CURRENT AFFAIRS DECEMBER 2020

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1. POLITY AND CONSTITUTION

1.1. PARLIAMENTARY SCRUTINY

Why in news?

The recent protests over Agricultural Reform laws by farmers has reignited the debate on 'ineffectiveness of Parliamentary scrutiny over the executive'.

About Parliamentary scrutiny of the government

Parliament is the embodiment of the people's will. Therefore, in addition to its legislative role, it is also mandated to scrutinize the functioning of the Government. The Parliament is equipped with various instruments for close and continuous scrutiny of the functioning of the government. These instruments are as follows

- **Discussion/debate:** During discussions/debates on Bills, issues of public or national interest on the floor of Parliament legislatures could point out any shortcoming of the government or its policies or loopholes in any laws or proposed bills.
- **Question Hour:** It is the first hour of business every day when *PARLIAMENT* is in session. It is during the Question Hour that the members can ask questions on every aspect of administration and Governmental activity. This brings government policies in national as well as international spheres come into sharp focus.
    - With the broadcasting of Question Hour since 1991, it has become one the most visible aspects of parliamentary scrutiny.
- **Parliamentary committees:** Parliament has put in place a large machinery of committees to scrutinize the Bills which are brought before it by the government. They carry out the detailed scrutiny of the proposed legislation, for which they can solicit expert advice and elicit public opinion.
    - Committee meetings are 'closed door' and members are not bound by party whips. This enables them to have an objective view on issues before them.

Related Information

State Legislative Assembly (SLA) scrutiny

- Just like Parliament**, SLA also has the power to scrutinize the functioning of the respective State Government.** SLAs are also equipped with instruments like
    - Discussion/debate
    - Question Hour
    - Assembly Committees
    - Council of Minister is collectively responsible to the Vidhan Sabha
- **However, the functioning of the SLAs have been sub optimal thereby affecting the scrutiny of State Government activities** by the respective SLA.
    - **Low sittings:** In the last 20 years, SLAs across the country, on average, met for less than 30 days in a year. But states like Kerala, Odisha, Karnataka are an exception. Low sittings shows that bills are passed without debate and discussions.
    - **Question Hour:** Total 'starred questions' asked vary between 11,200 in Rajasthan to 65 in West Bengal in 2017-19. In this time period only 21% of starred questions admitted in the 14th Rajasthan Assembly and 7% in 13th Maharashtra Assembly were answered on the floor of the House.
        - ✓ **For the 2020, Monsoon session** West Bengal, Punjab, Rajasthan, Haryana, Uttar Pradesh, and Maharashtra **Assembles have done away with Question Hour.**
    - **Opaque functioning:** Unlike Parliament, sittings of SLAs are not live streamed. While some states such as Karnataka, Delhi and Rajasthan host the texts of legislative debates on their assembly websites, many others like West Bengal don't.
- **Therefore, SLAs should also bring reforms parallel to that needed in Parliament** for enhancing the effectiveness of the scrutiny of the State Government.

What renders parliamentary scrutiny of the government ineffective?

- **Deciding the duration and timing of the session of the Parliament is government's prerogative:** According to Article 85 of the Constitution, the time gap between two sessions cannot be more than six months. However, it is the **government (Cabinet committee on parliamentary affairs)** that decides the exact time and duration of the Parliamentary session. Allowing the government to call the Parliament to meet is seen as a conflict with the principle of government being accountable to the Parliament.
    - For example, recently the winter session of the Parliament was truncated owing to the COVID-19 Pandemic.
    - Also, as there is no fixed calendar for the sessions, the Governments have shuffled around the dates of sessions to accommodate political and legislative exigencies.

- **Disruptions during Question Hour**: In the 16th Lok Sabha, question hour has functioned in Lok Sabha for 77% of the scheduled time, while in Rajya Sabha it has functioned for 47%. Consequently, this time lost indicates a lost opportunity to hold the government accountable for its actions.
    - Also, over the years, there has been a decline in the sittings days of Parliament.
- **Not referring bills to the Parliament committees:** There has been a declining trend in the percentage of Bills being referred to a Committee. While 60% of the Bills in the 14th Lok Sabha and 71% in the 15th Lok Sabha were vetted by the Parliamentary committees, this proportion came down to 27% in the 16th Lok Sabha.

What needs to be done to ensure effectiveness of the Parliamentary scrutiny?

- **Insulate the functioning of Parliament from externalities:** For the unforeseen externalities (like the pandemic this year), the parliamentary rules can be relaxed to allow its functioning with reduced number of members of Parliament (MPs) or the full strength of MPs convening in a hybrid manner (Mix of virtual and Physical session).
- **Parliament should have the power to regulate its procedure, sittings and timings:** Given the legislature's role in keeping the executive accountable for its actions, one argument is that the government should not have the power to convene or take decisions on sittings and timings of the Parliament. Instead, Parliament should convene itself so that it can effectively exercise its oversight functions and address issues without delay (by convening the session whenever required).
- **Annual calendar for the sessions:** Some countries such as the United Kingdom and Australia release an annual calendar with the sitting dates at the beginning of the year. This could be followed by the Parliament of India also.
- **Minimum number of sittings should be fixed:** Lesser number of sittings indicates that Parliament was able to transact less business. To address this, the National Commission to Review the Working of the Constitution has recommended that Lok Sabha should have at least 120 sittings in a year, while Rajya Sabha should have 100 sittings.
- **Shadow cabinet:** To improve government accountability in Parliament, the opposition in some countries such as the UK, Canada, and Australia forms a shadow cabinet. Under such a system, opposition MPs track a certain portfolio, scrutinise its performance and suggest alternate programs. This allows for detailed tracking and scrutiny of ministries and assists MPs in making constructive suggestions.
- **Changing certain provisions of the Anti-defection law:** The Supreme Court (Kihota Hollohon vs. Zachilhu, 1992), while upholding the validity of the Anti-defection law highlighted the need to limit disqualifications in the cases where Legislatures vote against the directions of Party. The court held that "such provisions should be limited to only those voting that are crucial to the existence of the government and to matters integral to the electoral programme of the party. So as not to 'unduly impinge' on the freedom of speech of members"**.**

Conclusion

Parliament's scrutiny of the government is crucial not only for upholding the accountability of the government to people of India but also for **improving the quality of laws drafted**. Strengthening the instruments of Parliamentary Scrutiny can go a long way **in minimizing the potential implementation challenges.**

1.2. WOMEN IN JUDICIARY

Why in news?

Attorney General of India recently stressed on the need to improve the representation of women in the judiciary.

Background

- Recently, Madhya Pradesh High Court has **granted bail to a man accused of sexual harassment on the condition** that he will request the complainant to tie a 'rakhi' on him.
    - With this appeal was filed by nine women lawyers seeking to set aside the High Court's order and a direction to courts across the country to restrain from **imposing such conditions as these are against the principle of law.**
- However, such trivialisation of sexual offences, through a judicial order to tie Rakhi, or in rape cases, to compromise by marrying the accused, **indicate that patriarchy and misogyny, with regressive notions of honour continue to obstruct women's access to justice.**

- In this regard Attorney General of India said that there is **need to gender-sensitize judges and improve women participation** in judiciary.
- A parliamentary standing committee on law and justice in 2015 had proposed reservation for women in the higher judiciary.

Existing women participation in judiciary

In Supreme Court (SC)	• **Supreme Court has only 2 women judges**, as against a total sanctioned strength of 34 judges and there has never been a female Chief Justice of India. • Since its inception 70 years ago, **only eight women judges have been appointed to the Supreme Court**. • Justice Fathima Beevi was the first woman SC judge, and she was appointed in 1989, 40 years after its establishment. • Currently, there are 17 women senior counsel designates in the Supreme Court as opposed to 403 men.
In High Courts (HC)	• In HCs there are only 80 women judges out of the total sanctioned strength of 1,113 **comprising only 7.2% of the total number of judges.** • 6 HCs (Manipur, Meghalaya, Patna, Tripura, Telangana, and Uttarakhand) have no sitting women judges.
In Subordinate courts	• There are 27% female judges in the lower judiciary. • Sub-ordinate judiciary has **better women participation due to reservation by some states and entrance exams** at the entry level, however it is highly skewed between states.
Advocates	• Women make up only **15% of all enrolled advocates in the country**.

Why there is need to improve women representation in judiciary?

- **Constitutional Provisions**: Article 14, 15, 15(3), 16, 39(a), 39(b), 39(c) and 42 of Constitution of India provides for gender justice, hence increased women participation is necessary to achieve provisions under these articles.
    - Constitution of India not only grants equality to women but also empowers the State to adopt measures of **positive discrimination in favour of women for neutralizing the cumulative socio economic, educational and political disadvantages** faced by them.
- **Sensitivity in proceedings:** Women in society are seen as empathetic and sensitive, improving participation will help to improve quality of justice which is most acceptable within rule of law.
- **Social respect:** With rise in women number in judiciary stigma of incapability of women in litigation job will get vanished and will provide due social respect to women.
- **Improve accessibility to justice by women:** Easy availability of women advocates and judges for women victims, makes them more comfortable and confident to communicate problems like sexual violence, which eventually improves access to justice.

What are the challenges to improve participation of women in judiciary?

- **Appointment:** In higher judiciary power of appointment rests almost exclusively with the collegium, which has tended to be opaque and therefore likely to reflect bias, unlike entrance exam and reservation in subordinate judiciary.
- **Workplace conditions:** It is difficult especially for a young woman in a male-dominated profession, with poor sanitation in court premises, lack of paid maternity leave and crèches, sexual harassment and frequent transfers contribute to the low numbers of women in litigation and inevitably to the low numbers of women judges.
    - Also, even after having **Vishakha guidelines and Gender sensitization committees**, the participation of women in higher judiciary is very dismal.
- **Job security and irregularity:** Litigation job in higher judiciary does not provide continuous income source, as well it is irregular without defined working time, hence women without other income source and irregularity tends to leave litigation job.

Way forward

- **Monitoring and assessment**: The Supreme Court must direct high courts, lower courts and tribunals for collection of data to determine the number of women judges and also to determine year-wise number of seniors designates.
- **Checks and balance:** There should be some checks and balance against the opacity of collegium and made more open for appointment of judges in higher judiciary.
- **Course and training:** Gender sensitization course for all new entrants at law school and refresher training for old judges.
- **Improve retention:** Retention of women advocates in higher judiciary needs to be maintained to make more options available for collegium to appoint competent women judges.
- **Holistic inclusion:** To be truly diverse, the Indian judiciary would need representation of judges from not only different gender identities, but also from different caste, socioeconomic, religious and regional backgrounds.

1.3. REVIEW OF THE INFORMATION COMMISSIONS

Why in news?

Recently, the Parliamentary Committee on Personnel, Public Grievances, Law and Justice has decided to review working of the Central Information Commission (CIC) and the State Information Commissions (SICs).

About Central Information Commission

- The Commission consists of a **Chief Information Commissioner and not more than ten** Information Commissioners (IC).
- They are appointed by **President on the recommendation** of a committee consisting of **Prime Minister** as Chairperson**, Leader of Opposition in the Lok Sabha** and a **Union Cabinet Minister nominated by the Prime Minister.**
- They should be persons of eminence in public life with wide knowledge and experience in law, science and technology, social service, management, journalism, mass media or administration and governance.
- They shall not be Member of Parliament or Member of the Legislature of any State or Union Territory as the case may be , or hold any other office of profit or connected with any political party or carrying on any business or pursuing any profession.
- They are **not eligible for reappointment.**

Background

- **Central/State (C/S) Information Commissions** are statutory bodies constituted under the Right to Information (RTI) Act, 2005.
  - They are the **final appellate authority for RTI Act.**
  - **They are vested with wide power** like power to impose penalty on erring Public Information Officers (PIOs), initiate an inquiry against them (for this they are vested with the same powers as are vested in a civil court) etc.
- CIC is required to **submit annual reports to the Parliament** and the SICs to state legislatures through its administrative wings, the Ministry of Personnel and Training in Centre and Services Department in the states.
  - However, these annual reports are **rarely discussed in Parliament or state legislatures** raising questions over the efficacy of the information law (RTI).
- **Now for the first time the functioning** of this body would directly be **scrutinized by a parliamentary committee,** to effectively implement its functioning**.**

Why is there a need to scrutinize the functioning of the C/S Information Commission?

Every year 40 to 60 lakh RTI applications are filed in India. Being the final appellate authority effective functioning of C/S Information Commission is crucial for proper implementation of the RTI Act. **Following factors make their scrutiny a need of the hour:**

- **To prevent the misuse of power by the C/S Information Commission:** Among various powers, they have the power to appoint PIOs and to recommend disciplinary action against them. Scrutiny of functioning is required for ensuring the transparency and accountability of the C/S Information Commissions to the people of the country.
- **Ensuring diligent discharge of the mandates:** Since, 2015 there has been a sudden surge in the number of cases (appeal/complaints) being returned to the Appellant by the C/S Information Commissions without any substantial reason for the same. In 2019-20, 59% of the disposed cases should have triggered the process of penalty on the PIOs. However; penalties were imposed only in 2.2% of the cases.

- **Keeping public trust intact in the C/S Information Commissions:** Tenure, salary and allowances of the information commissioners is not fixed. **RTI Amendment Act, 2019 has empowered the Central Government to notify them**. This amendment has raised apprehension of eroding autonomy of the Commission. Scrutiny of their functioning by the parliamentary committee as a neutral body may allay this fear of the people.
    - RTI Act, 2005 earlier assured incumbents of a fixed five-year term, with 65 as the retirement age. The salaries, allowances that were earlier pegged with that of the Chief Election Commissioner (for Chief Central Information Commissioner) and Election Commissioner (Central Information Commissioner and State Chief Information Commissioner).

Related information

RTI Act, 2005

- RTI Act, 2005 makes the **governance citizen centric by equipping citizens** with the power to seek information from public authorities.
- It provides the **mechanism for grievance redressal** to citizens who are denied any information
- **RTI applicant is not required to give any reason** for seeking information.
- **Public authorities mandated to proactively disclose certain information** (like functions, structure, powers and duties of its officers and employees financial information).
- **Authorities responsible for supplying information:** Public authorities designate some officers in their administrative units as the Public Information Officers (PIOs).
    - These PIOs are mandated to supply the information sought within 30 days (or 48 hours If information sought concerns the life or liberty of a person).
- **Appeal mechanism:** If the information sought is not provided within the specified time period, then the RTI applicant can file appeal against the decision of the PIOs.
    - **First Appeal Authority:** The first appeal lies within the public authority itself. The first Appellate Authority happens to be an officer senior in rank to the Central Public Information Officer.
    - **Final Appellate Authority:** C/S Information Commission, a statutory body that has a Chief information Commissioner and who is assisted with not more than 10 information commissioners. They are appointed by the President/Governor in the State respectively.

- **Provide continuity in regular transparency in the system:** In the past, effective functioning of these commissions have led to exposure of many corruptions cases (like Adarsh Society Scam, 2G scam, Common wealth game scam etc. Parliamentary scrutiny would not only provide continuity but may also give fillip to such effective functioning.

What more needs to be done to enhance the accountability of the C/S Information Commission?

- **Make the process of appointing transparent:** The process of appointment of the information commissioner is not transparent. Because of which many a time such appointments have been set aside by the courts.
    - The selection process should be in compliance with the direction of Supreme Court in the **Union of India vs Namit Sharma case, 2013** where it directed that the selection committee to put the relevant facts (indicating that recommended candidates are eminent in public life, knowledge and experience) in public domain.
- **Ensure balanced composition of the ICs:** The prescribed criteria for appointment as information commissioner is very broad. 84% of the Chief Information Commissioners and 59% of the Information Commissioners are retired government officials. Moreover, the Search Committee which short-lists the persons consists of bureaucrats only. There is a need to ensure that eminent persons from different background are appointed.
- **Cases should be allocated to commissioners with expertise in the matter:** In 2013, the Supreme Court took the cognisance of the poor quality of orders passed by Information Commissioners. It also directed that Chief Information Commissioners must ensure that matters involving intricate questions of law are heard by commissioners who have legal expertise.
- **Ensure optimal capacity of the C/S Information Commissions:** In 2011, the Central Information Commissions has set an annual norm for itself of 3,200 cases per commissioner, per year. This norm should be accepted by all the Information commissioners across the country. Also there is a concomitant need to develop norms for budget and staffing patterns (legal and technical experts) of Information Commissioners. This is especially important not only for reducing backlogs but also for timely disposal of new cases.
- **The Appeal filing process should be made people friendly** to check the rising number of rejection of cases (complaints/appeals) by the C/S Information Commissions. RTI rules should not allow for returning of

appeals/complaints due to minor or procedural defects. They should place an obligation on C/S Information Commissions to assist people in filing appeals and complaints, rather than summarily returning them due to a deficiency.

Conclusion

To ensure all the public authorities discharge their functioning in such a way that it upholds the public interest, it is important to make the C/S Information Commission accountable to the people. Scrutiny by the parliamentary committee may prove an effective tool in this direction.

1.4. VOTING RIGHTS TO NRIS

Why in News?

Recently, Election Commission (EC) approached the Ministry of Law to permit Non-Resident Indians (NRIs) to cast their votes from overseas through postal ballots.

About EC proposal

- EC informed the government that it is **ready to extend the Electronically Transmitted Postal Ballot System (ETPBS) to voters abroad** for elections in 2021 in Assam, West Bengal, Kerala, Tamil Nadu and Puducherry.
  - To extend ETPBS to overseas voters, government only needs to **amend the Conduct of Election Rules 1961.** It doesn't require Parliament's nod.
- Any NRI interested in voting through the postal ballot **will have to inform the Returning Officer (RO)** not later than five days after the notification of the election.
  - On receiving such information, the **RO will dispatch the ballot paper electronically.**
  - NRI voters will **mark their preference on the printout and send it back along with a declaration** attested by an officer appointed by the diplomatic or consular representative of India in the country where the NRI is resident.
- Through this move, **Indian NRI's can also participate in Indian democracy** and entitle them to basic human right i.e. right to vote.
  - Many countries allow expatriates to vote, with different rules. For instance, a British citizen living abroad can vote by post, or nominate a proxy to do so.
- However, there are also **concerns like compromise over secrecy of vote**, Logistical challenge, outside influence in voting etc.

About Postal Ballot

- It is a type of voting whereby Electronically Transmitted Postal Ballot Papers (ETPB) are distributed to electors and returned by post.
  - Under ETPBS, the postal ballot is **dispatched electronically and returned via ordinary mail** and it is currently only available to service voters like member of the armed Forces, person employed by govt outside India etc.
- **Service voters** have the option of either voting through postal ballot or through a proxy voter. It includes
  - members of Armed Forces of the Union
  - members of forces to which provisions of Army Act, 1950 applies.
  - members of armed police force of a State and serving outside that state
  - persons who are employed by Government of India in a post outside India.

