a colony, which grows when polyps multiply to make copies of themselves.

- **Types** - Corals are of two types - hard corals and soft corals.

- Hard corals (hermatypic or 'reef building' corals) extract calcium carbonate from the seawater to build hard, white coral exoskeletons.

- Soft coral polyps, however, borrow their appearance from plants; attach themselves to such skeletons and older skeletons built by their ancestors.

- They also add their own skeletons to the hard structure over the years and these growing multiplying structures gradually form coral reefs.

- **Symbiotic relationship** - Corals share a symbiotic relationship with single-celled algae called zooxanthellae.

- Zooxanthellae provide the coral with food and nutrients, which they make through photosynthesis, using the sun's light.

- In turn, the corals give the algae a home and key nutrients. The zooxanthellae also give corals their bright colour.

- **Significance** - Coral reefs support over 25% of marine biodiversity; even as they only take up 1% of the seafloor.

- The marine life supported by reefs further fuels global fishing industries.

- Besides, coral reef systems generate $2.7 trillion in annual economic value through goods and service trade and tourism.

- Coral reefs also provide protection from storm waves.

- Dead reefs can revive over time if there are enough fish species that can graze off the weeds that settle on dead corals, but it takes almost a decade for the reef to start setting up again.

Coral Bleaching

- Bleaching happens when corals experience **stress in their environment** due to changes in temperature, pollution or high levels of ocean acidity.

- Under the stressed conditions, the zooxanthellae start producing reactive oxygen species, which are not beneficial to the corals.

- So, the corals expel the colour-giving zooxanthellae from their polyps, which expose their pale white exoskeleton, giving the corals a bleached appearance.

- This also ends the symbiotic relationship that helps the corals to survive and grow.

- A 2021 study by the UN-supported Global Coral Reef Monitoring Network (GCRMN) showed that **14% of the world's coral on reefs had been lost** between 2009 and 2018, with most of the loss attributed to coral bleaching.

- **Recovery** - Bleached corals can survive depending on the levels of bleaching and the recovery of sea temperatures to normal levels.

- If heat-pollutions subside in time, over a few weeks, the zooxanthellae can come back to the corals and restart the partnership.

- But severe bleaching and prolonged stress in the external environment can lead to coral death.

- **Previous events** - The first mass bleaching event had occurred in 1998 and the second one in 2002.

- However, in the past decade, mass bleaching occurrences have become more closely spaced in time, with the longest and most damaging bleaching event taking place from 2014 to 2017.

- This is due to the fact that climate change and increased global warming owing to rising carbon emissions and other greenhouse gases have made seas warmer than usual.

Microplastics

A new study has found Microplastic particles in the blood samples of 17 out of the 22 persons, half of these were polyethylene tertraphthalate (PET) plastics.

- Microplastics are tiny bits of various types of plastic found in various places - the oceans, the environment, and now in human blood.

- They are ubiquitous pollutants found almost everywhere on earth.

- The name is used to differentiate them from "macroplastics" such as bottles and bags made of plastic.

- There is no universal agreement on the size that fits this bill.

- However, the U.S. National Oceanic and Atmospheric Administration (NOAA) and the European Chemical Agency define microplastic as **less than 5mm in length**.

- This new study did not yet clear if these microplastics can cross over from the blood stream to deposit in organs and cause diseases.

Mumbai and Hyderabad - Tree City of the World

Mumbai and Hyderabad have been jointly recognised as '2021 Tree City of the World' for their commitment to growing and maintaining urban trees and greenery in building healthy, resilient and happy cities.

- While Mumbai has made the list for the first time, Hyderabad has featured on it for the second consecutive year.
- 'Tree Cities of the World' is a programme started by the United Nations' Food and Agriculture Organisation (UN-FAO) and non-profit organisation Arbor Day Foundation.

- It is an international effort to recognise cities and towns committed to ensuring that their urban forests and trees are properly maintained, sustainably managed, and duly celebrated.

- It provides direction, assistance, and worldwide recognition for a community's dedication to its urban forest.

- It provides a framework for a healthy, sustainable urban forestry programme in a town or city.

- For 2021, 138 cities have been recognised under the programme.

- A city is recognised as a 'Tree City' if it meets five core standards to show its commitment towards caring for its trees and forests.

- To be recognised as a Tree City, a city must have a written statement delegating responsibility for the care of trees within the municipal boundary to a staff member, a city department, or a group of citizens - a Tree Board.

- The city should have in place a law or an official policy to govern the management of forests and trees.

- The city should have a dedicated annual budget for the implementation of the tree management plan.

- To be recognised as a Tree City, it should organise an annual celebration of trees to raise awareness among people and to acknowledge citizens who carried out the tree programme.

Rajamala Eravikulam National Park

The survival rate of newly born Nilgiri tahrs (up to one year) is found to be the highest at Rajamala in the Eravikulam National Park (ENP) than in other isolated natural habitats such as Silent Valley, Pothady, Munnar, etc.

- Rajamala is among the finest Hill Stations in Idukki, Kerala.

- Rajamala hills houses the Eravikulam National Park.

- The Eravikulam National Park is situated in the Kannan Devan Hills of the southern Western Ghats with an area of 97 sq. km.

- The Eravikulam National Park has the highest density and largest surviving population of **Nilgiri tahr**, the endangered mountain goat.

- The park is built mainly with the aim of conserving Nilgiri tahr.

- Every twelve years, this place will be carpeted with blue due to the mass flowering of **Neelakurinji flowers**.

Plan Bee

The "Plan Bee" of the Indian Railways to keep elephants off the rail tracks seems to have failed to get the desired results with 48 pachyderms and 188 other animals killed by running trains since 2019.

- The Indian Railways came up with the Plan Bee as a way of getting elephants to buzz off from train tracks.

- They use speakers that play the sound of bees to scare the jumbos away.

- The buzzing is played as trains approach vulnerable points and can be heard up to half a mile (600 metres) away.

- The 'Plan Bee' has won an award for "best innovative idea" from Indian Railways for regional operator Northeast Frontier Railway (NFR).

- **Concept** - Elephants have long been known to be frightened by the buzzing of bees and stings.

- Villagers in Kerala have been using "beehive fences" to scare away marauding elephants.

- When elephants touch the fences, bees inside boxes attached to the fences storm out angrily to defend their colonies.

- **Threats to Elephants** - Increasing human population, habitat destruction, increased frequency of fast trains, and neglect on part of authorities.

Desert National Park

A green agriculture project, funded by the Food FAO's Global Environment Facility, will act as a lifeline for the Desert National Park (DNP) Rajasthan with the conservation of critical biodiversity and forest landscapes.

- Desert National Park is an excellent example of the Thar desert's ecosystem.

- It is situated on the western border of India within Jaisalmer & Barmer in Rajasthan.

- It is only place where Rajasthan State Bird (Great Indian Bustard), State animal (Chinkara) and State tree (Khejri) and State flower (Rohida) are found naturally.

- Desert monitors, deadly vipers, spiny-tailed lizards, Krait, and sandfish are the prominent members of the wildlife family.

- In winter, the park hosts an incredible variety of **migratory raptors** such Himalayan and Eurasian Griffon Vultures, Eastern Imperial Eagle, and the Saker Falcon.

- The Desert National Park also has a collection of fossils of animals and plants of 180 million years old.