About NRI Voter/Overseas Elector

- NRIs or an Overseas Elector is "a person who is a citizen of India, absent from the country owing to employment, education etc., **has not acquired citizenship of any other country** and are otherwise eligible to be registered as a voter in the address mentioned in your passport
- According to estimates of Ministry of External Affairs, **there are about 3.10 crore NRIs** living in different countries across the world.
- In last Lok Sabha elections, roughly 25,000 of them flew to India to vote.

Current process of voting for NRIs

- Voting rights for NRIs were **introduced only in 2011,** through an amendment to the Representation of the People Act 1950.
- An NRI **can vote in the constituency in her place of residence**, as mentioned in the passport, is located.
- She **can only vote in person** and will have to produce her passport in original at the polling station for establishing identity.
- Earlier, **Representation of the People (Amendment) Bill, 2017** that proposed to extend proxy voting to overseas Indians lapsed on dissolution of 16th Lok Sabha

2. INTERNATIONAL RELATIONS

2.1. GEOPOLITICS OF TECHNOLOGY

Why in news?

Global transition to future technologies like Artificial Intelligence, 5G and Big Data among others have started affecting the global geopolitics which can be evidently seen in the global 5G adoption.

What is the relationship between geopolitics and technology?

In the modern parlance, Geopolitics can be roughly understood as interactions and relationship among nation states. The technology development and adoption not only affect the nature of geopolitics but also gets affected by it. For example, Russia's military technological development was largely driven by its susceptibility on its western borders.

Following can be cited as **key geopolitical factors affecting technological** access, adoption and development:

- **Geographical position:** Global geographical positioning plays an important role in determining the technological priorities. For example, due to its harsh geography and scarce water resources, Israel has spent considerable time and resources to develop technologies that conserve, reuse and desalinate water.
- **Relative access to resources:** Relative access to resources gives the country a position in the global economy. For example, large scale availability of labour puts China at a comparative advantage in labour intensive sectors. Whereas large scale availability of capital in US puts it at a comparative advantage for Research and Development. This relative access also influences the technological development and adoption.
- **Relationship with other countries:** In the globalized world, technological development happens collectively and not in silos. As a result, relationship among countries enables sharing of technology, thus enabling collective development. For example, a major facet of India-Israel relations is sharing of agricultural technology between them.
- **National Priorities and domestic constraints:** Nature of policy like regulatory environments, nature of education systems, extent of social acceptance for technology among others also drive the global distribution of technological advancement. For example, tech-driven private sector moves towards nations with conducive environment such as a country having a strong start-up culture.

How can these technological changes potentially alter the geopolitical landscape?

When combined, these changes are already beginning to affect every aspect of the globalized world. The emerging sectors in which this will be felt directly by consumers include social media for information, financial technologies, e-commerce, e-services affecting mobility and social services, and changes to the sourcing and management of energy. Broadly these technological changes will affect three areas-

- **Security:** New technologies creates new challenges in the realm of Cybersecurity, in emergence of threats like Hybrid Warfare and exploiting vulnerabilities of critical infrastructure like telecommunications. The **relative deprivation of these technologies within countries** alters the **security balance among countries**.
    - For instance, US alongside countries like UK and France have been apprehensive of penetration of Huawei technologies in their telecommunication systems citing security and privacy concerns.
- **International Standing:** The extent of technological development influences political standing both directly and indirectly. For instance, Israel despite being a small country, in a volatile neighborhood has considerable global influence. This is in part due to due to the technological development in the country.
- **Economic Growth:** Technological development or adoption is one of the key factors in ensuring long-term economic growth for any country. It enables higher worker productivity, improved efficiencies, enhanced quality of products and services. Access to technology thus becomes a key variable in relative economic growth and prosperity among countries.
    - For example, **control of data driven technologies** is being seen as key technological variable which will drive the future economic competition among countries.

How the current geopolitics of technology is playing out globally?

The emergence of new technologies is eliciting different reaction from different countries. Broadly these reactions can be divided into two categories:

- **Technologically authoritarian reaction:** Countries that have closed their data markets and restricted the flow of technology- such as China- would come under this category.
- **Technologically democratic reaction:** Countries that are guided by judicial standards, the rule of law, and support the freer — but not always free — movement of data and technology can be classified under this category.

The interplay between these two types has created political, ideological and economic tensions in the global realm and have generated following geopolitical debates:

- **What effect will technology have on future of US-China relationship?** The current technological competition within the countries and US's apprehension over threat from rising China has created a tendency of decoupling with regard to technology, talent and investment in these countries. The way this issue moves forward will have large impact on future of technology and associated geopolitics.
- **Will internet break into 'splinternet'?** As internet governance thickens, the worldwide web could segment into a collection of independent digital ecosystems or "splinternets." This emerging model could be attractive to states and businesses that seek to exert greater market control in cyberspace and exclude foreign competition.
- **Is creation of a global regulatory regime possible?** Although the current trends point towards a deglobalized and segmented world, but the growth of technology has been fastest when it was accompanied with global coordination. Keeping this idea in mind, it is possible that gradually national and regional regulatory regimes may come together in the near future.

What is India's standing in the current geopolitical scenario and what should it do?

India may not currently have a clear regulatory framework for emerging technologies, but it has a standing in this geopolitical debate by virtue of being the largest open data market in the world. Close to 600 million Indians currently use 4G data. India also has the highest per capita consumption of data (above 10 GB per month) anywhere in the world.

To sustain its standing and exert it's influence in geopolitical debate on technology, India will have to generate sustained technological development. To ensure this, following steps could be taken for better technological regulation:

- **Personal Data Protection Law (PDPL):** Accelerate the enactment of the PDPL as it will provide clarity on cross-border movement of data and regulate use of personal data among others.
- **Regulatory clarity on new technologies:** India's response on new technologies like Blockchain, Drone technology etc. has been ambivalent, which has hindered their development. Clear approach will pave the way for faster adoption both by Public and Private sector.
- **Evolve a clear stand for global stage:** Having a clear stance on how technologies like 5G, Blockchain need to be governed lends more credibility to India's position. Also, this stance needs to be consistent with the domestic approach.
- **Tech diplomacy:** The ministry of external affairs created the new, emerging, and strategic technologies (NEST) division in 2020. This idea can be taken further by appointing dedicated **technology ambassadors or technology coordinators**.
- **Making technological access a key part of diplomatic relations:** Access to technology should be a key feature of bilateral relations in the future especially for a developing country like India which has a large absorptive capacity.

The geopolitical maneuvers can improve global regulation in India's favor and increase access to technology. But this can only be capitalized if it is accompanied with domestic technological development. Efforts could be made on lines of creating entrepreneurial culture, increasing investment in R&D, providing the ecosystem to encourage private sector research and most importantly implementation of education reforms as envisaged by the New Education Policy 2020.

2.2. RELIGION AS A TOOL OF SOFT POWER DIPLOMACY

Why in news?

A virtual exhibition on the shared Buddhist heritage of the Shanghai Cooperation Organisation (SCO) countries was launched by India's Vice-President during the virtual meeting of the SCO Council of Heads of Government.

More about news

- This online international exhibition is **curated by the National Museum, Delhi**.
- This exhibition provides an opportunity for visitors to **access, appreciate and compare Buddhist art antiquities from SCO countries on a single platform** and from the comfort of their home.

Buddhism & India

India claims legitimacy in its promotion of Buddhist diplomacy in spite the fact that it is host to a relatively small population of Buddhists due to following reasons-

- Buddhist faith originated in India, therefore granting it singular historical legitimacy.
- India has numerous sites of importance to the Buddhist faith, such as Bodh Gaya, Sarnath, and Nalanda.
- India has nurtured an image of being a protector of the persecuted through the presence of the Dalai Lama and the Tibetan parliament-in-exile in Dharamshala.
- Historical links to Theravada Buddhism mean that India is in a good position to further relations with other Buddhist countries and create conversation between multiple streams of this faith.

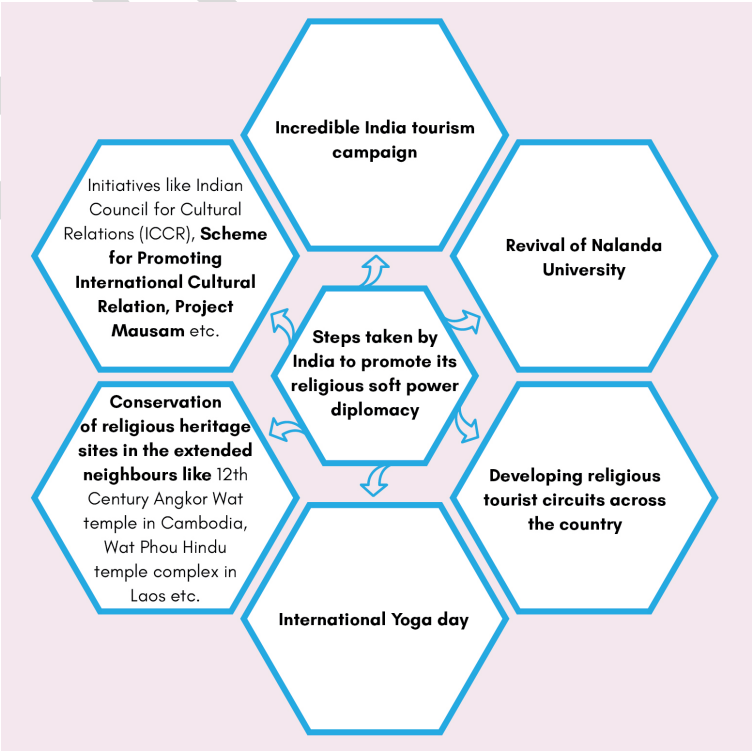
Successfully leveraging these associations with other Buddhist countries could have an impact beyond the realm of cultural diplomacy, and aid in other areas of foreign policy as well.

Soft power

- Soft power is the **ability to affect others to obtain the outcomes one wants through attraction rather than coercion or payment.** A country's soft power rests on its resources of culture, values, and policies.
- Soft power as a tool for foreign policy was **conceptualized by Joseph Nye in the 1990s.**
- **Religion, cuisine, music, art, Bollywood etc.** are India's various tools for soft power diplomacy.

Importance of religion in India's soft power diplomacy

- **India's religious diversity is its biggest strength:** India is fortunate to have all the major religions of the world. Four are homegrown: Hinduism, Buddhism, Jainism and Sikhism. Four came from outside: Zoroastrianism, Judaism, Christianity and Islam.
  - Also, unlike any other religion-based countries, people of various sects and religions live peacefully.
  - This adds to the incentives for the religiously minded people living across the globe to have a positive attitude towards India.
- **Role in its policy:** India's Look East Policy is being built up by emphasizing India's historical links with Buddhism.
  - India has sought membership to the Organisation of Islamic Cooperation (OIC) on the grounds that it has the 2nd largest Muslim population in the world.
  - Reputation for being a safe haven for Jews at a time of their prosecution in their native lands provides the foundation to strong India Israel relationship.
- **Religious diplomacy has been integral to India's tradition:** The principle of "VASUDHAIVA KUTUMBAKAM ('the whole world is but one family) was enshrined in Maha Upanishad**.** Ashoka sent Buddhist Missionaries to far off places such as Ceylon, Egypt, Macedonia, Tibet, etc. The address of Chicago Parliament of Religions in 1893 by Swami Vivekanad brought the much-needed recognition and respect for India particularly its culture and traditions.



- **Religion is a cohesive bond for Indian subcontinent:** Various religions of India help it to connect with all the neighboring countries. Thus, religions provide south Asia its unique identity.

What are the challenges being faced by India in projecting itself as a leader in religious soft power diplomacy?

- **China is emerging as a competitor:** In recognition of the potential that Buddhism holds in the area of diplomacy, China has made it a crucial part of its soft power strategy for the continent. The Chinese state promotes the religion on the grounds of its historical association, and the fact that it also possesses the largest Buddhist population of any country in the world.
    - It is also working through different projects (such as the US $ 3 Billion Lumbini project in Nepal) to woo countries having a significant amount of Buddhist population through its Belt and Road Initiative (BRI) projects.
- **Structural loopholes in the efforts to propagate India's culture:** The performance of the Indian Council for Cultural Relations (ICCR), with centers in about 35 countries and aimed at promoting Indian culture, has been lackadaisical. India has failed to build its brand value abroad. These centres are still aimed at the diaspora (like Caribbean, South Africa), ignoring strategic and growing relationships with other countries and regions.
- **Strict visa rules:** In South Asia, citizens of only Nepal, Bhutan, and Maldives are eligible for visa-free travel to India. This acts as a hurdle in leveraging India's enormous cultural assets and religious heritage by reviving intra-regional tourism flows.

Related information

Indian Council for Cultural Relations (ICCR)

- It is an autonomous organization of Govt of India founded in 1950 by Maulana Abdul Kalam Azad, first education minister of Independent India.
- It aims to **foster and strengthen cultural relations and mutual understanding** & to promote cultural exchanges with other countries and people.
- It **actively participates in the formulation and implementation of policies** and programmes pertaining to India's external cultural relations;

Scheme for Promoting International Cultural Relation

- It is implemented by Ministry of Culture with objective of **providing artists practicing Indian art forms an opportunity to perform abroad** under the banner of ' Festival of India'.
- It provides **financial assistance to cultural societies actively promoting Indian culture** abroad to organise cultural activities depicting Indian culture to help encourage interest in India among foreign nationals.

Project Mausam

- It is a Ministry of Culture project to be implemented by **Indira Gandhi National Centre for the Arts (IGNCA), New Delhi** as the nodal coordinating agency with support of Archeological Survey of India and National Museum as associate bodies.
- The endeavor of Project 'Mausam' is to position itself at two levels:
    - **at the macro level** it aims to re-connect and re-establish communications between countries of the Indian Ocean world, which would lead to an enhanced understanding of cultural values and concerns;
    - **at the micro level** the focus is on understanding national cultures in their regional maritime milieu.

What India should do to make its religious soft power diplomacy effective?

- **Needs to have a people centric approach for leveraging religious diversity**: Satyagraha based on non-violence propagated by Mahatma Gandhi reached across the globe without any support of British Indian government. Similarly Yoga, Meditation, Indian Classical Music and Indian spirituality was accepted by youth in western countries during 1960's Hippie movement without any active role of the Indian government.
- **Soft Power dissemination should be neutral**: There should not be any reference to our interests while propagating our civilization and cultural heritage. This is because using Soft Power to achieve specific goals is a contradiction in terms and can be counter-productive.
- **Economic vibrancy must be maintained and enhanced** as soft power assets per se do not translate into policy gains. For example, despite having strong religious linkages with countries in Indian Ocean region, (India's relations with these countries are affected negatively due to the growing clout of China. A vibrant economy would help India counter China's development projects under its BRI.
- **Celebrating values of other countries:** One way of winning hearts and minds is to celebrate the values of others. ICCR's objective is to not only promote Indian culture abroad but also make Indians aware of other cultures. Care has to be taken that this is done without even a hint of condescension or patronizing.

Conclusion

Religious tolerance and secular values provide India an edge in global diplomacy particularly over China. In the saga of Buddhist soft power diplomacy, China will be struggling because of its treatments of Tibetan Buddhist during Cultural Revolution and the occupation of the territory. Treatment to Uighur Muslims will make it difficult for China to win the hearts and minds of Islam followers.

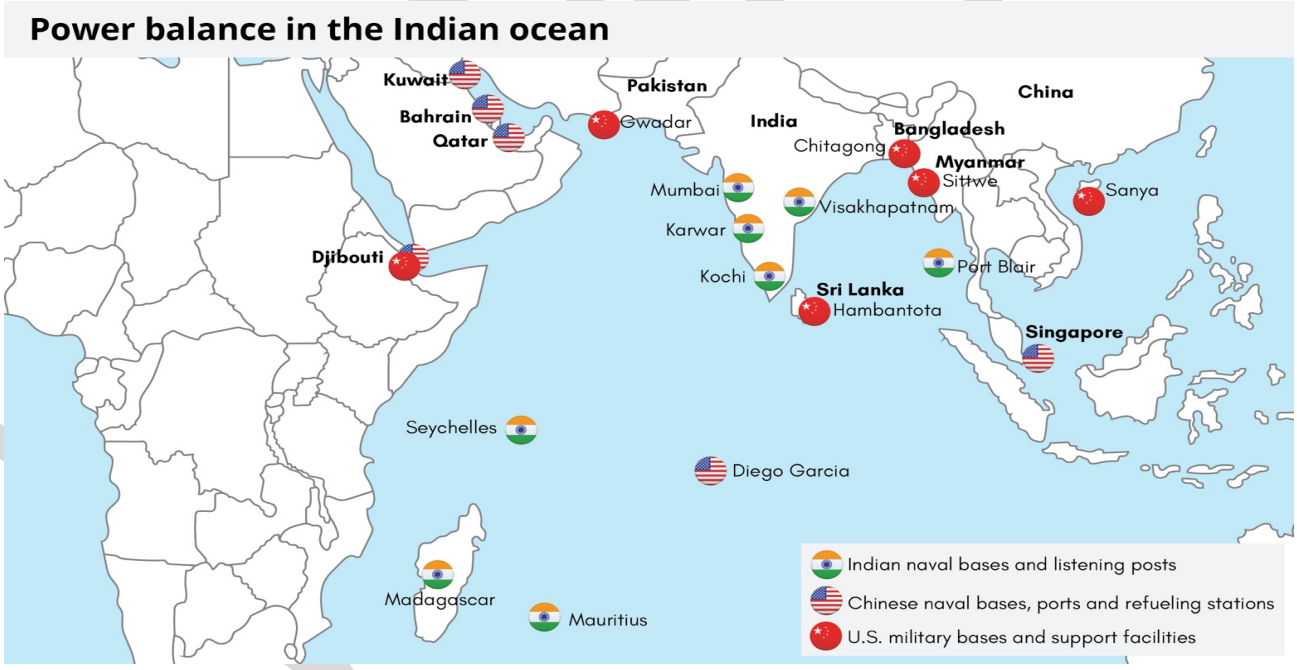
2.3. INDIAN OCEAN REGION (IOR)

Why in news?

Recently, India's Chief of Defence Staff (CoDS) remarked "the world is witnessing a race for strategic bases in the Indian Ocean Region (IOR) and it is only going to gain momentum in the times to come".

About the IOR

- **The Indian Ocean is the third-largest of the world's oceanic divisions** (after Pacific and Atlantic), covering 19.8% of the water on Earth's surface.
- **IOR is home to 1/3rd of the world's population** where the average age of a person is less than 30 years compared to 38 in the US and 46 in Japan.
- This densely populated IOR is also highly **vulnerable to natural disasters**.
- **Economies of many IOR countries are expanding rapidly.** Bangladesh, India, Malaysia and Tanzania witnessed economic growth in excess of 5% in 2017 (well above the global average of 3.2%).
- **IOR has become a pivotal zone of strategic competition:** There are over 120 warships of extra-regional forces are deployed in support of various missions. Global powers have shown a renewed interest in investing in infrastructure development in the IOR countries to maintain and increase geopolitical influence.



Why global powers are scrambling for strategic bases in the IOR?

Oversea bases are the first mechanism of mass networks. It helps in protection of commercial interests, aligning with friendly regimes, and expressing dominance in the region. Following factors have made the IOR a focus of rising global competition.

- **IOR falls at the crossroads of global trade:** It connects the major engines of the international economy in the Northern Atlantic and Asia-Pacific. More than 80% percent of the world's seaborne trade in oil transits through Indian Ocean choke points:
  - Strait of Hormuz connecting Persian Gulf and the Gulf of Oman.
  - Strait of Malacca between the Malay Peninsula and Sumatra island.
  - Bab el-Mandab Strait connecting Gulf of Aden & Red Sea.

- **IOR is rich in natural resources: 40% of the world's offshore oil production and almost 15% of the world's total fishing take place in the Indian Ocean basin. Poly Metallic Nodules (PMNs) containing nickel, cobalt, and iron, and massive sulphide deposits of manganese, copper, iron, zinc, silver, and gold present in sizeable quantities on the sea bed. Indian Ocean coastal sediments are also important sources of titanium, zirconium, tin, zinc, and various rare earth elements.**
- **Peace in the IOR is indispensable for global security:** As IOR is home to most of the existing and emerging threats to global security. More than half the world's armed conflicts are presently located in the IOR. Terrorism, piracy, drug trafficking and unregulated migrations are gaining traction within the region especially around the Horn of Africa.
- **Countering rise of China:** As part of its Belt and Road initiative (BRI) China is heavily investing in infrastructure and ports in Sri Lanka, the Maldives, and Bangladesh, Kenya. Western powers, including the US and UK are seeking to counter-balance China's rise.
- **Protection of maritime ecosystem:** The Indian Ocean is warming three times faster than the Pacific Ocean. Overfishing, coastal degradation, and pollution are also harming the marine ecosystem.

Why is India seen as pivotal by the global powers for increasing their geopolitical influence in the IOR?

Recently, the UK underscored that it is looking East and India is emerging as the key pillar in that strategy. Similar strategy has been initiated by other countries including US, France, Australia and Japan also. **Reasons underlining India's importance in the IOR are as follows**

- **India has a privileged geostrategic location:** India is geographically located at the Ocean's centre. It has over 7,500 Km of coastline. 95% of India's trade by volume and 68% of trade by value come via the Indian Ocean. Nearly 80% of India's crude oil requirement is imported by sea via the Indian Ocean. Thus, India's fate is inextricably linked with the IOR. Global powers are hedging on India's obligations for a peaceful and rule based IOR.
- **Shared interests in the IOR:** The global Interest overlap with India's objectives outlined under SAGAR (Security and Growth for All in the Region). These include preserving freedom of navigation for commercial shipping, sustainably and equitably harnessing the Indian Ocean's natural resources, Countering piracy, terrorism, smuggling, and illegal weapons proliferation etc.
- **India has the capability to counter the growing clout of China:** Relative to other countries in the region, India has advantages in terms of economic and military capability. India has already taken various steps for democratic governance of the IOR. These include
    - **Indian Ocean Naval Symposium (IONS)**: It is regional forum of Indian Ocean littoral states, represented by their Navy chiefs similar to Western Pacific Naval Symposium. It seeks to "increase maritime co-operation among navies" of the Indian Ocean littoral states.
    - **Indian Ocean Rim Association (IORA):** It emphasizes on maritime security, trade, cultural promotion, tourism, resource management and governance.
    - **Humanitarian And Disaster Relief Operations (HADAR):** For decades India has positioned itself as the first responder to humanitarian crises in the IOR. This also includes rescuing citizens of India and neighbouring countries from conflict zones.
    - **Maritime Domain Awareness (MDA):** India aspires to become net security provider in the IOR. It has taken following initiatives in this direction.
        - ✓ **Information Management and Analysis Centre (IMAC**): Jointly managed by the Indian Navy and Coast Guard, it is the nodal center of the National Command Control Communications and Intelligence (NC3) Network. It provides information and surveillance over India's entire coastline, along with its outlying islands, in real time.
        - ✓ **Information Fusion Center for the India Ocean Region (IFC-IOR)**: It aims to provide regional MDA by fusing large data sets originating from multiple sources.
        - ✓ **White shipping agreement** allows Indian Navy exchange data on commercial traffic. This helps create a better picture of movements and vessels at sea.

What challenges are poised before India in the IOR?

India's influence in the IOR has shrunk despite its advantages of location astride the Indian Ocean and historical links in East and South Africa, the Gulf, and South East Asia. This is because of

- **China's increasing economic and military footprint in the region**: By providing large loans on generous repayment terms, investing in major infrastructure projects and support in the UN Security Council (UNSC)

through its veto powers, China has secured considerable influence among littoral countries in the IOR. It also has a naval base in Djibouti and some facilities in Seychelles and Mauritius.

- **Capacity and capital constraints:** India faces logistical challenges in the southern and western Indian Ocean. Also due to a meager allocation of 15% of India's military budget, the Indian Navy has limited capacity and resources to strengthen its security efforts in the IOR.
- **Dysfunctionality of the South Asian Association for Regional Cooperation (SAARC):** Being located at the centre of Indian Ocean the dysfunctionality of SAARC affects that larger space directly as it hinders trade and connectivity among IOR countries.
- **New geopolitical challenges and strategic dilemmas:** As the world is moving in the direction of multi-polarity, balance of power and clash of values among countries presents a challenge for India.
    - Recently, Russia after raising concerns about India's participation in QUAD (Quadrilateral Security Dialogue declared that it is committed to develop good ties with Pakistan and India should not be concerned with it.

How India could overcome various challenges to play a significant role in IOR?

- **Maintaining strategic autonomy:** Choices have to be made for creation of balances among competing global powers. For this India need to strengthen bilateral, trilateral and multilateral mechanism like 'JAI' (Japan, Australia, and India), India-ASEAN (Association of Southeast Asian Nations) and others.
- **Strengthening capability:** India's ability to overcome domestic and strategic challenges will determine its place in the world particularly in the IOR. India is now focused on the right issues: digitization, urbanisation, rural growth, infrastructure, skills etc.
    - Logistic challenges in the western and southern Indian Ocean can be overcome by easy access to military facilities held by India's partners. India has already signed the **Logistics Exchange Memorandum of Agreement (LEMOA)** with the US and France. It has similar agreements with Australia, Singapore, and South Korea and is looking to finalize agreements with Japan and the UK.
- **Improving regional connectivity and trade:** The case for building connectivity and expanding trade in the South Asia is glaringly obvious. Hence, re-energizing SAARC should be one of India's key foreign policy priorities. The free trade agreement (FTA) of the Bay of Bengal Initiative for Multisectoral Technical and Economic Cooperation (BIMSTEC) should be finalized with the utmost priority.
- **Keeping cooperation with small littoral states at the heart of India's foreign policy:** If India's littoral states are hostile to it, they may tilt towards rising China. This will have a direct impact on India's security. Also India's relationship with small littoral states in the IOR will shape its role in the Indo-Pacific. Therefore, India should enhance its cooperative relations with these countries.

Conclusion

The entire world is focused on coming to term with rising China. In this exercise India will occupy a significant place by virtue of its location, size, potential, history and culture. If there is a common approach, it is of them simultaneously strengthening capacity internally, assessing the external landscape and seeking understanding with China.

2.4. INDIA CHINA WATER RELATIONS

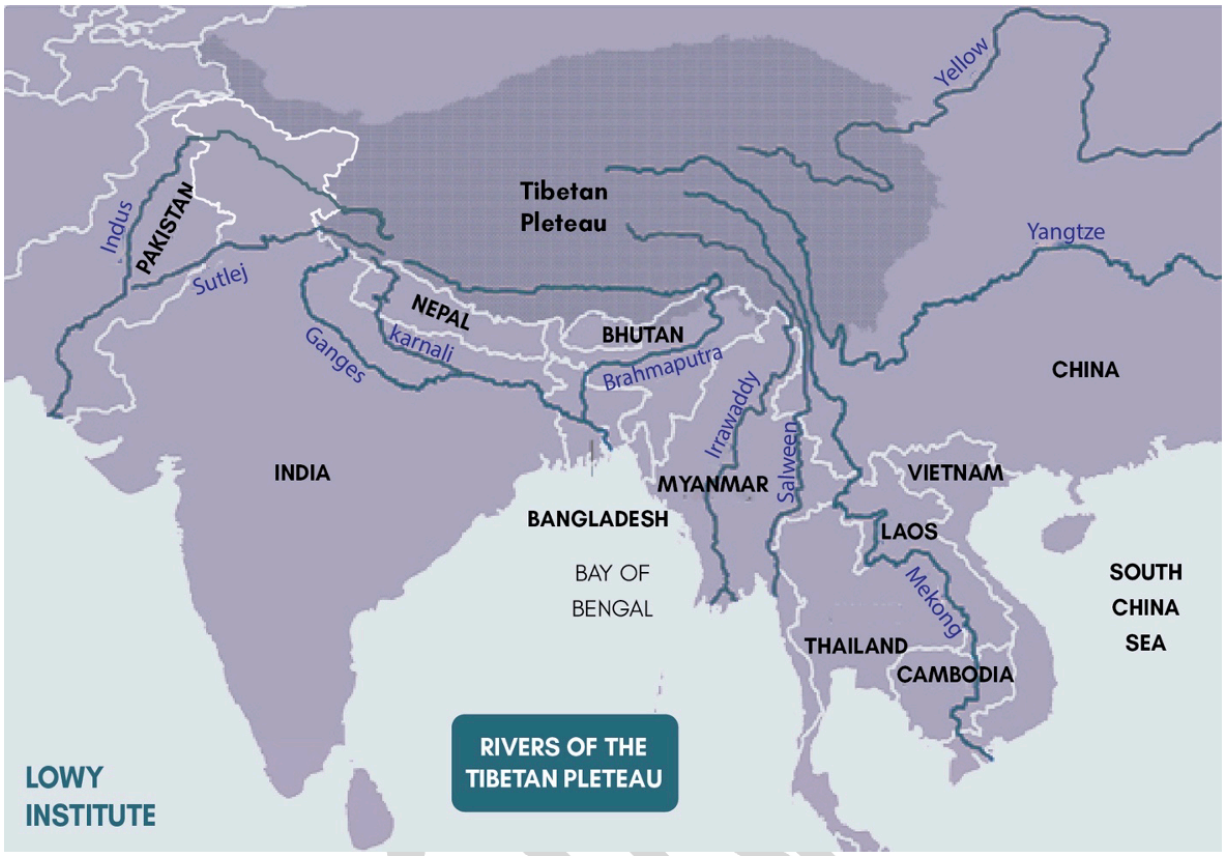
Why in news?

Recently, there have been reports that China plans to build a major dam on Brahmaputra. This has reinvigorated the debate on India-China water relations.

Run-of-the-river Project
It is a type of hydroelectric generation whereby the natural flow and elevation drop of a river are used to generate electricity. (Hence, there is **no need to build a reservoir**).

More on news

- China has stated that it plans to **build run-of-the-river dams on Yarlung Zangbo** (the tributary of Brahmaputra (called Siang in China)).
- It has also stated that there is no cause for concern as it plans to **keep communication clear with lower riparian states** i.e., India and Bangladesh.
- India, on the other hand has stated that it will monitor the developments on the Brahmaputra closely.



River System in the Tibetan Plateau

The Tibetan plateau is often called the "**Third Pole**", owing to its glacial expanses and vast reserves of freshwater. Following can be cited as key features of this system-

- It is a **source of seven of the South Asia's largest rivers**- the Indus, Ganges, Brahmaputra, Irrawaddy, Salween, Yangtze and Mekong.
- These rivers flow into **Pakistan, India, Bangladesh, Myanmar, Laos and Vietnam**, and form the largest river run-off from any single location.
- It is **estimated that 718 billion cubic meters** of surface water flows out of the Tibetan plateau and the Chinese-administered regions of Xinjiang and Inner Mongolia to neighboring countries each year.

What is the current status of India-China water relationship?

Trans-border rivers flowing from China to India fall into two main groups –

- The **Brahmaputra River System** on the Eastern side consisting river Siang (mainstream of river Brahmaputra) and its tributaries i.e., Subansiri and Lohit.
- The **Indus River System** on the Western side consists of river Indus and the river Sutlej.

There is **no institutionalized mechanism on water cooperation** between India and China, both countries have signed only -

- **MoU for Hydrological Information of the River Brahmaputra** in 2002 and in 2010 MoU on Hydrological Data Sharing on River Sutlej / Langqen Zangbo (renewed in 2015).
- **ELM (Expert Level Mechanism) to cooperate in emergency management** (e.g., flood), trans- border Rivers issues etc. in 2006.

Besides these continuous diplomatic engagement plays a key role in sustained communication for data sharing and other developments in the river systems.

What are the concerns that India has regarding the recent developments on Brahmaputra?

- **Volume and quality of water:** Experts have highlighted that even Run-of-the-river projects will significantly reduce the availability of water in the North-Eastern region.

- Also, creation of hydroelectric projects would alter the flow of water and **potentially increase the siltation levels,** thus affecting the quality of water in the lower riparian states.

- **Absence of transparency in developments:** Chinese infrastructural developments in the Tibetan region have not been transparent. E.g.- Road developments near the India-Tibet border etc.
- **Lack of trust on China:** Although China has stated that it will keep communication clear with the Indian dispensation. But China's past record of strong-arming Southeast Asian countries in Lancang-Mekong Cooperation (LMC) framework suggests otherwise.
- **Potential use as political leverage in border disputes:** The control over joint water resources can be used as a political tool by China. For example, China stopped sharing of hydrological data on Brahmaputra during the Doklam standoff. (But it was sharing the same with Bangladesh.)
- **National Security implication:** The question of availability of water can turn into a National Security issue as it directly affects the existence of a large section of people.
  - Also, poor water availability in the Eastern region can trigger a fresh influx of refugees from Bangladesh.
- **Environmental Impact:** Several concerns emerge such as increased pollution in the river (Siang- Brahmaputra's main artery recently turned blackish grey as it entered India), potential impact on climate change, threat to biodiversity in the region and altering the monsoonal patterns of the region.
- **Increased disaster vulnerability:** Artificially controlling and consequent sudden releases of the flow of water increases the probability of floods especially in lower riparian areas of India and Bangladesh.
  - Also, China plans to build this infrastructure by using small nuclear explosions, this will not only impact the seismic balance of the region but also will have a radioactive fallout (affecting agriculture and water quality).

In this context, what can be the course of action for India?

The Indian dispensation has stated that it is monitoring the situation, but several experts have suggested to go beyond monitoring to secure its interests. Following steps can be taken by India-

- **Strengthening its hydrological capacity:** Efforts could be made to increase the monitoring capacity for the flow of water on the Indian side. For example, weekly monitoring of flow of water on every major junction of the river.
  - This can be accompanied with regular satellite-based monitoring of the complete stretch of the Brahmaputra river (for activity and infrastructural developments).
- **Building international consensus against Chinese activities:** India can bank on its image as a responsible Upper riparian state and try to persuade other lower riparian states like Bangladesh, ASEAN countries etc. to build a regional consensus for countering potential excesses from China.
  - Efforts can also be made to draw out a consensus of a collective of democracies in pursuance of International law of 'Prior Appropriation'. In accordance with the law, India being the first user has rights to use same quantity of water for hydropower projects on Brahmaputra against China.
- **Drawing clear red lines:** India must lay down clear red lines and communicate the same to China, with regard to the water security in the region. For example, if Run-of-the-river dams created by China alter the water availability in India, it will not be acceptable to India.

But monitoring capacity, international consensus and red lines will only be effective if India has the capacity to back this pressure with actions. As a result, it becomes pertinent that India develops its economic and military capacity to showcase that it can potentially harm China if such a need arises.

Conclusion

Geographically, India and China share a water system and that fact will not change in the foreseeable future. As a result, pressure and counter pressure tactics can only be a solution in the short-term. In the long-term, strained water relations between countries will hinder the development on both sides.

In the light of this, India could make an effort to further strengthen cooperation through diplomatic channels available like the Expert Level Mechanism and using other diplomatic means like the Himalayan Charter and Himalayan Council for the future of the Himalayas among others.

2.5. INDIA-BANGLADESH RELATIONS

Why in News?

A Virtual Summit was recently held between India's Prime Minister and Prime Minister of Bangladesh.

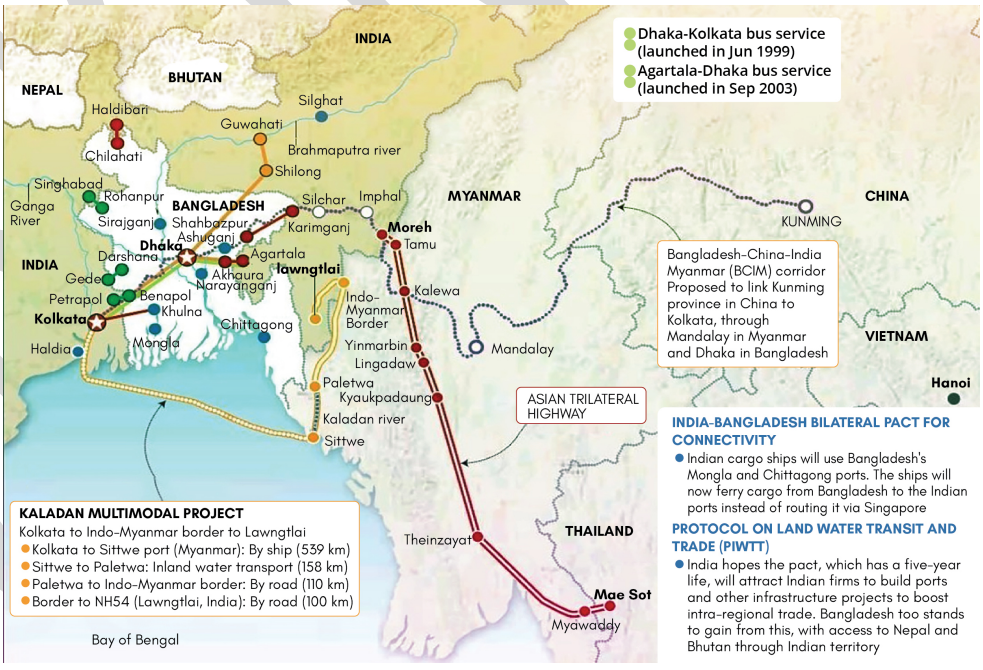
Key Highlights of the Summit

- **Signing of Bilateral Documents and Inauguration of Projects:** in varied fields such as Hydrocarbon Sector, Trans-boundary Elephant Conservation, High Impact Community Development Projects (HICDPs), Cooperation in the field of Agriculture etc.
- **Cooperation in Health Sector:** India assured that vaccines would be made available to Bangladesh as and when produced in India and also offered collaboration in therapeutics and partnership in vaccine production.
- **Cultural Cooperation:** A commemorative postal stamp was issued by the Government of India on the occasion of birth centenary of **Bangabandhu Sheikh Mujibur Rahman**, who was the founding leader of Bangladesh and country's first Prime Minister.
- **Border Management and Security Cooperation:** Both sides agreed to work towards finalizing the delineation of the fixed boundaries along **Icchamati, Kalindi, Raimongol, Hariabhanga and the Kuhsiyara** Rivers.