- The Park is formed of undulating sand dunes, jagged rocks, dense salt lake bottoms and inter-medial areas.

- Desert National Park (DNP) Timeline:
    1. 1980 - UNESCO World Heritage Site
    2. 1992 - National Park

Steel Slag Road

Surat has become the first city in the country to get a processed steel slag (industrial waste) six-lane road.

- Steel Slag Road is a brainchild of the Central Road Research Institute (CRRI), NITI Aayog, and the Council of Scientific and Industrial Research (CSIR).
- This road is built under the 'Waste to Wealth and Clean India' initiative.

Steel Slag

- Steel Slag is an industrial by-product obtained from the steel manufacturing industry.

- It is **generated from a steel furnace** burning at around 1,500-1,600 degree centigrade in the form of molten flux material as an **impurity**.

- **Use in Road** - The construction cost of the processed steel slag road is 30% cheaper than roads built from natural aggregates.

- The thickness of the road is also 30% lesser than normal ones, while the durability is much longer due to the utilisation of steel slag.

- Utilization of processed steel slag in road construction paves the way for

   1. Sustainable use of waste and reduces the reliance on perishable natural aggregates,

   2. Reduce GHG emissions and carbon footprint in road construction activity.

- This process is in line with India's commitment to the United Nations Sustainable Development Goal No. 9 for building resilient infrastructure through inclusive and sustainable industrialization & green technologies.

- **Other uses** - Steel slag can be used as **aggregates in concrete** to replace natural aggregates, because it has favorable mechanical properties, and high resistance to abrasion and impact.

- It is used to **treat acidic water**.

- In Agricultural sector, due to its ability to **correct soil acidity**, it is used as silicate fertilizer that is capable of providing silicon to the plants.

Seaweed

A Union Minister has said that the work on the seaweed park proposed in Tamil Nadu will commence as soon as the State government allots the land for a special economic zone for seaweed farming.

- "Seaweed" is the common name for **countless species of marine plants and algae** that grow in the ocean as well as in rivers, lakes, and other water bodies.

- Seaweeds are generally anchored to the sea bottom or other solid structures by rootlike "holdfasts".

- The holdfasts perform the sole function of attachment and **do not extract nutrients** as do the roots of higher plants.

- **Size** - Some seaweeds are microscopic, such as the phytoplankton that live suspended in the water column and provide the base for most marine food chains.

- Some are enormous, like the giant kelp that grow in abundant "forests" and tower like underwater redwoods from their roots at the bottom of the sea.

- Most are medium-sized, come in colors of red, green, brown, and black, and randomly wash up on beaches and shorelines just about everywhere.

- **Benefits** - These fixed and free-floating "weeds" of the sea utterly essential to innumerable marine creatures, both as food and as habitat.

- A number of seaweed species are edible, and many are also of commercial importance to humans.

- Some are used as fertilizers or as sources of polysaccharides.

- Seaweed is chock-full of vitamins, minerals, and fiber, and can be tasty.

- Many types of seaweed contain anti-inflammatory and anti-microbial agents.

- The ancient Romans used them to treat wounds, burns, and rashes.

- Certain seaweeds do possess powerful cancer-fighting agents that will eventually prove effective in the treatment of malignant tumors and leukemia in people.

- The ancient Egyptians may have used them to treat breast cancer.

- Among their many uses in manufacturing, they are

   1. Effective binding agents (**emulsifiers**) in such commercial goods as toothpaste and fruit jelly, and

   2. Popular softeners (**emollients**) in organic cosmetics and skin-care products.

   3.

Prevention of Cruelty to Animals Act, 1960

The Government has recognized that the Prevention of Cruelty to Animals Act, 1960 must be amended to introduce more stringent penalties.

- The Prevention of Cruelty to Animals Act, 1960 was authored by acclaimed dancer and animal lover, Rukmini Devi Arundale.
- This Act aims to **prevent the infliction of unnecessary pain or suffering on animals** and for that purpose to amend the law relating to the prevention of cruelty to animals.
- As per the provisions of this law, the government of India formed the **Animal Welfare Board of India** (AWBI).
- The Act defines animals as any living creature other than humans.
- It also discusses different forms of cruelty, exceptions, and killing of a suffering animal in case any cruelty has been committed against it, so as to relieve it from further suffering.
- It also provides the guidelines relating to **experimentation** on animals for scientific purposes.
- It provides the guidelines relating to **exhibition of the performing animals,** and offences committed against the performing animals.
- This Act provides for the limitation period of 3 months beyond which no prosecution shall lie for any offences under this Act.

Data

- The prevention of cruelty to animals is a **state subject**.
- The data in this regard is not maintained in the Central Government.
- However, the AWBI is regularly getting information on the cruelty to animals for which the AWBI is writing to the State Governments and local authorities to take necessary action as per the prevailing laws.

Animal Welfare Board of India

- The Animal Welfare Board of India (AWBI) is a statutory advisory body on Animal Welfare Laws and promotes animal welfare in the country.
- It was set up in 1962 under Section IV of the **Prevention of Cruelty to Animals Act, 1960**.
- Late Smt. **Rukmini Devi Arundale** pioneered the setting up of the Board, with its Headquaters at Chennai.
- The Board consists of 28 Members. The term of office of Members is for a period of 3 years.
- The jurisdiction of AWBI is throughout the Country.
- The AWBI recognizes the Animal Welfare Organizations (AWOs) including Gaushalas as per the request made by those organizations.

SPECIES IN NEWS

Nilgiri Tahr

- The Nilgiri tahr (*Nilgiritragus hylocrius*) is the only mountain ungulate in southern India amongst the 12 species present in India.
- The Nilgiri tahr is a congener of the Himalayan tahr (Hemitragus jemlahicus), found in Kashmir and Bhutan and the Arabian tahr (Arabitragus jayakari), found in Oman and United Arab Emirates.
- It is also the state animal of Tamil Nadu.
- It is an endemic species of the Western Ghats.
- The Nilgiri tahr, which used to be found along the entire stretch of Western Ghats, is presently found only in small fragmented pockets.
- Existing populations are under severe stress due to **habitat loss** and **hunting**.

Protection Status

IUCN Red List of Threatened Species	Endangered
Wildlife (Protection) Act of India, 1972	Schedule I

Spotted Deer

A one-year-old male spotted deer was found dead in Ranipet district, Tamil Nadu.

- Spotted deer (*Axis axis*), or **Axis Deer** or **chital**, is the most common deer species in Indian forests.
- It lives in grasslands and forests in **India** and **Sri Lanka**.
- The deer's golden-rufus coloring is speckled with white spots, and it has a white underbelly.
- Its curved, 3-pronged antlers extend nearly 3 feet and shed each year.
- Spotted deer has a **prolonged mating season**, as the perpetually warm climate allows females to remain fertile and to give birth to fawns any time of year.
- Due to these tropical conditions, males do not have synchronized antler cycles.
- Spotted deer most commonly occur in herds of 10 to 50 individuals, with one or two males and a number of females and young.
- They primarily eat grasses and vegetation but will also ingest their shed antlers as a source of nutrients.
- It is the **State animal of Telangana**.
- IUCN Status - Least Concern.

Indian Tent Turtles

There are no reports to indicate that the Indian tent turtle is on the verge of extinction due to illegal mining in Narmada River.

- Indian tent turtle (*Pangshura tentoria)* is a species of turtle in the family Geoemydidae.
- The species is native and endemic to India, Nepal and Bangladesh, with three subspecies recorded from the region.

Sub-species of Indian Tent Turtles	Region
P. t. tentoria	Occurs in peninsular India and is recorded from Orissa, Maharashtra, Andhra Pradesh, Assam and Madhya Pradesh
P. t. circumdata	Occurs in the western tributaries of Ganga and the rivers of Gujarat. It is found in Rajasthan, Madhya Pradesh, Uttar Pradesh and Gujarat.
P. t. flaviventer	Occurs in the northern tributaries of Ganga and is recorded from Uttar Pradesh, Bihar, West Bengal and Assam.

- They are terrestrial, oviparous, precocial in nature.
- **Habitat** - Freshwater, Wetlands and Swamp

Protection Status	
IUCN Status	Lower Risk/ least concern
CITES	Appendix II
Wild Life (Protection) Act, 1972	Schedule I (Highest degree of protection)
Major Threats - Due to the attractive appearance of the species, they are illegally traded in the pet market.	

Steps by the Government to protect wildlife and its habitats

- **Protected Areas**, viz., National Parks, Wildlife Sanctuaries, Conservation Reserves and Community Reserves have been created in the country covering important habitats to provide better protection to wildlife, including threatened species and their habitat.

- **Financial assistance** is provided to the State/Union Territory Governments under the Centrally Sponsored Scheme of 'Integrated Development of Wildlife Habitats', for providing better protection to wildlife and improvement of habitat.

- **Wild Life (Protection) Act, 1972** provides for stringent punishment for violation of its provisions.

- The Act also provides for forfeiture of any equipment, vehicle or weapon that is used for committing wildlife offence(s).

- **Local communities** are involved in conservation measures through eco-development activities which help the forest departments in protection of wildlife.

- **Wildlife Crime Control Bureau** (WCCB) coordinates with State/UTs and other enforcement agencies to gather intelligence about poaching and unlawful trade in wild animals and animal articles.

21. SCIENCE AND TECHNOLOGY

SPACE

Gravitational Lensing

Recently, scientists imaged a star that is extremely far away, at a distance of about 12.8 billion light years away, using Gravitational Lensing.

- Despite being the fastest moving object in our universe, even light is diverted from its straight path when it passes near a massive object, like a very massive black hole.

- When we observe the light from a star that passes near an intervening galaxy, again it can get "lensed".

- Gravitational Lensing is a term that implies that the gravity of the galaxy causes it to act like a lens and distort and magnify the light from the star.

- Gravitational lens can occur when a huge amount of matter, like a cluster of galaxies, creates a gravitational field that distorts and magnifies the light from distant galaxies that are behind it but in the same line of sight.

- **Effects** - Gravitational lensing can magnify the image of the star as we see it.

- So, it allows researchers to study the details of early galaxies too far away to be seen with current technology and telescopes.

- If the star we are observing is exactly behind the intervening large galaxy, there are four images of the star produced around the galaxy's image - a phenomenon known as Einstein cross.

- If it is slightly away from the line joining us on earth and the galaxy, but behind the galaxy, the image we capture will be like an arc of light.

- Gravitational lensing is the key in discovering many celestial objects today.

Episodically Accreting Young Star

Indian astronomers from the Aryabhatta Research Institute of Observational Sciences (ARIES) have discovered Gaia 20eae belonging to the extremely rare group of young stars that exhibit episodic accretion.

- Episodically accreting young stars are **young, low-mass stars** that have not initiated hydrogen fusion in their core.

- They are fuelled by **gravitational contraction and deuterium fusion** (pre-main-sequence phase of the star).

- These **pre-main-sequence stars** are surrounded by a disc from which it steadily feeds on the matter from the disc-shaped region of gas and dust surrounding the star to gain mass.

- This process is known as **mass accretion** from the circumstellar disc of the star.

- On occasions their feeding rate increases. This is known as the periods of enhanced mass accretion from their circumstellar disc.
- During such episodes, the brightness of the star increases by 4-6 magnitudes in the optical bands.
- So far 25 such rare groups of stars have been discovered.

Episodic Accretion

- Episodic accretion is a process where stars accrete (grow by accumulation) via a disk from a more spherically distributed envelope which adds mass to the disk and makes it unstable on an irregular basis.
- Such instability dumps extra material onto the star and the accretion rate and luminosity increase.

Blue Straggler Stars

Bengaluru-based Indian Institute of Astrophysics (IIAP) has found support for one way to understand the aberrant behavior of blue stragglers. For this, the IIAP made use of the observations by the Ultra Violet Imaging Telescope (UVIT) instrument of [ASTROSAT](), India's first science observatory in space.

Stellar ageing

- To know what blue stragglers are, it is necessary to understand how stars are classified and their evolution, studied.
- A **main sequence star** (for example, our Sun)**,** given its mass and age, is expected that once it has converted all its hydrogen into helium, its core will get denser.
- As the outer layers expand, it will swell into a **red giant**.
- After this phase, its fuel spent, it will shrink, becoming a smaller, cooling star called a **white dwarf** star at the end of its life.
- To study the behaviour of the star, a **colour-magnitude diagram** can be drawn, in which, we of
    1. The colour of the star, which is an indication of its surface temperature, is plotted in a graph against
    2. The magnitude of the star, which is related to the total energy given off by it.
- In a globular cluster of stars, a large number of stars are seen to find a place within a band known as the main sequence.
- The expectation is that all main sequence stars follow a similar pattern of evolution. But the blue straggler stars violate standard theories of stellar evolution.

Blue stragglers

- There are few stars, just at the stage of their lives, when they are expected to expand in size and cooling down, do just the opposite.
- They grow **brighter and hotter** as indicated by their **blue colour**, thus standing out from the cooler red stars in their vicinity.
- As they are blue in colour, and lag behind their peers in the evolution they are called blue stragglers.
- Blue stragglers are a class of star observed in old, dense stellar systems such as globular clusters, and also, sometimes, alone.
- They stand out because old stellar populations are expected to be devoid of blue (high-mass) stars which possess **very short lifespans**.
- The blue stragglers in an old stellar population must therefore have formed long after the system as a whole.
- The IIAP researchers have found why a blue straggler is more massive, and energetic, than it is expected to be.
- They have shown evidence that the straggler draws matter from the giant companion star and grows more massive, hot and blue, and the red giant to end up as a normal or smaller white dwarf.

Space Bricks

Researchers from the Indian Space Research Organisation (ISRO) and the Indian Institute of Science (IISc) have developed a way *to make 'space bricks'.*

- The team has demonstrated that the **slurry-casting method** is used to make 'space bricks' from Martian soil with the help of bacteria and urea.

- **Microbial Induced Calcite Precipitation** (MICP) technique, where certain bacteria can precipitate calcium carbonate using soil under right conditions, was used to create 'space bricks'.

- These 'space bricks' can be used to construct building-like structures on Mars that could facilitate human settlement on the red planet.

- **Slurry-casting Method** - First, a slurry was made by mixing Martian soil with guar gum, *Sporosarcina pasteurii* bacteria, urea and nickel chloride ($NiCl_2$).

- This slurry can be poured into moulds of any desired shape, and over a few days the bacteria - using bio-mineralisation - can convert the urea into crystals of calcium carbonate.