India Myanmar Thailand trilateral highway (IMTTH)

- IMTTH is a **trans-border corridor** that proposes to connect **Moreh in Manipur and Mae Sot in Thailand.**
- It is a grant-in-aid initiative by India as part of its Act East Policy and is aimed at opening land gate to ASEAN and boost trade and commerce.
- It is expected to be completed by 2021.
- India has also proposed extending the highway to Cambodia, Laos and Vietnam.

- **Trade Partnership:** Both countries directed the officials to expeditiously conclude the ongoing joint study on the prospects of entering into a **bilateral Comprehensive Economic Partnership Agreement (CEPA)**.
- **Connectivity:** Inauguration of the newly restored railway link **between Haldibari (India) and Chilahati (Bangladesh),** which was defunct since the India-Pakistan war of 1965.
  - Bangladesh also expressed keen interest in the ongoing **India Myanmar Thailand trilateral highway project**.
- **Cooperation in Water Resources, Power and Energy:** Underscored the need for early conclusion of Framework of Interim Agreement on sharing of waters of six joint rivers, namely, **Manu, Muhuri, Khowai, Gumti, Dharla and Dudhkumar** and agreed to expedite implementation of projects including India-Bangladesh Friendship Pipeline, Maitree Super Thermal Power Project etc.



- **Global Partnership**: Both countries agreed to continue working together towards achieving early reforms of the UN Security Council, combating climate change, attainment of the Sustainable Development Goals (SDGs) and protection of the rights of migrants.

Background of India-Bangladesh relations

- India was **one of the first countries to recognize Bangladesh** and establish diplomatic relations immediately after its independence in December 1971.
- The Indian Army fought side by side with the Bangladeshi freedom fighters in 1971 during the Liberation War.

Significance of Bangladesh for India

- **Enhancing Connectivity**: Bangladesh, due to its strategic geopolitical location, acts as a gateway to Southeast Asia. It is a central component to various regional connectivity projects such as the Bangladesh-Bhutan-India-Nepal (**BBIN**) initiative.
- **Important Trade Partner**: Bangladesh is India's biggest trade partner in South Asia and is an important destination for Indian exports. India's exports to Bangladesh in FY 2018-19 stood at around US$ 9.21 bn.
- **Security and border management**: India shares an extensive and porous boundary with Bangladesh. This has made cooperation between the two countries crucial for **effective border management** and **tackling transnational crimes** such as smuggling of arms, narcotics, fake Indian currencies and trafficking of women and children.
- **Development of North- Easter Region (NER):** Transit and transshipment to NER through Bangladesh helps increase connectivity with the NER and ensure peace, stability and economic development of the region. Also, Indo-Bangladesh security cooperation has helped in the taming of insurgency in India's northeast.

Steps taken to strengthen India-Bangladesh relations in the recent years

- **Sharing of river water**: India and Bangladesh signed a Memorandum of Understanding in October 2019 on water sharing of the Feni river.
- **Fuel pipeline**: India is providing grant assistance for development of **India-Bangladesh Friendship Pipeline**, inaugurated in 2018, for supply of diesel from Siliguri in India to Parbatipur in Bangladesh.
- **Assistance during COVID-19**: As Covid-19 spread to Bangladesh, India provided medical assistance in the form of test kits, PPE and medicines, as well as online trainings for medical professionals.
- **Trade Facilitation**: In May 2020, the two countries signed an addendum to the Protocol on Inland Water Transit and Trade (PIWTT) and added two new routes and five port of call, facilitating trans-shipment of Indian goods from **Kolkata to Agartala via Chattogram**.
- **Financial aid**: India has extended 3 Lines of Credits (LOC) to Bangladesh in the last decade amounting to US$ 8 billion for development of infrastructure in various sectors including roads, railways, shipping and ports.
    - In addition to LOCs, the Government of India has also been providing **grant assistance** to Bangladesh for various infrastructure projects such as the **Agartala-Akhaura rail link**, dredging of inland waterways, and high impact community development projects (HICDPs) in the areas of education, health, water, culture, urban development etc.

Contentious issues in India-Bangladesh ties

- **River water disputes**: Overall, India and Bangladesh have 54 trans-boundary rivers between them, part of the Ganga-Brahmaputra-Meghna (GBM) basin, and Bangladesh lies downstream in majority of these river streams. This has given rise to concerns in Bangladesh over sharing of river waters, interlinking of the rivers and building of dams in India. Several issues in this regards are-
    - **Doubts about the credibility of bilateral Joint Rivers Commission (JRC)** which has been working since 1972 for the resolution of water disputes. In 2019, the 38th round of meeting of JRC was held after a gap of around seven years.
    - **Delays in signing of the interim agreement for sharing of the Teesta waters**, as agreed upon by both the governments in 2011.
- **Trade imbalance**: Bangladesh has often complained that the bilateral trade tilts towards India.
- **China factor:** The Chinese influence on Bangladesh has been increasing in the past few years through measures like enhancing the list of products for duty-free access into its markets and providing massive loans for development projects.
- **Issues in Border Management**: Loss of civilian lives at the border and smuggling of arms, narcotics and fake currency has been a matter of concern.
- **Concerns related to Citizenship Amendment Act**: The new citizenship law granting Indian citizenship to persecuted religious minorities from Bangladesh indirectly implied the poor treatment of religious minorities in Bangladesh and brought negative publicity for Dhaka.

Way Forward

- **Institutionalizing a framework for management of the rivers**: Both countries can adopt a basin-wide approach in formulating a new framework, given that most of the rivers shared by India and Bangladesh are part of the transboundary Ganges-Brahmaputra-Meghna basin.

- **Allowing work permits**, to resolve the migration issue, in a manner that does not adversely impact the society and economy of both the countries.
- **Conducting meetings of JRC on regular intervals** and enhancing cooperation in the field of sharing hydrological data among the two countries.
- **Expediting projects in Bangladesh**: India should **expedite implementation of projects** including India-Bangladesh Friendship Pipeline, Maitree Super Thermal Power Project etc. to highlight the highest priority India attaches to Bangladesh under India's Neighbourhood First Policy.
- **Addressing issues of non-tariff barriers** and trade facilitation including port restrictions, procedural bottlenecks etc. for reducing the trade imbalance.
- Effective implementation of the ongoing **Coordinated Border Management Plan**.

2.6. INDIA-VIETNAM VIRTUAL SUMMIT

Why in News?

Indian Prime Minister and his Vietnamese counterpart recently participated in a Virtual Summit.

Key Highlights of the Summit

- **Seven agreements** were signed by the two countries covering diverse issues such as **defense, nuclear power, petrochemicals, renewable energy, Cooperation in United Nation Peacekeeping operations and treatment of cancer.**
- A **Joint Vision** document for Peace, Prosperity and People and a **Plan of Action for period 2021-2023** to implement the Joint Vision were released to guide the future development of India - Vietnam Comprehensive Strategic Partnership.
- Other major announcements include-
  - Implementation of the 554High-Speed Guard Boat (HSGB) Manufacturing Project for Vietnam Border Guard Command under the **US$ 100 million Defence Line of Credit** extended by Government of India to Vietnam.
  - Enhancing the number of **Quick Impact Projects (QIPs)** from currently 5 per year to 10 per year commencing FY 2021-2022.
    - The QIPs are short gestation projects mostly covering upgradation of physical infrastructure such as roads, local community centres, social infrastructure such as in the education, health, sanitation or community development sectors.
  - Launch of a bilateral project for **Encyclopedia on India - Vietnam Civilizational and Cultural Interactions.**
  - New Development Partnership **projects in heritage conservation in Vietnam**.

India-Vietnam Relations

- Bilateral relations between the two countries were elevated to the level of 'Strategic Partnership' in 2007 and further to a "**Comprehensive Strategic Partnership" in 2016**.
- India and Vietnam closely cooperate in various regional forums such as ASEAN, East Asia Summit, Mekong Ganga Cooperation, Asia Europe Meeting (ASEM) besides UN and World Trade Organisation (WTO).
- **Bilateral Trade:** From US$200 million in the year 2000, bilateral trade between India and Vietnam has reached US$12.34 billion in 2019-20.

Significance of Vietnam for India

- **Critical component of India's foreign policy**: Vietnam is an important pillar of India's Act East policy and a vital partner of its Indo-Pacific Vision and SAGAR policy.
- **Support to India on international platforms**: India and Vietnam will concurrently serve as non-permanent members of the UN Security Council from 2021, and this has opened up new opportunities for cooperation and coordination on regional and international issues.
  - For instance, Vietnam strongly supports India's permanent membership in an expanded UN Security Council and could help India push for reforms in this direction.
- **Countering China**: Both India and Vietnam are grappling with China's aggressive actions in the region, which makes them natural allies. While India is locked in a military standoff with China in Ladakh sector of the Line of Actual Control (LAC), Vietnam has major differences over Chinese claims within its exclusive economic zone in the South China Sea.
- **Trade potential:** Vietnam is the 8th largest destination of India's exports globally and the second largest export destination in the ASEAN region**.** Bilateral trade among the countries has **high potential for growth given the**

strong complementarities that exist between India's large domestic market and the vision of self-reliance under 'Atmanirbhar Bharat' on the one hand and Vietnam's growing economic vitality and capabilities on the other.

- **Defense exports**: Vietnam has reportedly shown interest in acquiring a host of military equipment from India, including India's Akash air defence system, Dhruv helicopters, the BrahMos missile etc. Defense cooperation with Vietnam will not only boost defense manufacturing and export in India, but also strengthen India's position as a net security provider in the region.
- **Energy security**: Indian companies have already invested in oil and gas exploration projects in the Vietnamese waters in the South China Sea which are extremely rich in hydrocarbon reserves. Consistent supply of hydrocarbons from Vietnam can help ensure energy security in India.
- **Integration to supply chains**: Partnership with Vietnam can help India participate in building reliable, efficient and resilient regional and global supply chains, especially in the post COVID world.
    - Vietnam's Free trade agreement with European Union has further enhanced its role in the global trade regime.
- **Maritime security and safety**: Nearly 50% of India's trade is centered in the Indo-Pacific Region and the Indian Ocean carries 90% of India's trade and its energy sources. Due to its strategic position in the Indo Pacific, Vietnam plays a key role in ensuring a secure and stable trade route in the region.
- **Fulfillment of converging interests**: Both countries have similar interests in multiple domains including blue economy, dealing with cyber security threats, countering terrorism, tackling natural disasters, water security, etc. which calls for enhanced legal and judicial cooperation.
    - For instance, there exists synergy between India's "Digital India" mission and Vietnam's "Digital Society" vision.

Concerns

- **Reluctance in Defence cooperation**: There has been no visible growth in negotiations for purchase of defence equipments from India.
    - Vietnam is also yet to operationalise a US $ 500 million line of credit for defence purchase that India had offered it in 2017.
- **Chinese claims over South China Sea**: can threaten India's prospects of exploring hydrocarbons in the region.
- **India opting out from RCEP**: Indian Government's decision to opt out of the Regional Comprehensive Economic Agreement (RCEP) can prevent India from enhancing trade relations with Vietnam and actively participating in the regional supply chains.
- **Inconsistent growth in trade**: Due to differences in foreign policy approaches and in institutional mechanisms and the absence of direct connectivity, trade between India and Vietnam has not seen a consistent growth over the years.
    - For example, the volume of bilateral trade for the period April–December 2019 was reduced to US $ 9.89 billion from US $ 13.69 billion in 2018–19.

Way Forward

- **Promoting closer people-to-people exchanges**: India and Vietnam share cultural and civilizational heritage, including Buddhist and Cham cultures. India should build on this shared heritage to strengthen people to people linkages, by increasing direct flights, providing ease of travelling through simplified visa procedures and facilitating tourism.
- **Enhancing economic cooperation** through steps such as promoting joint ventures, enhancing physical and digital connectivity, encouraging e-Commerce, upgrading regional trading architecture and mutually providing greater market access etc.
- **India can consider developing possible associative endeavors with Vietnam** within sub-regional frameworks, such as, Indian Ocean Rim Association (IORA), Bay of Bengal Initiative for Multi-Sectoral Technical and Economic Cooperation (BIMSTEC) to discuss mutual interests and integrating strategies.
- **Renewing the Joint Vision on Defence Cooperation for 2015-2020**: Such a joint vision for next five years would be an affirmation of the close defence and security ties and chart out the elements of bilateral cooperation with Vietnam in the near future.

2.7. BREXIT TRADE DEAL

Why in news?

The United Kingdom and the European Union have agreed to a post-Brexit free trade deal i.e. The EU-UK Trade and Cooperation Agreement (TCA), sealing the UK's exit from the bloc.

Background

- **Brexit** - or "British exit" - **refers to the process of the withdrawal of the United Kingdom from the European Union** and the European Atomic Energy Community.
- Following a **referendum in 2016**, **Britain became the first country to leave the EU in January 2020** after which an 11-month transition period was kicked-in in accordance with the withdrawal agreement.
- The UK and European Union have finally agreed a deal that will define their future relationship.

Major provisions of the deal

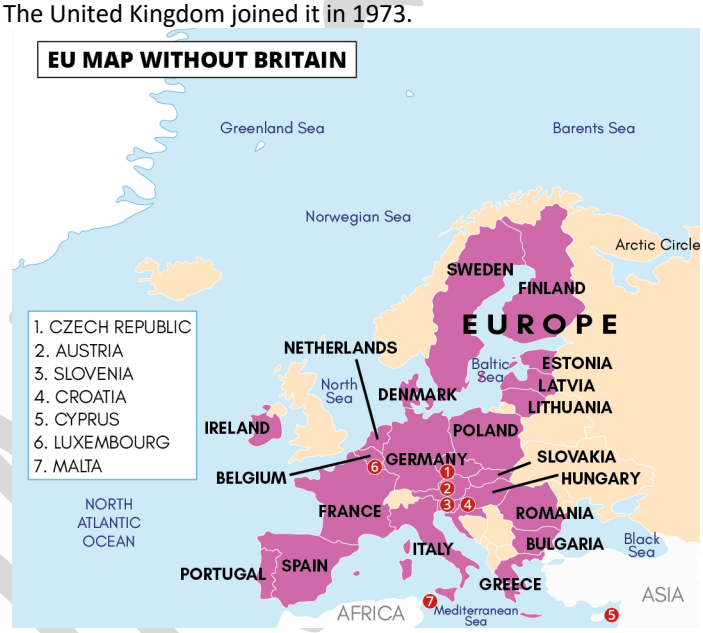
- **Goods trade:** The trade deal **does not impose any tariffs or quotas on goods traded between the EU and UK**, however, British exporters will have to contend with new regulatory hurdles which will make it costlier to do business with Europe.
- **Level Playing Field:** The EU and UK have **both agreed to uphold their environmental, social, labour and tax transparency standards.**
- **Disputes:** Any disputes on the trade between the two parties are **subject to negotiation by both but EU courts will have no say in the matter.**
- **Professional services:** There will **no longer be automatic mutual recognition of professional qualifications.**
- **Agriculture: Agricultural products would not be subject to tariffs or quotas**, however, shippers would face new challenges and higher costs as a result of new border requirements.
- **Law:** There will be **cooperation between the EU and the UK, especially in cases of investigating terrorism and other serious crime.** Exchange of DNA, fingerprint and airline passenger information is allowed under the new deal.
- **Mobility or freedom of movement:** UK nationals **no longer have the freedom to work, study, start a business or live in the EU.** Visas will be required for stays over 90 days.

Impact on India

- **Brexit will create both opportunities and challenges** for India. **However, India may emerge as a net gainer** from the Brexit deal.
- **Services Sector:** In sectors such as IT, R&D, architecture and financial services, **India may gain in both the markets but particularly in the UK.**

European Union

- It is an economic and political union involving 27 European countries.
- It allows free trade and free movement of people, to live, trade and work in whichever country they choose.
- Article 50 of Lisbon Treaty provides for exit of member countries from European Union.
- For any country to come out of European Union, it has to negotiate a settlement deal with EU.
- It has its own currency, the euro, which is used by 19 of the member countries, its own parliament and other institutions
- The United Kingdom joined it in 1973.



India, UK and EU: Trade Relations

- **UK is India's 14th largest trade partner** and trade between India and UK touched $15.5 billion with a $2 billion **trade surplus in favour of India.**
  - The UK is the **third-largest source of foreign direct investment in India** and **India is now the second largest investor** in the UK economy.
- The **EU is India's 3rd largest regional trading partner** while India was the EU's 9th largest trading partner in 2018-19. India's overall bilateral trade with the European Union for the period 2018-19 was 115.64 USD billion.
  - The EU continued to be one of the largest sources of FDI for India and **India is among the few nations in the world that run a surplus in services trade with the EU.**
- There are **about 800 Indian-owned companies in the UK** employing roughly 110,000 people. (Eg: Jaguar Land Rover is owned by the Tata group). Many of these firms made investments with the wider European market in mind.
- Together, the **UK and Europe account for over-a-quarter of the country's IT exports**, worth around $30bn.

- For example, in the IT sector, India's competitor in the EU, particularly in the lower segment of services, is Poland. Now, because Poland will have restrictions on the free movement of professionals, that may be to the advantage of India.

- **Indian exporters** who were catering to the EU and UK markets **will not have the challenge of meeting different standards and registrations** for the markets.
- **Trade Deals: Brexit also opens the opportunity for India to sign trade deals separately with both the EU and the UK.** Negotiations for a comprehensive Bilateral Trade and Investment Agreement between India and the EU (including the UK) was called off in 2013 after both sides failed to reconcile differences.
  - A well-negotiated bilateral trade deal between the UK and India has the potential to increase bilateral trade by 26%.
- **Barriers for Indian manufacturers:** Indian companies who have based their headquarters either in the UK or the EU to serve both the markets may face some challenges. **These include restrictions on the movement of professionals, reaching rules of origin thresholds for zero tariffs, ensuring the correct regulatory approvals for the final products, and potential delays at borders.**

2.8. TIBETAN POLICY AND SUPPORT ACT

Why in News?