- [Bio-mineralisation is a process by which living organisms produce minerals to harden or stiffen existing tissues.]

- These calcium carbonate crystals, along with biopolymers secreted by the microbes, act as cement holding the soil particles together.

- As the Martian soil has a lot of iron that causes toxicity to organisms, adding $NiCl_2$ will make the soil hospitable to the bacteria.

- To recreate conditions on Mars while creating the brick, researchers have constructed a device - MARS (Martian AtmospheRe Simulator).

- **Benefits** - The slurry-casting method ensures that the bricks are less porous, which was a problem with other methods used to make Martian bricks.

- The bacteria seep deep into the pore spaces, using their own proteins to bind the particles together, decreasing porosity and leading to stronger bricks

- **Difference** - In the past, the team had made bricks out of lunar soil using a similar method.

- However, the previous method could only produce cylindrical bricks, while the current slurry-casting method can also produce bricks of complex shapes.

Bernardinelli-Bernstein Comet

NASA's Hubble Space Telescope has confirmed that the huge Bernardinelli-Bernstein comet (C/2014 UN271) with an estimated diameter of almost 129 km is indeed the largest icy comet nucleus ever seen by astronomers.

- The Bernardinelli-Berstein comet was discovered by chance in 2010.

- This comet was discovered by astronomers Pedro Bernardinelli and Gary Bernstein in archival images from the Dark Energy Survey at an astronomical observatory in Chile.

- It has been travelling towards the sun for over a million years and it is believed to have originated in the Oort Cloud.

- It follows a 3-million-year-long elliptical orbit.

- It has an estimated temperature of minus 348 degrees Fahrenheit.

- Despite the chilly temperature, it is warm enough to shed carbon monoxide from its surface to produce the dusty coma around its center.

- [Coma is a cloud of dust and gas surrounding the nucleus of a comet.]

- The comet's nucleus is around 50 times larger than that of most known comets, and its mass is estimated to be around 500 trillion tonnes.

- **Measuring the size** - The comet is too far away to be accurately measured by the telescope.

- So, a computer model of the surrounding coma was made and adjusted it to fit the images taken by the Hubble Space Telescope.

- The glow of the coma was then subtracted to reveal the nucleus.

Oort Cloud

- Oort Cloud is a distant region of the solar system that is predicted to be the source of most comets.

- The Oort Cloud is still only a theoretical concept as the comets that constitute it are too faint and distant to be directly observed.
- It was first hypothesised by Dutch astronomer Jan Oort in 1950.

EOS-02 Satellite

A Union Minister said that EOS-02 satellite will be launched in second quarter of 2022, which was slated to launch during Quarter-4 of 2021.

- EOS-02 is an Earth Observation Satellite (EOS) that will function as a **Technology demonstration satellite** for various new technologies.
- It will be launched by the Indian Space Research Organisation (**ISRO**).
- The first developmental flight of Small Satellite Launch Vehicle (**SSLV-1**) is scheduled to launch the EOS-02.
- EOS-02 is a 4-stage **microsatellite** that will carry a payload of 500 kg to **Sun-Synchronous** Low Earth Orbit (**LEO**).
- It has various applications that include agriculture, forestry, geology, hydrology, miniaturized power electronics, reaction wheels etc.
-

EOS Series	Launch Vehicle	Purpose of the Earth Observation satellite
EOS-01	PSLV-C49	EOS meant for Agriculture, Forestry & disaster management support
EOS-02	SSLV-01	Technology demonstration satellite for various new technologies with applications that include agriculture, forestry, geology, hydrology etc.
EOS-03	GSLV F10	First Agile Earth Observation satellite in Geostationary orbit and applications which include near real time imaging, quick monitoring of natural disasters, spectral signatures for agriculture, forestry etc.
EOS-04	PSLV-C52	Radar Imaging satellite meant to provide high quality images under all weather conditions for applications such as Agriculture, Forestry & Plantations, Soil Moisture & Hydrology and Flood Mapping.
EOS-05	-	EOS in the Geostationary Orbit.
EOS-06	-	EOS meant for applications, which include ocean related services and advisories towards potential fishing zone forecast , ocean state forecast

HEALTH

M2e

- The influenza A virus was isolated for the first time in 1931, and the first attempts to develop a vaccine against the virus began soon afterwards.
- These viruses cause seasonal epidemics and also pandemics at random intervals.
- Vaccination is the most effective way of preventing the spread of influenza infection.
- But, the seasonal influenza strains mutate rapidly and new strains of the virus proliferate. This makes it very difficult to make a vaccine that can consistently generate a sufficient degree of immunity.

- However, the **M2e peptide** of influenza A virus is a conserved region section, meaning it doesn't undergo too many mutations across the several kinds of influenza A strains.

- Therefore, to design a **universal flu vaccine** the M2e peptide can be targeted and then the immune system can be primed to generate antibodies.

- But, it has a limited ability to trigger a strong and long-lasting immune response and this has represented a major roadblock in its clinical development.

- **Vaccine Platform** - Recently researchers have reported a novel vaccine platform to deliver M2e to immune cells.

- By deploying this platform, a single shot vaccine containing M2e was able to trigger long-lasting immune responses that could protect effectively against multiple strains of the flu.

- This vaccine approach has the potential to

    1. Minimise the amount of M2e vaccine **antigen** and the need for strong **adjuvants**,

    2. Reducing potential side-effects, particularly in more vulnerable populations.

Epilepsy

- Epilepsy is a chronic Non-Communicable Disease of the brain that affects people of all ages.

- It is characterized by recurrent seizures, which are brief episodes of involuntary movement that may involve a part of the body (partial) or the entire body (generalized) and are sometimes accompanied by loss of consciousness and control of bowel or bladder function.

- Seizure episodes are a result of excessive electrical discharges in a group of brain cells.

- **Symptoms** - Seizure symptoms can vary widely.

- Some people with epilepsy simply stare blankly for a few seconds during a seizure, while others repeatedly twitch their arms or legs.

- One seizure does not signify epilepsy (up to 10% of people worldwide have one seizure during their lifetime).

- Epilepsy is defined as having two or more unprovoked seizures.

- **Treatment** - Treatment with medications or sometimes surgery can control seizures for the majority of people with epilepsy.

- Some people require lifelong treatment to control seizures, but for others, the seizures eventually go away.

- Some children with epilepsy may outgrow the condition with age.

- **Response** - WHO, the International League Against Epilepsy (ILAE) and the International Bureau for Epilepsy (IBE) led the Global Campaign Against Epilepsy to bring the disease out of the shadows.

Two-finger Test

The Madurai Bench of the Madras High Court directed the State to ban 'two-finger test' on victims of sexual offences, particularly on minor victims.

- A "per vaginal" or two-finger test is an explicitly intrusive physical examination wherein a doctor inserts two fingers inside the vagina of a rape survivor to check if

    1. The hymen is intact or not, and

    2. The size of the vaginal opening and the laxity of vagina.

- It examines the laxity of vagina in order to determine if the woman has engaged in or has been subjected to sexual intercourse.

- As per WHO, the two-finger test cannot prove that a woman has had a vaginal intercourse or not.

- The technique is practised on the **assumption** that a hymen can be torn because of sexual intercourse and that the appearance of female genitalia can determine the sexual history of a woman.

- **Controversy** - Virginity testing is a patriarchal idea which transgresses ethics, ethical medical practices, as well as the **privacy** of the victim.
- For decades, however, the two-finger test was the only method of confirming rape.
- In addition to being medically uncalled-for, it is exclusively performed on women, mostly **without their consent**.
- The practice is rooted in **gender and power inequalities**, wherein a woman's body is a subject of archaic ideas and/or can be regulated as per men's desires.

Haemophilia

The World Haemophilia Day is observed on April 17 every year. This year's theme "Access for all: Partnership. Policy. Progress."

- Hemophilia is usually an **inherited X-linked recessive bleeding disorder** in which the blood does not clot properly.
- This can lead to spontaneous bleeding as well as bleeding following injuries or surgery.
- Blood contains many proteins called clotting factors that can help to stop bleeding. People with hemophilia have low levels of either factor VIII (8) or factor IX (9).
- **Causes** - Hemophilia is caused by a mutation or change, in one of the genes, that provides instructions for making the clotting factor proteins needed to form a blood clot.
- This change or mutation can prevent the clotting protein from working properly or to be missing altogether.
- These genes are located on the X chromosome.
- **Symptoms** - Bleeding within joints that can lead to chronic joint disease and pain; it often affects the knees, elbows, and ankles.
- Bleeding into the skin (which is bruising) or muscle and soft tissue causing a build-up of blood in the area (called a hematoma).
- Bleeding after circumcision (surgery performed on male babies to remove the hood of skin, called the foreskin).
- Bleeding in the head and sometimes in the brain which can cause long term problems, such as seizures and paralysis.
- Death can occur if the bleeding cannot be stopped or if it occurs in a vital organ such as the brain.

Types of Hemophilia	Causes
Hemophilia A (Classic Hemophilia)	Most common form of Hemophilia Caused by a lack or decrease of clotting factor VIII
Hemophilia B (Christmas Disease)	Caused by a lack or decrease of clotting factor IX

- **Severity** - The severity of hemophilia that a person has is determined by the amount of factor in the blood.
- The lower the amount of the factor, the more likely it is that bleeding will occur which can lead to serious health problems.
- In rare cases, a person can develop hemophilia later in life.
- The majority of cases involve middle-aged or elderly people, or young women who have recently given birth or are in the later stages of pregnancy. This condition often resolves with appropriate treatment.
- **Diagnosis** - To make a diagnosis, doctors would perform certain blood tests to show if the blood is clotting properly.
- If it does not, then they would do clotting factor tests, also called factor assays, to diagnose the cause of the bleeding disorder.

- **Treatment** - The best way to treat hemophilia is to replace the missing blood clotting factor so that the blood can clot properly.

- This is done by **infusing** (administering through a vein) commercially prepared factor concentrates.

Colour Blindness

The Supreme Court has directed the Film and Television Institute of India (FTII) not to exclude candidates suffering from colour blindness from its courses on film making and editing.

- Colour blindness or colour deficiency is the inability to see colours in the normal way.

- Colour blind individuals often cannot distinguish between certain colours - usually greens and reds, and sometimes blues as well.

- Two types of cells in the retina detect light

    o Rods - Distinguish between light and dark, and

    o Cones - Detect colour.

- There are three types of cones that see colour - red, green, and blue - and our brains use the information from these cells to perceive colour.

- **Causes** - Colour blindness can be the result of the absence of one or more of these cone cells, or their failure to work properly.

- In a situation where all three cone cells are present but one of them is malfunctioning, mild colour blindness may occur.

- Most colour blind people are born with the condition (congenital colour blindness), but some can develop it later in life.

- Congenital colour vision deficiencies are usually passed on genetically.

- A problem with colour vision that arises later in life could be the result of disease, trauma, or ingested toxins.

- Medical conditions that may increase the risk of getting colour blindness include glaucoma, diabetes, Alzheimer's, Parkinson's, alcoholism, leukaemia, and sickle-cell anaemia.

- **Severity** - Colour blindness may be of different kinds and degrees.

    o Mildly colour blind people often see all colours properly only when the light is good.

    o There are others who cannot tell one colour apart from another no matter how good the light is.

    o In the most severe kind of colour blindness, vision is black-and-white, that is, everything appears as a shade of grey.

- Color blindness generally affects both eyes, and the condition remains roughly the same for as long as the individual is alive.

- **Treatment** - Colour blindness cannot as yet be treated or reversed.

- However, it can be corrected to some extent by wearing special contact lenses or colour filter glasses.

- **Diagnosis** - In the case of a child, parents can notice the deficiency for the first time when the child is beginning to learn colours.

- The child may have difficulty in seeing colours or in recognising the brightness of colours in ways that would be considered 'normal'.

- The child may also show an inability to distinguish between shades of the same or similar colours.

- **At risk -** Men suffer from a higher incidence of colour blindness than women.

- Around the world, every tenth male is estimated to have some form of colour deficiency.

- In India, the Supreme Court in the FTII case quoted, "Estimated 8% of male population and less than 1% female population have red and green colour deficiency being the most common form of colour-blindness."

BIO-TECHNOLOGY

Genome-editing Technology

The Central Government paved the way for easy introduction of genome edited crops. The genome-edited crops are different from genetically-modified crops.

- A decade ago, scientists in Germany and the US discovered a technique which allowed them to 'cut' DNA strands and edit genes.

- For agriculture scientists this process allowed them to bring about desired changes in the genome by using Site Directed Nuclease (SDN) or Sequence Specific Nuclease (SSN).

- Nuclease is an enzyme which cleaves through nucleic acid - the building block of genetic material.

- The highly effective clustered regularly interspaced palindromic repeat (CRISPR)-associated proteins based systems allow for targeted intervention at the genome sequence.

- This tool has opened up various possibilities in plant breeding. This tool can now edit genome to insert specific traits in the gene sequence.

- **Categories** - Depending on the nature of the edit that is carried out, the process is divided into three categories - SDN 1, SDN 2 and SDN 3.

- SDN1 introduces changes in the host genome's DNA through small insertions/deletions without introduction of foreign genetic material.

- In the case of SDN 2, the edit involves using a small DNA template to generate specific changes.

- Both these processes do not involve alien genetic material and the end result is indistinguishable from conventionally bred crop varieties.

- But, the SDN3 process involves larger DNA elements or full length genes of foreign origin which makes it similar to Genetically-modified organisms (GMO) development.

Difference between Gene-edited Organisms & GMO

- Genetically-modified Organisms involves modification of the genetic material of the host by introduction of a foreign genetic material.

- In the case of agriculture, soil bacteria is the best mining source for such genes which are then inserted into the host genome using genetic engineering.

- The basic difference between genome editing and genetic engineering is that while the former does not involve the introduction of foreign genetic material, the latter does.

- In the case of agriculture, both the techniques aim to generate variants which are better yielding and more resistant to biotic and abiotic stress.

- Before the advent of genetic engineering, such variety improvement was done through selective breeding which involved carefully crossing plants with specific traits to produce the desired trait in the offspring.

- Genetic engineering has not only made this work more accurate but has also allowed scientists to have greater control on trait development.

INFORMATION TECHNOLOGY

Variable Refresh Rates

Google is testing support for Variable Refresh Rates (VRR) in the Chrome OS 101 Dev Channel.

- **Refresh rate** is the number of times a display is capable of refreshing in a second. It is measured in hertz (Hz).