Recently, The US Senate passed the Tibetan Policy and Support Act (TPSA) of 2020 outlining United States' policy on Tibet.

About the TPSA

- Built on the landmark Tibetan Policy Act of 2002, the TPSA **addresses Tibetan human rights, environmental rights, religious freedoms and the democratic Tibetan government** in exile.
- It **formally recognises the Central Tibetan Administration (CTA)** as the legitimate representative of the Tibetan people.
- It **will pave the way for the U.S. government to issue economic and visa sanctions** against any Chinese officials who interfere with the succession of the Dalai Lama.
- The TPSA **also introduces new key provisions aimed at protecting the environment and water resources on the Tibetan plateau.**
- In addition, it **calls for greater international cooperation to monitor the environment on the Tibetan plateau.**

Succession of Dalai Lama

- **Dalai Lama is the Tibetan spiritual leader who is also a global Buddhist authority.**
- As per the Buddhist Belief, The **Dalai Lama is expected to reincarnate after he dies** and it is the **responsibility of the High Lamas of the Gelgupa tradition and the Tibetan government to seek out and find the next Dalai Lama** following the death of the incumbent.
- The **entire process of searching is complex and can take a long time**. It took four years to find the 14th (current) Dalai Lama, Tenzin Gyatso.
- There is **widespread belief that the Chinese government may interfere in the process and appoint its own Dalai Lama for political purposes.**

Background: Geostrategic and Geopolitical importance of Tibet

- Tibet is the **world's highest and largest plateau**, covering an area of 2.5 million square kilometres, with an average elevation of more than 4,000 metres above sea level.
- Its **entire southern rim is flanked by the Himalayas**, the world's highest mountain chain thus the land mass **constitutes a formidable buffer or barrier for any power operating beyond Tibet.**

- The **environmental importance** of Tibet arises from the fact that it play a **major role in the Asian monsoon and holds largest concentration of glaciers outside of the two Poles** that feed the 10 major river systems that sustain millions downstream.
- Tibet has **always been a place of geostrategic prominence in the eyes of regional as well as superpowers.**
    - In the early 20th century, British India adopted its forward policy towards Tibet for expanding her market and to establish Tibet a buffer against the Czarist Russia's threat to India.
    - Presently, as per the popular perception, **China considers Tibet as the palm and Ladakh, Nepal, Sikkim, Bhutan and Arunachal Pradesh as the five-finger.**
    - The **incumbent and the 14th Dalai Lama has been living in exile in India** ever since the Tibet was occupied by the Chinese People's Liberation Army (PLA) in 1950-51. He has been leading the movement for "genuine autonomy" for Tibet and the Tibetans.
    - **China's militarization of the Tibetan plateau triggered the geopolitical tensions in South Asia.** Since the disappearance of Tibet as a traditional buffer state between India and China in 1950, the two Asian giants faced military escalations in and along the Indo-Tibetan border.
    - US on the other hand remains concerned with the People's Republic of China's repression of the Tibetan community and severe restrictions on Tibetans' religious freedom. **US supports the Central Tibetan Administration**, **the Middle Way Policy and genuine autonomy for Tibetans**, religious freedom, environmental protection of Tibetan plateau and restoration of freedom in Tibet.

India's stance on Tibet: Is there a need to change it?

- **India has a one China policy** (policy asserting that there is only one sovereign state under the name China, as opposed to the idea that there are two states, the People's Republic of China (PRC) and the Republic of China (ROC)) and has **mostly refrained from playing the Tibet card against China.**
- **China and India had codified their position on Tibet** and these remained the touchstone for addressing subsequent controversies on this issue. For instance, under the **1954 treaty on trade and transportation on the border between Tibet and India** which was preambled by Panchsheel (five principles of peaceful coexistence), **India had formalised the recognition of Tibet as part of China.**
- India currently has an executive policy (not a law) on Tibetans in India called "**Tibetan Rehabilitation Policy 2014.**" While this policy was a significant development **for Tibetans' welfare in India**, it is devoid of any substantive relevance on core issues of Tibet, that is, destructive Chinese policies in Tibet and Tibetans' demand for freedom in Tibet.
- **However, in the recent Ladakh standoff**, it was the first time India used special forces made up almost entirely of Tibetan exiles to occupy strategic heights in Pangong Tso's south bank. Strategically, the **Tibetans were the first line of the defence for India.**
- **Experts are of the view that** keeping in mind the attached importance of Tibet for India for our National Security, it is now high time that **India should also adopt a more assertive stand on the Tibet issue in dealing with China.**
    - Just like Tibetans, millions of **Indians, particularly in states like Jammu & Kashmir, Himachal, Uttarakhand, Sikkim, West Bengal, and Arunachal worship the Dalai Lama.** Almost half of the **water (48%) that flows from the Tibetan plateau runs directly into India.**
    - Also, **China is actively encroaching in the Himalayan borders** of Ladakh, Nepal, Sikkim, Bhutan and Arunachal Pradesh, which aim to an encircle India through different fronts. A more assertive policy with regard to Tibet is thus equally vital to Indian national security.

2.9. CHABAHAR PORT

Why in news?

Recently, the first Trilateral Working Group (TWG) Meeting between India, Iran and Uzbekistan on joint use of Chabahar Port was held virtually.

More about news

- The TWG is **now expected to meet every three months to push forward the joint use** of the strategic trade and transit facility to enhance regional connectivity.
- India's proposal to hold **'Chabahar Day' on the sidelines of the International Maritime Summit in January 2021** was also welcomed at the meeting.

- All sides also noted the **significant role played by Chabahar port** for the region to deliver humanitarian assistance **during the COVID-19 pandemic.**

About Chabahar port

- It is located in the Gulf of Oman at the Sistan-Baluchistan **province of energy rich Iran on the Makran Coast**
- It is jointly being developed by **India, Iran and Afghanistan** for multi-modal transport of goods and passengers.
- Port has **geographical proximity with India** with distance from Kandla port, Gujarat to Chahabar to be around 1000 kms and that from Chahabar to Mumbai around 1450 kms.
- **Chabahar has two terminals** - Shahid Kalantari and Shahid Beheshti (also called first phase of the Chabahar port).
- **Shahid Beheshti is being developed jointly by India Afghanistan and Iran** under the Trilateral Transit Agreement signed in 2016 according to which
  - **India would be granted a 10-year lease** to develop and operate two terminals and five berths at **Shahid Beheshti Port in Chabahar**
  - India and Iran would develop a **rail network between Chabahar and Zahedan** (located just across the border from Afghanistan).
  - It also provides the necessary **legal framework for trans-shipment of goods to Afghanistan.**

Why India's connectivity with Chabahar port holds strategic importance?

The significance is reflected by the fact that Chabahar is India's first-ever overseas port investment. It would help India meet the following strategic goals

- **India's gateway to Central Asia and Europe:** Chabahar port provides India direct connectivity to these regions bypassing Pakistan. Chabahar will be linked with the International North-South Transportation Corridor (INSTC) which would enhance India's trade with Eurasia up to $170 billion. INSTC at present stretches from Bandar Abbas port, Iran to Russia.
  - Chabahar port could also be integrated with the **proposed transit corridor under the Ashgabat Agreement** (it envisages facilitation of transit and transportation of goods between Central Asia and the Persian Gulf).
- **Enhance trade opportunities among India-Iran-Afghanistan:** It is because of their geographical integration in addition to the agreement that grant preferential treatment and tariff reductions at Chabahar to Indian goods. Chabahar allows India to export humanitarian supplies to Afghanistan and Afghanistan diversify its export opportunities.
- **A potential alternative to Belt and Road Initiative (BRI) of China:** Besides Uzbekistan, other Central Asian countries have also shown interest in using this port. For them, Chabahar is the shortest opening to the India Ocean for their maritime trade. So far, they have been relying on seaport facilities in Turkey, Russia, Baltic States, Iran (Bandar Abbas) and China.

What steps have been taken by India to make the investment in Chabahar port meaningful?

- **Managing exemption from US sanction:** In spite of the US sanctions on Iran, India was exempted which not only continued to invest in Chabahar but also was allowed to ship goods to Afghanistan through the Chabahar port. However, the exemption did not allow to ship goods to Central Asia via Iran.
- **Quick operationalization of the port:** The 1st wheat consignment from India to Afghanistan via Chabahar port was sent in 2017. In 2018, India took the control of operation of the Shahid Beheshti Port and since then the volume and transit of shipments through the port have increased significantly. In early 2019, Afghanistan started exporting goods to India using the port.
- **Doubled budgetary allocation:** In budget 2020, nearly US$ 14 million was allocated for the development of the port.
- **40% subsidy on charges for cargo and vessels moving to Shahid Beheshti Port** to boost the trade through Chabahar port.

What are the challenges India is facing in harnessing the strategic potential of Chabahar Port?

- **India's investment in Chabahar has always been held hostage to International policy on Iran:** The Chabahar agreement was signed after the UN sanction on Iran was removed. In 2018, US unilaterally re-imposed

stringent sanctions on Iran. Because of this India's energy imports from Iran, which was its third largest supplier, dropped to zero, bilateral trade also stopped.

- **India's receding economic influence on Iran:** Iran has dropped India from the project to build a rail line from the Chabahar port to Zahedan owing to delay in the proposed $400 million funding from India. Iran also cut off India's ONGC Videsh Ltd (OVL) from the development of an Iranian gas field project, Farzad B.
- **Iran gravitating towards China:** The countries are in an advanced stage of finalising a $400-billion long-term agreement (for 25 years partnership). There is a fear of Iran falling to debt trap of China and leasing the Chabahar port to it. Also, China's growing inroads in Iran could make Indian projects there more unviable.

What should India do to make its Chabahar port diplomacy a success?

- **Prioritize strategic interests:** India's friends (US, Israel other Arab countries) are Iran's enemy. Yet, as major regional actors, India and Iran will have to continue to explore ways to further strengthen their partnership by taking pragmatic steps based on their respective national interests.
- **Join the Chabahar-Zahedan railway line development project forthwith:** It is expected that Iran may rope in China to fund the project. India's loss could well become China's gain. Therefore, it is logical for India to actively participate in developing the project.
- **Make the Chabahar port lynchpin of trade:** Chabahar port can hook onto ongoing corridor plans and programmes like Transport Corridor Europe-Caucasus-Asia (TRACECA), Central Asia Regional Economic Cooperation (CAREC) and other multilateral transport initiatives in the region.
- **Allay the psychological fear of private sector:** Despite the waiver by the U.S. for the Chabahar port, private companies in India are afraid of attracting the US sanctions if they were to use the use Chabahar port for trade. This needs to be addressed to make the use of waiver.

Conclusion

Geographical proximity, the need for regional connectivity, economic integration, and common security challenges in Afghanistan and West and Central Asia demand close cooperation between India and Iran. "Chabahar" literally means a place where all four seasons of the year are like spring. For India's economic and strategic reach, it's time to make that a reality now.

3. ECONOMY

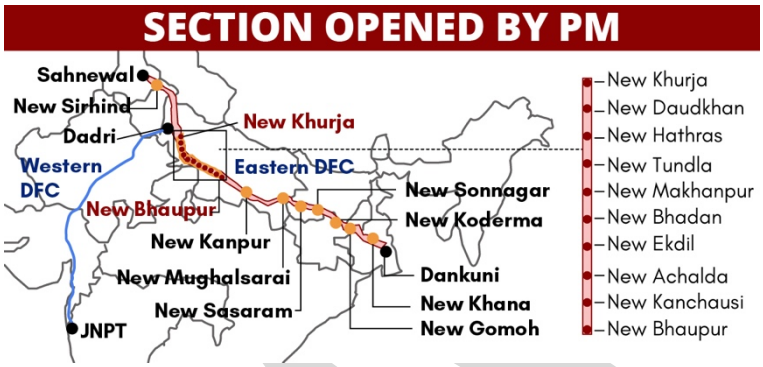
3.1. DEDICATED FREIGHT CORRIDORS

Why in news?

The Prime Minister recently inaugurated the New Bhaupur- New Khurja section and the Operation Control Centre of Eastern Dedicated Freight Corridor.

More on news

New Bhaupur- New Khurja section is a **351-km section** between Khurja and Bhaupur in Uttar Pradesh and state-of-the-art **Operation Control Centre is located in Prayagraj, UP.**



Dedicated Freight Corridor Corporation of India Limited (DFCCIL)

- It was incorporated as a company under the Companies Act 1956 in 2006 to undertake planning & development, mobilization of financial resources and construction, maintenance and operation of the dedicated freight corridors.
- As the dedicated agency to make the vision into reality, **DFCCIL's mission** is:
  - To build a corridor with appropriate technology that enables Indian railways to regain its market share of freight transport.
  - To set up Multimodal logistic parks along the DFC.
  - To support the government's initiatives toward ecological sustainability.

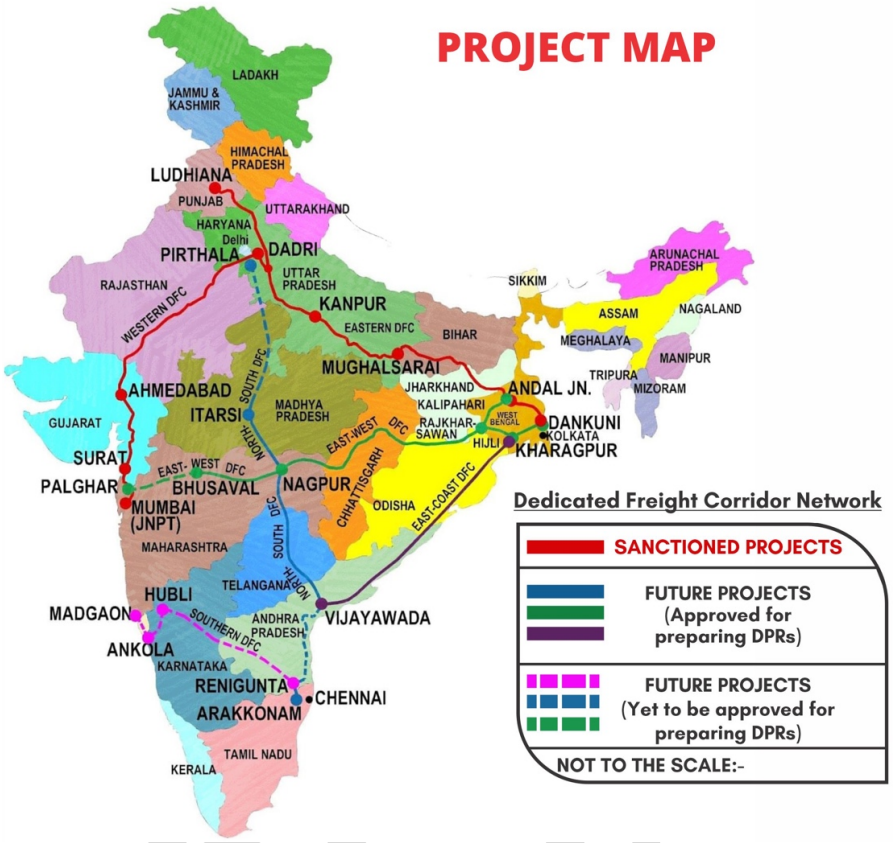
Background: Emergence of Dedicated Freight Corridors

- **Freight contributes the revenue share of 67 percent.** But, the saturation of existing railway lines has led to **congestion and loss in the freight market share** for Indian Railways (from 90 percent in 1950 to <40 percent in 2017).
  - The existing trunk routes of Howrah-Delhi on the Eastern Corridor and Mumbai-Delhi on the Western Corridor were highly saturated, with line capacity utilization varying between 115% to 150%.
- This **along with growth of Indian economy** has created the need for highly efficient, and amplified design features to enable railways overcome with the burden on existing rail lines and ensure faster, timely and cost-effective freight transportation.
- This led to the **conception of the dedicated freight corridors along the Eastern and Western Routes in 2006** to be implemented by a Special Purpose Vehicle named "Dedicated Freight Corridor Corporation of India Limited (DFCCIL).

About Dedicated Freight Corridors

- It is a high-speed and high-capacity railway corridor dedicated exclusively for freight movement and built to affirm a higher throughput per train and a more significant share in the freight market.
- **The DFC consists of two arms-** Eastern Dedicated Freight Corridor and Western Dedicated Freight Corridor.
  - Additionally, **four more corridors** namely, East Coast (Kharagpur-Vijaywada), East-West (Kolkata-Mumbai), and North-South (Delhi-Chennai) and Southern (Chennai-Goa) Sub-Corridor **are also in the pipeline.**
- **Eastern Dedicated Freight Corridor (EDFC):**
  - It will be the **1,856 km** long **from Sahnewal in Punjab to Dankuni in West Bengal** having double electrified tracts. It will run across six States.
  - The Corridor is **projected to cater to a number of traffic streams**-
    - **coal for the power plants in the northern region** of U.P., Delhi, Haryana, Punjab and parts of Rajasthan **from the Eastern coal fields,**
    - **finished steel, food grains, cement, fertilizers, lime stone from Rajasthan to steel plants in the east** and
    - general goods.
  - It is also proposed to set up **Logistics Park at Kanpur in U.P. and Ludhiana in Punjab** to be developed on Public Private Partnership mode by creating a sub-SPV for the same.

- **Western Dedicated Freight Corridor (WDFC)**
  - It will be **1,504 km long** will stretch **linking Dadri in National Capital Region (NCR) to Jawaharlal Nehru Port (JNPT) in Mumbai.** It will run across six States and is proposed **to join Eastern Corridor at Dadri.**
  - It is proposed to set up Logistics Parks at Mumbai area, Gujarat, Jaipur, & NCR.



Significance of DFCs

- **Reduction in Logistics costs:** An Assocham study in 2016 put **India's logistics costs at 14 per cent of GDP**, compared to 9.5 per cent for the US and 8 per cent for Germany. Through DFCs, **the speed of the freight train would increase by 3 times** and would be able to carry double the volume of goods. This will help reduce the cost and allow faster transportation of goods.
  - Reduced logistics cost **would make India's products competitive** that would give a **boost to India's exports.**
- **Modal shift in transportation:** India still largely depends on the more expensive road transport to carry goods, moving 57 per cent of its freight by road and 36 per cent by rail. This will **also help in decongesting roads** in the longer run and reducing the cost of transportation.
- **Benefits for existing Railway lines:** Freight trains plying on DFCs will **help decongest the existing lines** of Indian Railways (IR), **more passenger trains can be pumped in** and **better train punctuality** can be achieved.
  - IR is already planning to privatise certain busy passenger routes along with **creation of high-speed railway network**, for which there is an urgent need to separate freight traffic from passenger traffic.
- **Enhanced investment opportunities** due to improved Ease of doing business environment as a result of Faster transportation and reduced cost.
- **Connecting India's hinterland:** A large part of our population that is residing is in the land-locked hinterland, especially in the northern states such as Rajasthan, MP will be served by the routes under the DFCs.
  - **Agriculture sector would also be a beneficiary** as Farmers can send their produce through Kisan rail to any big markets across the country, safely and at a low price.
- **Economic gains:** The project will immensely benefit ports, exporters, and importers, shipping lines and container operators and other consumers of Rail transport and will **act as a catalyst for the development of industry and areas along the corridor.**
- **Employment generation:** The DFC will generate large number of employment opportunities **during its construction and due to industrialisation facilitated by it** such as Delhi-Mumbai Industrial Corridor(DMIC).