- The higher the refresh rate, the better the quality of viewing experience.

- Displays with over 120 Hz can deliver a smoother and more comfortable viewing experience.

- This is necessary while playing video games or watching videos.

- **Variable Refresh Rates** (VRR) is also termed as dynamic refresh rate or adaptive refresh rate.

- It supports a wide range of refresh rates, allowing its refresh rate to change in real-time based on the frames-per-second (FPS) rate coming from a source device such as a gaming console.

- It allows your screen to adjust how often it refreshes the image to match the frame rate from your console or PC.
- **Working** - VRR is designed to **eliminate syncing issues** that arise when the refresh rate of a display does not match with the FPS of the content from a source device.
- Issues such as screen-tearing, judder (wobbling effect) and lag are common when refresh rate and FPS are not synchronised.
- VRR screen technology can improve gaming experience in both console and PC-based gaming.
- In mobile devices, a VRR solution can improve the gaming experience of users by keeping up with intense gameplay and also save battery power.

Near Field Communication Technology

Recently, Google Pay has launched the 'Tap to pay for UPI' feature in India, in collaboration with Pine Labs. The feature makes use of Near Field Communication (NFC) technology.

- NFC is a **short-range wireless connectivity technology** that allows NFC-enabled devices to communicate with each other and transfer information quickly and easily with a single touch.
- NFC transmits data through **electromagnetic radio fields**, to enable communication between two devices.
- NFC-enabled devices must be either physically touching or within a few centimetres from each other for data transfer to occur.
- To work, both devices must contain NFC chips, as transactions take place within a very short distance.
- **Applications of NFC -** NFC tech has a wide range of applications besides driving payment services like Google Wallet and Apple Pay.
- It is used in contactless banking cards to perform money transactions or to generate contact-less tickets for public transport.
- Contactless cards and readers use NFC to secure networks and buildings, to monitor inventory and sales, to prevent auto theft, to keep tabs on library books, and to run unmanned toll booths.
- NFC is behind the cards that we wave over card readers in subway turnstiles and on buses to check tickets.
- It is present in speakers, household appliances, and other electronic devices that we monitor and control through our smartphones.
- With just a touch, NFC can also set up WiFi and Bluetooth devices in our homes.
- It also has an application in healthcare, to monitor patient stats through NFC-enabled wristbands. NFC is used in wireless charging too.
- **NFC in Google Pay** - Google Pay has been the first among UPI apps to bring the Tap-to-Pay feature working on POS terminals.
- It allows users with UPI accounts configured on GPay to make payments just by tapping their NFC-enabled Android smartphones on any Pine Labs Android point-of-sale (POS) terminal and verify the payment.
- The process is much **faster compared to scanning a QR code** or entering the UPI-linked mobile number which has been the conventional way till now.
- **Safety -** NFC technology is designed for an operation between devices within a few centimetres from each other.
- This makes it difficult for attackers to record the communication between the devices compared to other wireless technologies which have a working distance of several metres, according to the NFC forum.

Splinternet

Russia's invasion of Ukraine does seem as a potential trigger for a splintered internet.

- The idea of 'Splinternet' was proposed by Clyde Wayne Crews, a researcher at libertarian think-tank Cato Institute.
- The 'Splinternet' is an internet splintered into disparate realms controlled by different dispensations or powers.
- It is also referred to as cyber-balkanization or internet balkanization.

- The fundamental proposal was to have more internets instead of having more regulations.
- Over the past two decades, a splintering of internet has occurred in some limited ways. For example,
  1. **China's** 'Great Firewall' keeps American tech giants out while pushing online services developed indigenously.
  2. In 2019, **Russia** passed the online Iron Curtain (the sovereign internet law) that enabled it to disconnect its internet from rest of the world.
  3. In **Iran**, a project called the National Information Network (NIN) or National Internet in Iran has been initiated by the state-owned Telecommunication Company of Iran.

DEFENCE

Hermes StarLiner

Israel becomes the first-ever country to allow drones in civilian airspace.

- The Israeli Civil Aviation Authority (CAA) has issued certification to the Hermes Starliner drones.
- This is Israel's first certification for unmanned aircraft vehicles (UAVs) to operate in civilian airspace for the benefit of agriculture, environment, fight against crime, the people and the economy.
- Hermes Starliner was manufactured and developed by Elbit Systems, an Israeli defense electronics company.
- It can fly for up to 36 hours at an altitude of around 7600 m, and can carry an additional 450 kg of thermal, electro-optical, radar and other payloads.
- **Uses** - Hermes Starliner will also be able to
  1. Participate in anti-terror and border security operations,
  2. Perform maritime rescue and search,
  3. Take part in securing public events, and
  4. Take part in environmental inspection and commercial aviation missions.
- There are two variants - Hermes 450 and Hermes 900.
- For safety reasons, international aviation regulations prohibit uncertified aircraft from flying in civilian airspace, limiting the operation of UAVs to unsegregated airspace.

Sarmat Intercontinental Ballistic Missile

Russia has successfully test-fired the Sarmat intercontinental ballistic missile.

- The Sarmat is a Russian liquid-fueled intercontinental ballistic missile capable of nuclear charges.
- This multiple independently targetable reentry vehicle (MIRV)-equipped weapon can be deployed with 10 or more warheads on each missile.
- It is claimed that it has the longest range of destruction of targets in the world.
- Dubbed **Satan-2** by Western analysts, Sarmat is designed to elude anti-missile defence systems with a short initial boost phase, giving enemy surveillance systems a tiny window to track.
- The name Sarmat is based upon the **nomadic Sarmatian tribes** which used to live between 6th and 4th century BC in current territories of Russia, Ukraine and Kazakhstan.

OTHERS

Bio-Digester

- It is a system that **biologically digests organic material**, either anaerobic (without oxygen) or aerobically (with oxygen).
- Most food, including fat, greases, and even animal manure, can be processed in a bio-digester.
- Microbes and other bacteria break down organic materials in a bio-digester.

- Biodigesters are a **closed system**; so, it gives off no odor from food waste; this will eliminate flies and rodents from the facility.

- Biodigesters are a **living system** and do require maintenance. However, they are easy to use and maintain.

- It **utilizes organic waste**, particularly animal and human excreta, **to produce fertilizer and biogas**.

- The capacity of food a biodigester can process depends on the size; larger the digester more food it can handle.

- Biodigester systems can be implemented on farms that need to improve soil fertility or the quality of life of the producers if the conditions referred to above are in place. Permanent access to water is required.

- In India, Biodigester technology has been developed by Defence Research Development Organisation (DRDO) for resolving the problems of un-decomposed human waste.

- **Other Solid Waste Management Techniques**

    1. Bio-methanation,

    2. Vermi-composting,

    3. Anaerobic digestion or any other appropriate processing for bio-stabilisation of biodegradable wastes, and

    4. Waste to energy processes including refused derived fuel for combustible fraction of waste or supply as feedstock to solid waste based power plants or cement kilns.

Battery Passport

German-funded consortium of 11 carmakers and battery producers, including BMW, Umicore and BASF, are aiming to develop a "battery passport" that traces the content and carbon footprint of batteries in Europe.

- The Battery Passport is a **digital representation of a battery** that conveys information about all applicable ESG and lifecycle requirements based on a comprehensive definition of a sustainable battery.