Related Challenges

- **Delays in project completion:** DFC Project has already missed several deadlines after its launch in 2006 and **as of July, 2020, only 56% of WDFC and 60% of EDFC was completed**. Delays are mainly due to Sluggish work by contractors, the law and order situation at some places, slow progress in land acquisition, by almost all states.
  - **Recent COVID pandemic induced disruption of work is expected to further delay the project deadline** from December 2021 to June 2022.
- **Renewable resources v/s coal**: With an inclination towards using renewable resources in future, **viability of the EDFC could be a concern** since the majority of the traffic was expected to be coal for power plants in northern India from the coal fields in the east.

Apart from this, it will help in **Skill Up-gradation by providing Training** for Enhancing employability of people under its CSR initiatives.

- **Environmental benefits:** The operation of trains on DFC will **help reduce CO2 emissions** by saving of fuel through modal shift, regenerative braking and other operational efficiencies. This will help India achieve its targets for reducing carbon emissions.
    - Carbon footprint analysis conducted by the Indian Railways finds that the **DFC will generate 2.25 times less greenhouse gas emissions** over a 30-year period compared to business as usual.

3.2. DRAFT INDIAN PORTS BILL 2020

Why in News?

Recently, Ministry of Ports, Shipping and Waterways circulated **draft Indian Ports Bill 2020 for public consultation.**

About the Draft bill

- It will **repeal and replace Indian Ports Act, 1908** to create an enabling environment for the growth and sustained development of the ports sector in India.
- **Key Features in the bill:**
    - **Constitution of Maritime Port Regulatory Authority** with following functions:
        - ✓ To advise the Central Government on matters relating to the **National Port Policy and Plan.**
        - ✓ Formulate **short-term and perspective plans** for development of the Port Sector.
        - ✓ **Co-ordinate the activities of the planning agencies** for optimal utilization of the Coastline of India to sub serve the interest of the national economy.
    - **Formulation of the National Port policy and National Port plan** in consultation with Coastal State Governments, State Maritime Boards and other stakeholders.
    - **Formulation of specialised Adjudicatory Tribunals** namely Maritime Ports Tribunal and Maritime Ports Appellate Tribunal to curb any anti-competitive practices and act as a speedy and affordable grievance redressal mechanism.

Significance of draft Bill

- **Better port Conservation:** It will provide measures to facilitate conservation of ports, taking into account the prevalent situation with respect to the high number of non-operational ports.
- **Bring investment:** It shall further ensure greater investment in the Indian maritime and ports sector through the creation of improved, comprehensive regulatory frameworks for the creation of new ports and management of existing ports.
- **Simplified regulations:** It seeks to provide increased opportunities for public and private investments in the Indian maritime and ports sector by way of removing barriers to entry, simplifying processes and establishment of agencies and bodies to plan and enable growth of the ports sector.
- **Sustainable development:** Provisions of the Bill would ensure safety, security, pollution control, performance standards and sustainability of Ports and also incorporate all conventions /protocols to which India is a party.
- **Impetus to self reliance:** Enhancing 'Ease of Doing Business', it will provide greater impetus to a self-reliant domestic investment climate in the maritime sector, towards Aatmanirbhar Bharat initiatives of the government.

India's potential in port sector

- India is strategically located on the world's shipping routes with **a coastline of approximately 7,517 km** and 14,500 km of potentially navigable waterways.
- Maritime transport handles around **70% of India's trading in value terms**.
- **India has 204 ports, out of which 12 are major ones** and handle 55% of the cargo traffic.
    - Major ports together had handled around 700 million tonnes (MT) of cargo during 2018-19.

- **Jawaharlal Nehru Port Trust** is the largest major port in India.
- Port development in India is a **concurrent subject**.
  - Presently, **Major ports are regulated by central government under Major Ports Act, 1963** and non-major ports governed by state governments under the Indian Ports Act 1908.
  - Gujarat accounts for ~70% of non-major port cargo, while Andhra Pradesh accounts for ~16%, Maharashtra, ~7% and Odisha, ~4%
- Cargo traffic in the country is **expected to rise to 2,500 MT by 2024-25**.
  - The government **has also introduced various fiscal and non-fiscal incentives** for enterprises that develop, maintain and operate ports, inland waterways and shipbuilding in India.

Other major steps taken for port sector

- **Major Port Authorities Bill 2020:** Lok Sabha recently passed this bill which seeks to provide autonomy to India's major ports and improve their efficiency and competitiveness.
- **Sagarmala project:** Launched in 2015 to strengthen port infrastructure and enhance capacity, improve operational efficiencies etc.
- **Central Port Authority (CPA) Act:** This law was passed in 2016 to grant more autonomy to the major ports.
- **National Maritime Development Programme (NMDP):** It is an initiative to develop the maritime sector, with an outlay of USD 11.8 billion.
- **Foreign Direct Investment (FDI):** It has allowed FDI of up to 100% under the automatic route for port and harbour construction and maintenance projects.

Challenges faced by Port sector in India

- **Port congestion, customs clearance,** shipping line issues & charges, documentation & paperwork, and regulatory clearance.
- **Lack of standardized operations:** Costs and time for key processes are unpredictable and there is an unacceptable level of variation across ports as well as within the port.
- **Lack of private participation:** Financial viability of port projects is a major deterrent for private developers as well as financiers.
- **Red-tapism:** Because of delays in obtaining government approvals, environmental clearances, as well as compliance with coastal regulations.
- **High Turnaround time:** Because of issues like inadequate road networks within the port area, inadequate cargo-handling etc.
- **Lack of infrastructure:** Equipment incapable of handling large volumes, deficient dredging capabilities, outdated navigational aids and IT systems, lack of proper logistics companies, lack of proper equipment handling training etc.
- **Poor connectivity:** Poor hinterland connectivity, road, and railway problems make it challenging to export goods in a timely manner in India.

Other steps that can be taken to enhance port sector in India

- **Complete relaxation of cabotage:** To enhance shipping capacity for coastal movement and facilitate availability of adequate vessels at lower cost.
  - Cabotage is the restriction of the operation of sea, air, or other transport services within or into a particular country to that country's own transport services.
- **Increasing investments and cargo traffic point towards a healthy outlook for the Indian ports sector:** Providers of services such as operation and maintenance (O&M), pilotage and harbouring and marine assets such as barges and dredgers are benefiting from these investments.
- **Digital transformation in shipping**: Through technologies such as Internet of Things (IoT), Blockchain, Machine Learning, Artificial Intelligence (AI), Analytics, and Augmented & Virtual Reality shipping process can be made faster and hassle-free.
- **Certain policy reforms**: It should be **aimed at upgrading infrastructure at Indian ports,** implementing new land policy for major ports, establishing a port regulator at all ports to monitor and regulate services and technical and performance standards, simplifying the environmental clearance process for port projects, establishing a special purpose vehicle for making investments in ports, developing major new ports, and so on.

3.3. FARM MECHANISATION

Why in news?

The government is focusing on farm mechanisation with a target to double farm mechanization per hectare in next 10 years.

About Farm Mechanisation

- It refers to the **development and use of machines that can take the place of human and animal power in agricultural processes** with the end objective **to enhance the overall productivity and production with the lowest cost of production.**
- Farm mechanisation in India **stands at about 40-45%** with states such as UP, Haryana and Punjab having very high mechanisation levels but north eastern states having negligible mechanisation.
    - However, it has been **lower in India compared to other countries** such as USA (95 per cent), Brazil (75 per cent) and China (57 per cent).
- Farm mechanization market in India has been **growing at a CAGR of 7.53 per cent during 2016-2018** due to thrust given by various government policies. This is also reflected by **increasing sale of tractors in India.**
    - **Indian tractor industries have emerged as the largest in the world** and account for about **one- third of total global tractor production.**
- **Factors emphasizing the need for Farm Mechanization** includes:
    - **Increased migration** of rural workers to urban areas increases the cost of farm labour. According to the World Bank estimates, percentage of agricultural workers in total work force would drop to 25.7% by 2050 from 58.2% in 2001.
    - Due to **intensive involvement of labour in different farm operations**, there is a need for high cost machinery for better turnout in shorter time.
    - **Sustainable agricultural productivity.**
    - **Over dependence on monsoons.**
    - The **use of tractors enhanced agricultural productivity** due to better seed-bed preparation, timeliness of operations and precision in distribution and placement of seed and fertilizer.

Initiatives taken by the government

- **Sub mission on Agricultural Mechanization (SMAM)** was launched in 2014- 15 to increase the reach of farm mechanization to small and marginal farmers and to the regions where availability of farm power is low.
    - Under the scheme, **assistance is provided to State governments to impart training and demonstration of agricultural machinery**, provides assistance to farmers for procurement of various agricultural machineries and equipment and for setting up of Custom Hiring Centre.
- **Multilingual Mobile App, 'CHC-Farm Machinery'** also known as "FARMS-app" developed by Ministry of Agriculture, connects farmers with Custom Hiring Service Centres situated in their locality to take machines on rental basis for agriculture practices.
- Government has given **massive thrust to promoting latest agricultural machineries**, like laser leveller, happy seeder technology, combine harvesters and small equipment like power weeders.
- **Crop Residue Management (CRM)** scheme by Ministry of Agriculture & Farmers Welfare was initiated in 2018 with an objective of moving away farmers of northern region from the practice of crop residue burning causing pollution.
    - Under the scheme **farmers are provided machinery for in-situ management of crop residue** through establishment of CHCs (Custom Hiring Centres).

Benefits of Farm mechanisation

- **Input savings:** Studies have shown a direct relationship between farm mechanization (farm power availability) and farm yield. Farm mechanization is said to provide a number of input savings:
    - Seeds (approximately 15-20 percent)
    - Fertilizers (approximately 15-20 percent)
- **Increase in efficiency**: It is estimated that farm mechanization can help reduce time by approximately 15-20 percent thus increasing the efficiency of farm labour and reducing drudgery and workloads. Additionally, it helps in improving the harvest and reducing the post-harvest losses and improving the quality of cultivation.
- **Social benefits:** There are various social benefits of farm mechanization:
    - It **helps in conversion of uncultivable land to agricultural land** through advanced tilling techniques and also in shifting land used for feed and fodder cultivation by draught animals towards food production.
    - **Decrease in workload on women** as a direct consequence of the improved efficiency of labour.
    - **Improvement in the safety of farm practices.**

- Helps in **encouraging the youth to join farming** and attract more people to work and live in rural areas.

- **Dealing with increasing cost of labour:** The cost of deploying labour for agriculture operation is increasing substantially. For instance, daily wages of men has increased from approx. Rs. 70 in 2006-07 to nearly Rs. 230 in 2013-14. Farm mechanization is the way to reduce labour cost and **can reduce the cost of farming by 20 per cent.**
- **Improvement in the cropping intensity and making agricultural land commercially more viable**: Effective use of agriculture machinery helps to increase productivity & production of output, undertake timely farm operations and enable the farmers to quickly rotate crops on the same land. **This boosts farm output and thus farm income.**
- **Sustainable Agriculture:** Farm mechanization provides **optimal utilization of land and water resources that can influence the environmental footprint of agriculture** leading to sustainable outcomes.

Challenges with farm mechanisation in India

- **Economies of scale and operations:**
  - India has **very small average land holding size** (2.66 acres as per Agri Census, 2015-16) and that too is scattered over different places in small parcels. This is **making individual ownership of agriculture machinery economically unviable**. (In comparison**,** in U.S.A. the average size of a holding is about 145 acres and in Canada it is 235 acres).
  - To ensure return on investment and make investment profitable in farm mechanization, area under operation should be grown. **Increasing the gross cropped area has limitations** due to unavailability of assured irrigation facility and unfavourable climatic conditions.
- **Low income level of farmers:** 86 percent of farmers in India are small and marginal and earns on an average Rs 6,426 per month as per 2016 NSSO report. This **hinders huge investment needed for mechanisation of agriculture.**
- **Credit procedure:** The procedure to avail agriculture term loan for various activities helping farm mechanization **is very cumbersome**. Also, the **rate of interest is higher** for such loans in comparison to crop loans.
- **Subsidy limitations:** Farm mechanization requires substantial investment. Central Govt. and various State Govts. have been providing subsidy for Individual/ Group of farmers/ Cooperative to invest. These subsidies are however available **based on the budget allocation, and not on farmer's requirement basis**.
- **Dependent population:** The level of farm mechanization behaves inversely with population engaged in the agriculture. **70 percent of India's rural households still depend primarily on agriculture for their livelihood.** Unless and until, there is lucrative alternate option for livelihood, promotion of farm mechanization will not be successful.
- **Low awareness:** Farm mechanization, is viewed as only usage of tractors, power tillers, combine harvesters and threshers. There are many other machines suitable for small land holdings and can be used by even individual farmers. Farmers are not aware about these kind of machineries and implements and methods of using them.
- **Variability in farm power:** Power availability varies highly from one state to the other as well as according to the agro-climatic regions. **Lack of access to power results in slow uptake of farm mechanization** and hence non-intensification of farm productivity, particularly among small and marginal farmers.

Way forward

- **Consolidation of land holdings:** Small farmers will continue to be the mainstay of Indian agriculture. It is, therefore, necessary to consolidate the land holdings to reap the benefits of agricultural mechanization.

Recommendations of Committee on Doubling Farmers' Income headed by Ashok Dalwai

- **Farm power:** The consumption of farm power in India stands at an average of 2.02 kW/ha in 2017-18 and compares very poorly even with Asia-Pacific countries. **A target of at least 4 kw/ha should be the aim by 2022.**
- **R&D:** Considering the preponderance of small & marginal holdings in the country, R and D **should aim at developing and designing scale-neutral machinery.** Further, machinery that can suit different terrain of the geography deserves priority attention.
- **'State/Regional Services'** possessing more sophisticated and heavier machineries, that can service larger areas to meet certain specific demands; and **also possess ICT/GIS/ Space technology based services.**
- **CHCs at different levels, should be supported to broaden their technologies to include modern systems** like drones, sensor based applications, etc. and also those needed in the sub-sectors of animal husbandry, fisheries, etc.

- **Small farm machineries / implements (individually operated)** need to be promoted keeping in view the versatility of various crops, cropping pattern and agriculture operations.
- **Advanced machineries and implements**: 'Make in India' initiative can be used to support the manufacture of inputs and farm implements currently being imported. This would help in reducing the overall capital cost.
- **Need to innovate custom hiring service** or a rental model by institutionalization for high cost farm machinery such as combine harvester, Sugarcane harvester, paddy transplanter, laser guided land leveller etc. to reduce the cost of operation.
- **Ease of financing :** Like KCC, procedures to avail term loan may be simplified with minimum documentation. Capacity building of bank staff dealing with agriculture term loan products may be ensured.

4. SECURITY

4.1. POLICE REFORMS

Why in News?

Recently, Bureau of Police Research and Development (BPRD) has released data on police organisations.

Key data on Police Organisations

About Bureau of Police Research and Development (BPR&D)

- **BPR&D, under Ministry of Home Affairs,** is mandated to
  - promote excellence in policing,
  - promote speedy and systematic study of police problems,
  - apply science and technology in method and techniques by Police.

- **Human resource strength:** India's actual Police-population ratio (number of police personnel per lakh of population) is 195.39 and there are only 20,91,488 police personnel actually in service against the sanctioned strength of 26,23,225.
  - Best Police-population ratio states/UTs are Nagaland, Andaman & Nicobar Islands and Manipur. While worst state/UTs are Bihar, Daman & Diu and West Bengal.
- **Vacancies:** More than 5.31 lakh posts in different state police forces and 1.27 lakh posts in CAPF are lying vacant.
- **Women in police:** It is just 10.30% of the total police force and only 2.98% of the total strength in Central Armed Police Forces (CAPF)**.**There has been a 16.05% increase of women police over previous year.
- **Scheduled Castes (SCs)/ Scheduled Tribes (STs)/OBCs representation:** SCs (who form 16.6% of population) have 14% representation and STs (who form 8.6% of population) have 12% representation in the police forces. OBCs constitute only 25% of the police forces.

Various Committee on Police reforms		
Committee	**Year**	**Notes**
National Police Commission (NPC)	1977-81	Established after the Emergency, the NPC produced 8 reports suggesting major reforms across a range of police issues.
Ribeiro Committee	1998	Established by the Supreme Court to review the lack of action taken to implement NPC recommendations and to re-frame a new police act
Padmanabhaiah Committee	2000	Dealt with the issues of politicization and criminalization of the police and police accountability.
Malimath Committee	2002-03	Suggested changes to the Indian Penal Code and outlined ways of improving judicial proceedings.
Police Act Drafting Committee 1	2005	Drafted a new model Police Act to replace the 1861 Police Act.
Supreme Court Directives	2006	SC issued seven directives to state police forces including setting up State Security Commissions, Police Establishment Boards and a Police Complaints Authority.
Second Administrative Reforms	2007	Noted that police-public relations were unsatisfactory and suggested a range of reforms to change this.
Justice Thomas Committee	2010	Highlighted the total indifference of state governments to police reforms.
Supreme Court Directives	2018	New directives on police reforms and reviewed states progress in the implementation of the 2006 directives.

Data suggests a need for overhauling Indian Police because of issues like

- **Lack of accountability:** While exercising force to enforce laws and maintain law and order in a state, Police face various kinds of complaints including unwarranted arrests, unlawful searches, torture and custodial rapes.
- **Overburdened police force:** Because of high percentage of vacancies an average policeman ends up having an enormous workload and long working hours, which negatively affects his efficiency and performance.
  - United Nations recommended standard is 222 police per lakh persons.
- **Mismatch in constabulary's skill set and responsibilities:** Constabulary constitutes 86% of the state police forces with wide-ranging responsibilities.

- Padmanabhaiah Committee and the Second Administrative Reforms Commission have noted that the entry level qualifications (completion of class 10th or 12th in many states) and training of constables do not qualify them for their role.

- **Poor service conditions:** High working hours, inadequate insurance coverage, lack of welfare measures etc. erodes their morale and motivation and also weakens incentive to perform well.
- **Need to separate law and order from investigation:** Well over 50% of cases filed by the police (nearly 80% in rape cases) end up in acquittals. Crime investigation requires skills and training, time and resources, and adequate forensic capabilities and infrastructure, which is lacking in police force.
- **Improving Police-Public relations:** Police requires the confidence, cooperation and support of the community to prevent crime and disorder. But relationship is in an unsatisfactory state because people view the police as corrupt, inefficient, politically partisan and unresponsive.
- **Newer Threats:** With the advancement in technology, newer versions of threats are continuously arising in the form of cyber-attacks, bank frauds, organised crimes etc. which need to be tackled in a more specialised manner.
- **Lack of women representation:** The skewed ratio leads to impediments in effective implementation of the legislations on crimes against women. According to the UN, women police officers correlates positively with reporting of sexual assault.
- **Shortage of weaponry:** CAG audits have found shortages in weaponry with state police forces. For example, Rajasthan and West Bengal had shortages of 75% and 71% respectively.

Suggested reforms areas can be:

Boosting capacity and infrastructure	• **Increase in the number of police personnel:** As per suggestions after 18 years of service, some CAPFs could switch to the Armed Police of the state. Another reform is using technology to supplement manpower. • **Improvement in recruitment and training:** Raise the qualification for entry into the civil police to class 12th or graduation, refresher courses should be made compulsory and a prerequisite for promotion etc. • **Improvement in service conditions:** Reducing working hours like Kerala has introduced eight-hour duty, Haryana has introduced shift system. Better remuneration, welfare service, transparent promotion avenues will boost morale of police force. • **Improving the infrastructure:** Transport and communication facilities need to be expanded and upgraded, augmenting forensic support etc.
Legislative reforms	• **Enactment of the organized Crimes Act:** In times of rising cases of money laundering; arms, drugs and human trafficking; expanding terror networks, etc, there is an urgent need to have a Central law to regulate the same. • **Single police act for the country:** To have uniformity in basic features which are in tune with the present, experts suggest that Article 252 can be relied on to have a single police law if two or more states consent. o In this respect, the Model Police Act was prepared in 2006 which has now been revised to a Model Police Bill 2015. • **Moving Police to the Concurrent List:** To address growing threats to internal security, terrorism, Left Wing Extremism due to which policing only by the state without Central support will be difficult. • **Declaration of Federal Crimes:** What this means is that certain offence which have inter-state or national ramifications should be governed by a new law. State Police as well as the CBI could be given the concurrent jurisdiction over investigation of all such crimes. • **Commissionerate system for large areas:** to allow for quicker decision-making in response to complex law and order situations.
Administrative Reforms	• **Separation of investigation from law and order:** As suggested by the Supreme Court in Prakash Singh v. Union of India, "the investigating police shall be separated from the law and order police to ensure speedier investigation, better expertise and improved rapport with the people. • **Specialized wings for Social and Cyber Crimes:** specialized crimes require a specialized approach and personnel to deal with them. Experts suggest that it needs to be handled by a separate wing with people like students who have graduated in Social Science/Social Work, MCA or passed out from an IIT.

	• **Restricting the police to core functions:** Functions like serving court's summons, antecedents and addresses verification for passport applications or job verifications etc. can be outsourced to private agents or government departments. • **Setting up authorities as directed by the Supreme Court:** Setting up of State Security Commission (laying down broad policies and directions for police functioning), Police Establishment Board (to decide on transfers, postings, promotions, and other service related issues), Police Complaints Authorities (at state and district levels as redressal mechanisms for complaints against police) etc.

4.2. NATIONAL SECURITY DIRECTIVE ON THE TELECOM SECTOR

Why in news?

Considering the need to ensure India's national security, the Cabinet Committee on Security has accorded approval for the **National Security Directive on the Telecom Sector**.

About telecom industry in India

- Currently, India is the **world's second-largest telecommunications market** with a subscriber base of 1.16 billion and tele-density of 87.37% in FY20.
- India also ranks as the **world's second largest market in terms of total internet users** with subscribers at 743.19 million in FY20.
- It is expected that over the **next five years, rise in mobile-phone penetration and decline in data costs will add 500 million new internet users** in India, creating opportunities for new businesses.

Background

- Indian directives for telecom security come **amid global security concerns raised against Chinese equipment maker Huawei**.
- **India has restricted investments from Huawei** for the rollout of 5G networks, which was also banned by UK and US government for on ground of national security.
- **India has also banned** over 200 Chinese mobile apps under Section 69A of the Information Technology Act.
- With rising such security concerns in telecom industry National Security Directive on the Telecom sector has been approved.

About National Security Directive on the Telecom Sector

NSDTS is **India's first and biggest framework to protect itself from cyber-attacks**, data theft and other virtual vulnerabilities threatening its national security.

- **National Security Committee on Telecom (NSCT) headed by the deputy National Security Advisor** will identify trusted sources of telecom equipment that can be used by India's cellular operators on their networks.
  - It will also **release the names of the firms** whose equipment cannot be used.
- The directive has provisions that to qualify as domestic players in the trusted category they should meet **the criteria of the Department of Telecommunications' preferential market access (PMA) scheme.**
  - **PMA scheme** is for providing preference to domestically manufactured electronic products, in procurement of those electronic products which have security implications for the country.
- **New devices have to mandatorily procure from trusted sources** while directives will not affect annual maintenance contracts or updates to existing equipment already inducted in the network.
- **Department of Telecom will make appropriate modifications in the licence conditions** for the implementations of the provisions of the directive and policy will come into operation after 180 days from the date of approval.

Why there is need to have telecom security?

Rising telecom industry in India with globalisation and digitisation has created many security concerns in field of telecom industry as given follow.

- **Cyber security:** With development of IoT & Big Data, security challenges in telecom industry, banking and financial transactions have increased manifold like data protection, architecture, email security, web security, information security, cloud security etc.
  - According to the industry report, **only 50% of Indian companies have their security strategy for cloud computing**.
- **National security:** Data sovereignty of defence sector and other strategic sectors are much important in respect of national security.
  - Virtual world is increasingly being targeted in covert state-sponsored attacks and actions of non-state actors, which creates threat to the sovereignty and integrity of India.

- **Dubious suppliers:** There are dubious telecom equipment suppliers, whose products have been suspected of being misused.
  - Hence, identifying trusted source and negative list of vendors by govt will make procurement more transparent and eliminate dubious foreign suppliers.
- **Realizing Self-reliance (Atmanirbhar Bharat mission):** Currently, India is heavily dependent on import of telecom equipment at Rs 1.30 trillion and China is biggest exporter.
  - Hence, steps towards telecom security with given directives will help to include more domestic trusted sources, which ultimately helps in boosting India's domestic capacities and reduce reliance on foreign equipment.

Ways to address challenges in telecom security

It is said that with list of banned sources and limited trusted sources **makes price of telecom equipment higher or uncompetitive.** E.g. Equipment sold by Ericsson, Nokia and Samsung are relatively expensive and may add to input cost. Hence, security in telecom industry can be improved by other measures as well.

- **Technological advancements**: Effective security can be maintained by keeping pace with the technological advancements in the world of data security, and by adhering to the rapidly evolving compliance landscape.
  - For this the C-DOT, telecom research and development arm of govt should work for development of technology and products
- **Strategy and approach:** Adopting a holistic and strategic approach to cyber security, telecom providers would be more able to mitigate the threats posed by the security vulnerabilities as given below.
  - **Threat detection:** It is the practice of analyzing the entirety of a security ecosystem to identify any malicious activity that could compromise the network and help neutralize the threat before it can exploit any present vulnerabilities.
  - **Prevention measures:** Here the legal frameworks come into force and legal security measures are created by the regulators and the sectors, in order to overcome security concerns.
  - **Incident response methods**: It is structured methodology for handling security incidents, breaches, and cyber threats with well-defined incident response plan (IRP).

5. ENVIRONMENT

5.1. INDIA'S CLIMATE PERFORMANCE

Why in news?

India ranked 10th in the latest edition of the **Climate Change Performance Index (CCPI).**

Highlights of CCPI

- **First three ranks of the overall ranking remained empty**: Since no country performed well enough in all index categories.
- From the G20 countries, this year, **only the EU as a whole, along with the UK and India, rank among high performers.**
- **Renewable energy continues to expand**: In 2019, its installed capacity grew by over 200 gigawatts – the largest annual growth to date.
  - The expected tipping point where new installed renewables capacity is cheaper than operating coal or natural gas power plants is expected in 2025.
- **Several countries updated their NDCs**: China, the world's largest emitter, committed to a target of net zero by 2060, while Japan and the Republic of Korea even announced their aim to become carbon neutral by 2050.
- **Impact of COVID 19**
  - **GHG Emissions**: Owing to the COVID-19 crisis, the first half of 2020 brought a drastic 8.8% decrease in global GHG emissions.
  - **Energy Use**: COVID-19 pandemic is expected to trigger a global recession, inducing spending cuts of over 10% in energy efficiency sectors (IEA, Energy Efficiency Report 2020).
- **India's ranking**: India is rated high for its performance in the Energy Use, **GHG Emission and Climate Policy** category and medium in **Renewable Energy** category.

Climate Change Performance Index (CCPI)

- The Index is published by **Germanwatch, New Climate Institute and the Climate Action Network**.
- Published annually since 2005, the CCPI is an independent monitoring tool for tracking countries' climate protection performance.
  - In 2017, the methodology of the CCPI was revised to fully incorporate the **2015 Paris Agreement**.
- It aims to enhance transparency in international climate politics and enables comparison of climate protection efforts and progress made by individual countries.
- CCPI, 2021 evaluates and compares the climate protection performance of **57 countries and of the European Union (EU)**, which are together responsible for more than 90% of global greenhouse gas (GHG) emissions.
- It assesses countries' performance in four categories:
  - **GHG Emission- 40%**
  - **Renewable Energy – 20%**
  - **Energy Use- 20%**
  - **Climate Policy- 20%**

Category	India's rank
GHG Emission	12
Renewable Energy	27
Energy Use	10
Climate Policy	13

Analysis of India's performance in its climate action

- Main elements of India's **Intended Nationally Determined Contribution (INDC)** under the Paris climate agreement are- 33-35% reduction in emissions intensity by 2030 from 2005 levels; 40% of all electricity to be generated from non-fossil fuels by 2030; and afforestation programmes that can remove 2.5-3 billion tonnes of carbon dioxide-equivalent GHG from the atmosphere. In this regard, some achievements and concerns are stated below:-
- **Achievements**
  - **On track to achieve and even exceed Paris Agreement targets**: India is the only major economy in the world with 2°C compatible climate targets and is set to overachieve its 2030 targets by a wide margin.
    - India has reduced its emission intensity by 21% in 2020 over 2005 levels.
    - Solar capacity of India has grown from 2.63 GigaWatts in 2014 to 36 GigaWatts in 2020.
    - Renewable energy capacity of India is the fourth largest in the world and is expected to reach 175 GigaWatts by 2022 from 136GW at present.
    - India's total forest and tree cover increased to 80.73 million hectare (24.56 per cent of the geographical area of the country) as per the 2019 India State of Forest Report (ISFR). This is an increase of 5,188 sq. km as compared to the assessment of 2017.
  - **Initiatives on the global stage**: India has pioneered two major initiatives: **International Solar Alliance and Coalition for Disaster Resilient Infrastructure**.

- **Setting other ambitious targets**: India now plans to generate 450 GigaWatts of renewable energy capacity by 2030. Also, Indian railways announced plans to achieve net zero emissions by 2030 and complete electrification of its network by 2023.
- **Improvement in energy efficiency**: Electricity consumption per capita in India is very low at 500 KWh compared to the world average of nearly 3,000 KWh per capita. India's energy intensity of GDP has halved from 1.09 kilogram unit of oil equivalent (koe) in 1980 to less than 0.5 in 2020.

International Solar Alliance (ISA)

It is a treaty based inter-governmental organization working to create a global market system to tap the benefits of solar power and promote clean energy applications.

Coalition for Disaster Resilient Infrastructure (CDRI)

It is an international partnership that will support countries- developed and developing- to build climate and disaster resilient infrastructure. The Coalition's secretariat is supported by United Nations Office for Disaster Risk Reduction and is based in Delhi.

- **Concerns**
  - **Coal dependency**: According to an estimate, 68% of India's greenhouse gas emissions come from energy production, which remains largely reliant on coal power plants. Based on current coal expansion plans, capacity would increase from currently more than 200 GW to almost 300 GW over the coming years, leading to higher CO_2.
  - **Rising emissions from agricultural sector:** India's significant food and fertilizer subsidies contribute to climate change leading to high NOx emissions.
  - **Declining clean energy investment**: Investment in India's renewable energy sector fell 12% in 2018-2019 and has plummeted 32% since its peak in 2017.
  - **Reduction in some targets**: India has reduced its target for sales of electric vehicles by 2030 to 30%, down from its originally proposed 100%, which would have been a Paris Agreement consistent benchmark.

5.2. EMISSIONS GAP REPORT 2020

Why in news?

The United Nations Environment Programme (UNEP) recently released its annual Emissions Gap Report 2020.

Emissions Gap Report

- It is an annual report released by the **United Nations Environment Programme (UNEP).**
- It assesses the gap between estimated future global greenhouse gas (GHG) emissions if countries implement their climate mitigation pledges and the global emission levels from least-cost pathways that are aligned with achieving the temperature goals of the Paris Agreement.
  - This difference between "where we are likely to be and where we need to be" is known as the **'emissions gap'**.

Key Findings

- **GHG emissions continued to increase**: Global GHG emissions continued to grow for the third consecutive year in 2019, reaching a record high of 52.4 $GtCO_2e$ without land-use change (LUC) emissions and 59.1 $GtCO_2e$) when including LUC.
- **Current NDCs remain seriously inadequate to achieve the climate goals of the Paris Agreement:** and would lead to a temperature increase of at least 3°C by the end of the century.
- **Countries committing to net-zero emissions goals**: Around 126 countries, such as the United Kingdom, European Union, China, Japan, France etc, covering 51 per cent of global GHG emissions have net-zero goals that are formally adopted, announced or under consideration.
- **Consumption based emissions**: Around two thirds of global emissions are linked to the private household activities according to consumption-based accounting.
- **Inequity in emissions**: The emissions of the richest 1 per cent of the global population account for more than twice the combined share of the poorest 50 per cent.

Suggested steps to reduce Emission Gap

- **Improving energy efficiency of housing:** New UNEP research on buildings showed that the buildings and construction sector accounted for 38 per cent of total global CO_2 emissions. To get on track to net-zero carbon building stock by 2050, direct building CO_2 emissions need to fall 50 per cent by 2030.
- **Post-pandemic green recovery:** A green pandemic recovery would put emissions in 2030 at 44 $GtCO_2e$, shaving 25 per cent off the emissions, bringing the world within the range of emissions required for the 2°C pathway. Some steps that can be taken are-

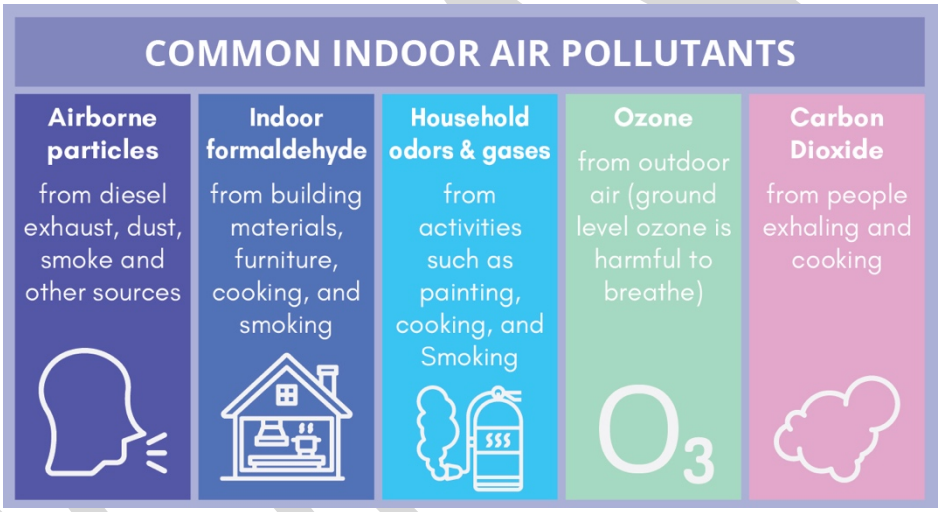
- support for zero-emissions technologies and infrastructure, for example, low-carbon and renewable energy, low-carbon transport, zero energy buildings and low-carbon industry
- support for research and development of zero emissions technologies
- fossil fuel subsidies through fiscal reform
- nature-based solutions, including large-scale landscape restoration and reforestation.

- **Lifestyle changes**: Some examples of good practices in both the developing and developed world that show it is possible to lead more sustainable lifestyles include:
  - replacing domestic short-haul flights with rail journeys and providing incentives and the infrastructure necessary for cycling and car-sharing, while restricting petrol cars;
  - improving the energy efficiency of housing and renewable energy defaults from grid providers;
  - ensuring the provision of low-carbon food in the public sector and developing policies to reduce food waste.

5.3. INDOOR AIR POLLUTION

Why in news?

Recently, a report published in the Lancet journal highlighted that Indoor air pollution (IAP) caused 64% fewer deaths in the last two decades (1990-2019) in India.



Key findings

- **1·67 million deaths were attributable to air pollution in India in 2019,** accounting for 17·8% of the total deaths in the country. Of this**, 36.5% (0·61 million deaths) were caused due to the IAP.**
- **The death rate due to IAP decreased by 64·2% from 1990 to 2019,** while that due to ambient particulate matter pollution increased by 115·3%.
- Impact (health and economic) of air pollution is **highest in the less developed states of India.**

About IAP

- **IAP is the degradation of indoor air quality by harmful chemicals and other materials**. Indoor air quality is affected by many factors, including the type and running conditions of indoor pollution sources, ventilation conditions, as well as indoor activities.
  - For example, air pollutants may accumulate in the indoor environment if the indoor air is not well ventilated**.**
- The indoor environment **also reflects outdoor air quality and pollution**. Outdoor pollution primarily results from the combustion of fossil fuels by industrial plants and vehicles.

Impact of Indoor Air Pollution

- **On Health**- Indoor air pollution increases the potential of health risks such as respiratory illness, acute respiratory tract infection, stillbirth, lung cancer, leukemia, stroke, ischaemic heart diseases, etc.
- **On Women, Aged and Young Children**- they are the most affected, as they spend the majority of their time in the home.
  - Indoor air pollution significantly affects problem solving, mathematical abilities, IQ and learning capabilities in children.
- **On Overall Productivity-** As it aids in following lifestyle changes like fatigue, dizziness, allergies, hypersensitivity coughing, sinus congestion etc.
- **On Mortality**: According to WHO, due to indoor pollutants 3.8 million premature deaths occur annually.