- Each Battery Passport will be a digital twin of its physical battery enabled by the digital Battery Passport platform.

- [The Battery Passport platform offers a global solution for securely sharing information and data.

- This platform aims to go beyond enabling the performance management of just one battery to that of all batteries across the full industry value chain.]

- Batteries could carry a QR code linking to an online database where EV owners, businesses or regulators could access information on the battery's composition.

- This digital tool should also make it easier to recycle raw materials inside batteries, which would cut dependence on foreign suppliers which control the vast majority of resources, like lithium and nickel, essential for battery production.

Garbology

- Garbology is the study of modern culture through the **analysis of what is thrown away as garbage**.

- As an academic discipline, it was pioneered at the University of Arizona and long directed by **William Rathje**.

- It uses colouring books, board games & activity-based learning to drive long-term behavioural change among school students, especially with regard to consumption & waste management.

Twisted Bilayer Graphene

Researchers from the Indian Institute of Science (IISc), Bengaluru, have discovered that the twisted bilayer grapheme may possess a new phase that exhibits what is called charge density wave states.

Twistronics is the study of how the angle (the twist) between layers of two-dimensional materials, such as bilayer grapheme, can change their electrical properties.

- *Graphene* is an allotrope of carbon consisting of a single layer of atoms arranged in a two-dimensional honeycomb lattice.

- This 2-dimensional material comprising a single layer of carbon atoms arranged in a hexagonal lattice. It is the building-block of Graphite.

- Graphene is the world's thinnest, most electrically and thermally conductive material. It is flexible, transparent and incredibly strong.

- Graphene possesses several interesting properties by itself, and, it can be combined with other materials to form useful devices.

- One such material is twisted bilayer graphene.

- *Twisted bilayer grapheme (TBG)* is made by placing two layers of graphene on top of each other such that they are aligned well, and then twisting one layer so that it makes a well-calibrated, known angle with respect to the former.

- When such a twist is given, the lattice shows what is called **moire patterns**.

- [Moire patterns are wavy fringelike patterns that we see, for example, when two layers of synthetic fabric overlap and move with respect to each other.]

- Twisted bilayer graphene is a material in which a **wide variety of phases** have been observed, such as insulators, superconductors, and even phases that imitate liquid crystals, such as nematic ordering.
  - **IISc's TBG -** U. Chandni's lab (IISc) produced a twisted bilayer graphene.

- The second layer was twisted with respect to the first by a small angle between one and two degrees.

- Then they made a third layer of **tungsten diselenide**, which shows a property called spin- orbit coupling.

- [Spin-orbit coupling is a link between the intrinsic spin and the orbital angular momentum of the electrons.]Adding the layer of tungsten diselenide endowed the material with unique properties and created the charge density wave states.

Charge density wave states

- Normally in a conductor, the charge carriers (for example electrons) are free to move anywhere in the conductor.

- But here, some areas are restricted and the electrons can move only in the allowed regions.

- Just like there are variations in particle density in a sound wave, these states show a wave-like variation in the charge density.

22.   INDEX AND REPORT

UNEP Report on Noise Pollution

The UN Environment Programme (UNEP) has released the Frontiers report on the environmental challenges posed by noise, wildfires and the disruption of biological rhythms of plants, animals and ecological cycles.

- This is the fourth edition of the Frontiers Report, which was first published in 2016 with an alert to the growing risk of zoonotic diseases, four years before the outbreak of the COVID-19 pandemic.

- The first chapter of this report compiles studies about noise levels in several cities around the world.

- It illustrates a subset of 61 cities and the range of decibel (dB) levels that have been measured.

- At a maximum value of 119 dB, Dhaka (Bangladesh) is the first-most-noisiest city in the list.

- Delhi, Jaipur, Kolkata, Asansol and Moradabad are the five Indian cities mentioned in this list.

- Moradabad in Uttar Pradesh was shown as having a dB range from 29 to 114. It was the second-most-noisiest city in the list.

- **Factors** - Road traffic, industry and high population density.

- **Impacts** - Unwanted, prolonged, high-level sounds from road traffic, railways, or leisure activities impair human health and well-being.

- This includes chronic annoyance and sleep disturbance, resulting in severe heart diseases and metabolic disorders, and poorer mental health.

- Traffic noise exposure is a risk factor for the development of

    1. Cardiovascular disorders and

    2. Metabolic disorders such as elevated blood pressure, arterial hypertension, coronary heart disease and diabetes.

- The elderly, pregnant women and shift workers are among those at risk of noise-induced sleep disturbance.

- Particularly affected are the very young, the elderly and marginalized communities near high traffic roads, and industrial areas and far from green spaces.

India on Noise Pollution

- In India, the Central Pollution Control Board (CPCB) is mandated to track noise levels, set standards as well as ensure, via their State units, that sources of excessive noise are controlled.

- The CPCB has a manual monitoring system where sensors are installed in major cities and few cities have the facility to track noise levels in real time.

- It also measures noise levels before and after Diwali in major cities, to publicise the impact of firecrackers.

WWF Report on Online Wildlife Trade

A report by the World Wildlife Fund shows illegal purchases of wildlife online are growing in Myanmar in a threat both to public health and to endangered species.

- The report found that enforcement of bans on such transactions has weakened amid political turmoil following a 2021 military takeover.

- The number of such dealings rose 74% over a year earlier to 11,046, nearly all of them involving sales of live animals.

- For the 173 species traded, 54 are threatened with global extinction.

- The animals bought and sold included elephants, bears and gibbons, Tibetan antelope, critically endangered pangolins and an Asian giant tortoise.

- The most popular were various species of monkeys, often bought as pets.

- Most of the animals advertised for sale were taken from the wild.

- They included civets, which along with pangolins have been identified as potential vectors in the spread of diseases such as SARS and COVID-19.

IPCC Report Warns Malaria Outbreak in Himalayan Region

The Sixth Assessment Report of the Intergovernmental Panel on Climate Change (IPCC) has observed a shift in the distribution of malaria and dengue to higher altitude areas like Himalayan Region.

- In India, the IPCC has projected changes in the spatial distribution of malaria, warning of potential outbreaks in the Himalayan region, besides the southern and the eastern states.

- As temperatures rise, the number of months suitable for transmission of Malaria will grow, although in some areas transmission of the vector-borne disease will fall by the 2030s.

- With rainfall patterns changing, the range and distribution of vector borne diseases is changing along with it, as well as the vector's ability to breed longer.

- As temperatures rise, the diseases are shifting northwards to higher altitudes such as towards the Himalayas.

- As temperatures become too hot in some lowland tropical areas for the Malaria vector to thrive, however, the report predicts an increase in diseases such as dengue and zika.

Other impacts

- In South and Southeast Asia, the report says, rising temperatures will also cause an adverse impact on availability and prices of food, leading to increased undernourishment.

- Besides, mental health challenges will grow, affecting particularly the young and the elderly, and those with underlying conditions.

- With more frequent hot days and intense heat-waves, the heat-related deaths will increase in Asia.

- In addition to all-cause mortality, deaths related to circulatory, respiratory, diabetic and infectious diseases, as well as infant mortality are increased with high temperature.

- Increases in heavy rain and temperature will increase the risk of diarrheal diseases, dengue fever and malaria in tropical and sub-tropical Asia.

- The report finds the Spring pollen season start dates in northern mid-latitudes are occurring earlier due to climate change, increasing the risks of allergic respiratory diseases.

- Higher atmospheric concentrations of carbon dioxide reduce the nutritional quality of wheat, rice, and other major crops, "potentially affecting millions of people at a doubling of carbon dioxide," it added.

Extreme Poverty Dipped in India - World Bank

- The World Bank has reported that extreme poverty in India dropped to 10.2% in 2019 from as much as 22.5% in 2011 and the pace of reduction in rural India has been more dramatic than in urban areas.

- During the 2011-2019 period, the poverty level in rural and urban areas declined by 14.7 and 7.9% points, respectively.

- While it eased to 11.6% in rural areas in 2019, the urban poverty level stood at 6.3%.

- Extreme poverty has been measured in terms of the number of people living on less than $1.90 a day (roughly Rs 145).

- Interestingly, urban poverty inched up by 2% points in the demonetisation year of 2016 and rural poverty rose by 10 basis points in 2019.

- According to the World Bank paper, there has been a slight moderation in consumption inequality since 2011, but by a margin smaller than what is reported in the unreleased 2017 NSS report.

- Real incomes for farmers with the smallest landholdings have risen by 10% in annualised terms during the 2013-2019 period.

International Religious Freedom Report 2022

In its 2022 Annual report, the United States Commission on International Religious Freedom (USCIRF) has recommended that India be designated a 'Country of Particular Concern' (CPC) for the third time in a row.

- The 'Country of Particular Concern' (CPC) is the category of governments performing most poorly on religious freedom criteria.

- The CPCs are countries whose governments either engage in or tolerate "particularly severe violations" of religious freedom.

- ["Particularly severe violations" of religious freedom are defined as systematic, ongoing, egregious violations of the internationally recognized right to freedom of religion.]

- The other designation, for less serious violations, is Special Watch List (SWL).

- **CPCs** - For 2022, based on religious freedom conditions in 2021, 15 countries have been recommended for the CPC designation.

- They include India, Pakistan, Burma, China, Eritrea, Iran, North Korea, Pakistan, Russia, Saudi Arabia, Tajikistan, Afghanistan, Nigeria, Syria and Vietnam.

- **SWLs** - For 2022, countries recommended for a SWL designation include Algeria, Cuba, Nicaragua, Azerbaijan, Central African Republic, Egypt, Indonesia, Iraq, Kazakhstan, Malaysia, Turkey, and Uzbekistan.

- **Legality** - The USCIRF's decision is not binding on the US government.

- The USCIRF typically recommends more countries for a CPC label than the State Department will designate.

- This happens because the USCIRF is concerned solely with the state of religious freedom when it makes a recommendation.

- But the State Department and its Office of International Freedom (IRF), along with religious freedom, also takes into account other diplomatic, bilateral and strategic concerns before making a CPC designation.

USCIRF's Designation of India as a CPC

- The USCIRF states that religious freedom conditions in India significantly worsened in 2021.

- It noted that India had its promotion and enforcement of policies - including those promoting a Hindu-nationalist agenda - that negatively affect Muslims, Christians, Sikhs, Dalits, and other religious minorities.
- It highlighted the use of the Unlawful Activities Prevention Act (UAPA) against those documenting religious persecution and violence.

United States Commission on International Religious Freedom

- It is an independent bi-partisan US federal government commission that was created by the International Religious Freedom Act (IRFA) 1998.
- It has a mandate to monitor religious freedom violations globally and make policy recommendations to the U.S. President, the Secretary of State, and the Congress.
- It is dedicated to defending the universal right to freedom of religion or belief abroad.
- It is a congressionally created entity and not an NGO or advocacy organisation.
- It is led by nine part-time commissioners appointed by the President and the leadership of both political parties in the House and the Senate.
- IRFA requires the USCIRF to annually identify countries that merit a CPC designation.

QS World University Rankings 2022

Recently, the QS World University Rankings 2022 was released by the Quacquarelli Symonds (QS).

- Started in 2004, the QS World University Rankings is an **annual** publication of university rankings.
- Featuring 1,300 Universities from around the world, the university rankings of the year 2022 is the largest of the rankings.
- **Methodology** - Each institution has been assessed according to the following six metrics:
    1. Academic Reputation (40%)
    2. Employer Reputation (10%)
    3. Faculty/Student Ratio (20%)
    4. Citations per faculty (20%)
    5. International Faculty Ratio (5%)
    6. International Student Ratio (5%)
- This ranking can be used to easily compare universities by looking at their score which is from 0 to 100.
- **Findings** - In the 2022 ranking, the top rank holders are
    1. Massachusetts Institute of Technology (MIT), Cambridge, USA,
    2. University of Oxford, United Kingdom and
    3. Stanford University, United States.
- IIT-Kharagpur has been ranked 37th in 2022 in mineral and mining engineering and 80th in 2022 in electrical and electronic engineering globally.
- Jadavpur University is the only state university in India which was ranked in the QS World University Rankings in the sphere of arts and humanities, 2022.
- Vellore Institute of Technology (VIT) bagged 9th rank in engineering and technology in the country.

QS World University Rankings by Subject 2022

- The QS World University Rankings by Subject are compiled **annually** to help prospective students **identify leading universities in a particular subject**.
- It covers a total 51 disciplines under 5 broad subject areas.
- 16 higher education institutes (with 35 programmes) from India were ranked among the top 100 in their subject categories.
- Two programmes with best performance among Indian Institutes were
    1. Saveetha Institute of Medical and Technical Sciences with its Dentistry programme placed at 18; and
    2. Indian School of Mines (ISM) University, Dhanbad with its Mineral and Mining Engineering programme placed at 26.

State Energy and Climate Index

NITI Aayog has launched its State Energy & Climate Index-Round I.

- The State Energy & Climate Index (SECI) Round I is the first index that **tracks the efforts made by states and UTs in the climate and energy sector**.

- An in-depth analysis of individual states will help in enhancing the service delivery on various parameters of energy.

- **Objectives of the index**

  1. **Ranking the States** based on their efforts towards improving energy access, energy consumption, energy efficiency, and safeguarding environment;

  2. Helping drive the agenda of affordable, accessible, efficient and clean **energy transition at the State level**;

  3. Encouraging healthy competition among the states on different dimensions of energy and climate.

- The SECI ranks the states' performance on **6 parameters**, namely,

  1. DISCOM's Performance

  2. Access, Affordability and Reliability of Energy

  3. Clean Energy Initiatives

  4. Energy Efficiency

  5. Environmental Sustainability; and

  6. New Initiatives.

- The parameters are further divided into 27 indicators.

- **Categories** - Based on the composite SECI Round I score, the states and UTs are categorized into 3 groups: Front Runners, Achievers, and Aspirants.

- The states have been categorized based on size and geographical differences as larger states, smaller states, and UTs.

Category	Top performers
Larger states category	Gujarat, Kerala, and Punjab
Smaller states category	Goa, Tripura, and Manipur
UTs category	Chandigarh, Delhi, and Daman & Diu/ Dadra & Nagar Haveli

- Detailed state profiles and scorecards have been included in the report which provides a comprehensive snapshot of each state and union territory on the various parameters.

- The role of the States is critical to convert our efforts towards achieving India's 'Panchamrit' targets announced at COP-26, Glasgow into a peoples' movement.

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