- **Sources of IAP:** Among various source of IAP, the use of traditional **biomass and cookstoves** is one of the key causes. Incomplete combustion of biomass produces a range of toxic gases including PM, methane, carbon monoxide, volatile organic compounds etc.

- **Severity:** According to the Environment Protection Act, 1986, the levels of indoor air pollutants are often 2-5 times higher than outdoor levels. In some cases, these levels can exceed the outdoor levels of the same pollutants 100 times.
    - Thus, it can affect the health of individuals more severely as people spend most of their time (more than 80%) indoors.
- **To save people from the ill effects of IAP, the central government has launched two schemes**
    - **Unnat Chulha Abhiyan** was launched to promote improved biomass cookstove
    - **Pradhan Mantri Ujjwala Yojana** was launched for LPG connections to Below Poverty Line families.
    - **Retrofit of Air-conditioning to improve Indoor Air Quality for Safety and Efficiency (RAISE)** which is a joint initiative of Energy Efficiency Services Limited (EESL) and USAID.
- **In September, 2010, the UN Foundation launched the Global Alliance for Clean Cook Stoves.** This is a public–private initiative that brings together partners from the range of specialties across which the issue of indoor air pollution sprawls.

Challenges in tackling IAP

- **Ensuring the sustained adoption and usage of clean-cooking tech:** The Pradhan Mantri Ujjwala Yojana programme has been highly successful and has exceeded its target in 2019. However, additional efforts are required to achieve consistent usage of liquefied petroleum gas for cooking.
- **Behavioural changes due to global warming:** It is prolonging peoples' time indoors and extending their usage of air conditioners. Thus, possible public health consequences may arise due to increased human exposure to IAP.
- **Marginalization of IAP in public discourse**: In discussions on air pollution, IAP often loses out to outdoor pollution. As a result of this IAP is also get neglected while policy formulations on pollution take place.

Way ahead

- Central and state governments should **allocate sufficient long-term funding** to prevent the adverse health impacts of air pollution.
- **Public awareness about the clean fuel** and other IAP agents, behavioural changes, ensuring proper ventilation in houses designs, modification of design of cooking stove, etc, should get adequate attention as a means of reducing IAP.
- **Promoting solar cookers** to reduce the indoor air pollution.
- **Green Roofs-** that are planted with vegetation -- may improve the indoor air quality of commercial buildings.

Conclusion

Control of air pollution in India will not only improve health as envisioned in the SDGs but will also accelerate the potential to achieve other SDG targets, including alleviating poverty, promoting social justice among others. Air pollution control (particularly IAP control) in India is not expenditure, but rather an essential investment in the country's future economic growth.

5.4. AMMONIA POLLUTION

Why in news?

Recently, Ammonia gas leaked at the Indian Farmers Fertilizer Cooperative Limited (IFFCO) unit at Prayagraj, Uttar Pradesh.

About Ammonia

- Ammonia (NH_3) is a **colourless highly reactive and soluble alkaline gas.**
- It is **prominent constituent of the nitrogen cycle** that adversely affects ecosystems at higher concentrations.
- **Sources of emissions:**
    - The largest source of NH_3 emissions is **agriculture, including animal husbandry and NH_3-based fertilizer applications.**
    - Other sources of NH_3 include industrial processes, vehicular emissions, volatilization from soils and oceans, **decomposition of organic waste, forest fires, animal and human waste**, nitrogen fixation processes.
- Ammonia is **stored in liquid form under high pressure** or in gaseous form at low temperature.

- Ammonia is **naturally present in the body** and secreted by the kidneys to neutralise excess acid, while ammonia in the form of nitrogen is essential for plant growth.
- **Uses:**
    - It is used as an **industrial chemical in the production** of fertilisers, plastics, synthetic fibres, dyes and other products.
    - It is critical in the **manufacturing of fertilizers**, because ammonia is a building block for ammonium nitrate (NH_4NO_3) that is used in agriculture as a high-nitrogen fertilizer.

How ammonia pollution affects the environment and humans?

Growing demand of food, rising focus on production security will catalyse the fertilizer demand in India, thus enhancing the expansion of the Indian ammonia market, **which creates manifold challenges as given below:**

- **Climate change:** Ammonia excess in environment lead to increases in nitrification and denitrification, contributing to greenhouse gas emissions, which results in global warming and climate change.
- **Air pollution:** Ammonia in gaseous forms reacts with other oxides and pollutants in the atmosphere to form PM 2.5 and fine particles of ammonium salts, which further result in formation of haze like condition.
- **Water pollution:** Ammonia can leach into streams and rivers and where it can be toxic to aquatic organisms. Also ammonia contributes to harmful algal blooms and dead zones with dangerously low oxygen levels. Eg. ammonia in water is above 1 ppm it is toxic to fishes.
    - The acceptable maximum limit of ammonia in drinking water, as per the Bureau of Indian Standards, is 0.5 ppm, while the **level of ammonia in Yamuna water was found at more than 1.8 parts per million (ppm).**
- **Ecosystem damage:** Excess nitrogen can cause eutrophication and acidification effects on semi-natural ecosystems, which in turn can lead to change in species composition and other deleterious effects. **Eg. increase in nitrogen loving species** by shift from mosses, lichens and ericoids to grasses like Deschampsia flexuosa and Molinia caerulea
- **Adverse health effects:**
    - Ammonia interacts with moisture present in the skin, eyes, oral cavity, respiratory tract to form **ammonium hydroxide, which is very caustic and disrupts the cell membrane lipids, ultimately leading to cellular destruction.**
    - Gaseous ammonia reacts with other pollutants in the air to form fine particles of **ammonium salts which affect human breathing as well cause diseases like pneumonia and asthma**.

What should be done to check ammonia pollution?

- **Laws and guidelines:** Stringent implementation of guidelines and conservation laws against dumping harmful waste mainly agricultural waste and fertilizers into the river to maintain safe level of ammonia and check water pollution.
- **Policy decisions:** Subsidies to ammonia based fertilisers should be streamlined and reduced with time, which is biggest cause for ammonia emission in atmosphere. As well as improvement in manure management system like acidification of slurry etc.
- **Technology:** Need to develop innovative approaches and specific technology to treat ammonia in water, so the adverse health effects of ammonia can be averted.
- **Animal dietary management:** Reducing the crude protein and acidification of the animal diet to improve protein digestion, which reduces nitrogen excretion and eventually ammonia emission.

5.5. COMMUNITY FOREST RIGHTS

Why in news?

Recently, Ministry of Tribal Affairs (MoTA) has drafted **fresh guidelines for Community Forest Rights (CFR) and Habitat Rights.**

More about news

- Ministry of Tribal Affairs (MOTA) constituted a committee headed by NC Saxena **to examine and recommend Guidelines for management and governance of CFR** for its sustainable use to ensure livelihood security of the forest dwelling communities.

- Earlier in 2016, CFR guidelines were prepared by MoTA, in consultation with Ministry of Environment, Forest and Climate Change.
- However, the guidelines faced criticism from various tribal organisations for being too technical and unclear about the role and responsibilities of the Gram Sabha.

- Another committee headed by Hrusikesh Panda was assigned the task of **drafting guidelines to manage habitat rights.**
  - It will **review the habitat rights of particularly vulnerable tribal groups (PVTGs)** and seasonal resource access to nomadic and pastoralist communities in at least five states.

About Community forest rights

- **Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006 or Forest Rights Act (FRA), 2006** recognises and vests two broad types of rights to scheduled tribes and other traditional forest dwellers: individual forest rights (IFR) and community forest rights (CFR).
  - **FRA 2006**, is one of the most important and popular Entitlement based laws favouring the tribal and other traditional forest dwellers' rights over forest land.
  - **FRA 2006** provides for a framework for recording of the forest rights so vested and the nature of evidence required for such recognition and vesting in respect of forest land.
- According to FRA, **community rights defined are**:
  - **community rights such as nistar** including those used in erstwhile Princely States, Zamindari or such intermediary regimes;
  - **right of ownership, access to collect, use, and dispose of minor forest produce** which has been traditionally collected within or outside village boundaries;
  - **other community rights of uses or entitlements such as fish and other products of water bodies**, grazing (both settled or transhumant) and traditional seasonal resource access of nomadic or pastoralist communities;
  - **rights including community tenures of habitat and habitation** for primitive tribal groups and pre-agricultural communities;
  - **rights of settlement and conversion of all forest villages**, old habitation, unsurveyed villages and other villages in forests, whether recorded, notified or not into revenue villages;
  - **right to protect, regenerate or conserve or manage** any community forest resource which they have been traditionally protecting and conserving for sustainable use;
  - rights which are recognised under **any State law or laws of any Autonomous District Council or Autonomous Regional Council** or which are accepted as rights of tribals under any traditional or customary law of the concerned tribes of any State;
  - **right of access to biodiversity and community right to intellectual property** and traditional knowledge related to biodiversity and cultural diversity;
  - **any other traditional right customarily** enjoyed by the forest dwelling Scheduled Tribes or other traditional forest dwellers, as the case may be, which are not mentioned in clauses but excluding the traditional right of hunting or trapping or extracting a part of the body of any species of wild animal;
- **FRA empowers Gram Sabha** to be the authority to initiate the process for determining the nature and extent of individual or community forest rights or both.
- Further, the **draft guidelines for CFR recently released aim to guide & empower the Gram Sabhas** in managing and conserving their CFR areas in a sustainable fashion.

Draft Guidelines for CFR

- It proposes to form **Community Forests Resource Management Committee (CFRMC)** as an executive arm of the Gram Sabha in managing CFR areas.
  - It shall consist of not less than 5 persons as members with at least 2/3rd members from the Scheduled Tribes.
- It **provides financial independence of the Gram Sabha through a fund,** which would get money from the sale of forest produce, development grant from the government and non-profits as well as compensatory afforestation funds.
- **Further empowerment of Gram Sabhas to:**
  - **integrate the committees for the protection of wildlife, forest and biodiversity**, catchment areas, water sources and other ecological sensitive areas located within which it has had traditional rights.

- **Be empowered to carry out the powers and authority** as laid down under section 5 of FRA, which talks about duties of holders of forest rights.
- **File complaint before the state level monitoring committee (SLMC)** in case of any violation of provisions of FRA 2006.
- **Make rules and issue appropriate directions for governance and conservation of CFR,** including regulating powers, functions and activities of the CFRMC; conflict resolution; benefit sharing; issuance of transit permit; fund management etc.,
- **Approve and modify CFR conservation and management plan**, prepared and suggested by the CFRMC.

Why these rights are important?

- **Forest conservation, management, and governance** by using their own knowledge systems and institutions and integrating them with modern scientific knowledge.
- **Ensuring livelihood security** through rights over collection and sale of Non-Timber Forest Produce (NTFP) i.e. Minor Forest Produce.
- **Influencing decision-making & Democratic decentralisation** by gram sabhas.
- **Trust building** by building a relationship of trust and bond between forest dwellers, the government, thereby reducing land conflict, Naxalism and underdevelopment.
- **Provide legal recognition** to the community conservation initiatives.

Habitat Rights

- Habitat rights under the FRA 2006 are **granted to the particularly vulnerable tribal groups (PVTG**.
- Section 3(1)(e) of FRA mentions about rights that **include community tenures of habitat and habitation** for primitive tribal groups and pre-agricultural communities.
- However, the **FRA isn't clear on the nature of the right.**
- Guidelines for habitat rights tries to address this and provide a distinction between habitat rights and CFR.
  - **CFR are more important for fulfilling the material needs of the communities**, such as livelihood generation.
  - **While Habitat right include the entirety of the spiritual connection** or belonging that a community feels with the landscape.

Draft Guidelines for Habitat Rights

- Draft defines **habitat as places where tribal and other traditional forest dwellers have ancient connections in spiritual, cultural, social** (burial grounds, birth places, temples, deities etc.) and livelihood matters (areas used for forest produce collection, fishing, seasonal cultivation and collection of medicinal plants).
- Habitat Rights are **bundle of rights comprising of above connections** with the habitat.
- **Some of habitat rights include:**
  - **Right to perform all customary religious** or cultural ceremonies in the landscape related to their clans
  - **Right to protect and conserve the natural entities** and sacred sites recognised under habitat rights
  - Right to protect and conserve places important for religious and spiritual purposes such as sacred groves etc.
  - **Right to practice traditional cultivation systems** and other livelihood generating activities including seasonal resource use
  - Habitat **rights exclude any traditional right of hunting or trapping or extracting a part of the body** of any species of wild animal.

Issue with community forest rights

- **Poor demarcation of boundaries:** The boundaries of community forest areas in most parts overlaps with the traditional and customary boundary of the gram sabha, which create conflict in management of community forest rights.
- **Non recognition of claims:** Without crucial evidence and effective implementing agencies to facilitate the claim process, thousands of gram sabhas across India are yet to claim their CFR.
  - Hence, they are either pending or have been rejected at different stages.
- **Lack of ownership**: Gram sabhas with recognised community forest rights are not allowed to exercise exclusive ownership rights to NTFP.
  - Nodal agency and district-level departments do not extend the required technical support to the gram sabhas to protect and conserve the recognised forestland.

Ways to strengthen community forest rights

- **Technology and resources:** Leveraging modern technology, proper survey, settlement and land record to map and monitor the implementation of rights with proper demarcation of boundaries to reduce conflict and ensure sustainable forest management.

- **Review and updation:** Reviewing all rejected and pending claims by district and sub-division level committees to consider and approve community forest rights for building capacities of gram sabhas for governance and management of community forest resources.
- **Market access:** There is a need to provide marketing and MSP support to non-timber forest products and create institutional mechanisms to support community forest enterprises for value addition.
- **Creating awareness:** There is an urgent need for widespread awareness about the existence and details of provisions on Community Forest Rights, especially in areas where social groups are not active.

5.6. OVERCOMING WATER CHALLENGES IN AGRICULTURE

Why in news?

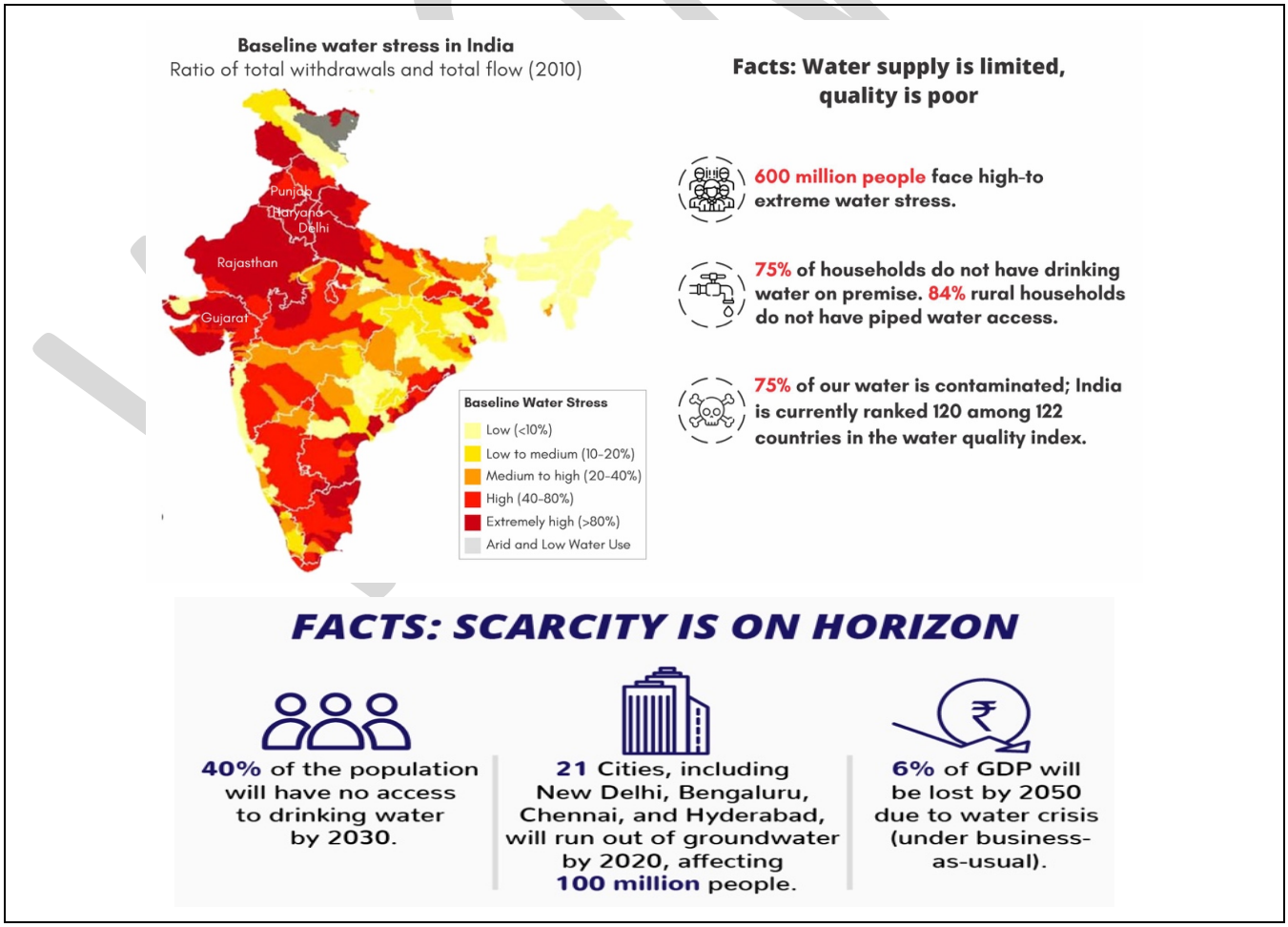
Recently, Food and Agriculture Organization of the United Nations (FAO) has released the report **State of Food and Agriculture, 2020** with the theme 'overcoming water challenges in agriculture'.

Key findings

Report presents new estimates on the pervasiveness of water scarcity in agriculture, as well as on the number of people affected through following observations:

- **3.2 billion People live in agricultural areas** with high to very high water shortages or scarcity.
- Roughly 1/6th of the world's population live in severely water-constrained agricultural areas.
- Globally, the annual amount of **available freshwater resources per person has declined** by more than 20% in the past two decades.
- **Socio-economic development contributes to shifting of diets towards more water-intensive foods** (e.g. meat and dairy products).
- Rising competition for water and the effects of climate change are leading to tensions and conflicts among stakeholders, thereby **exacerbating inequalities in access to water**.

How severe is water scarcity problem in India?



Why Agriculture holds the key to tackling water scarcity in India?

- India has witnessed a dramatic increase in water demand for all uses: agricultural, industrial, and domestic. However, **agricultural irrigation accounts for 90% of India's freshwater withdrawals (global average being 70%).**
- Between 2000 and 2017 India's **groundwater depletion increased by as much as 23%.**
- **India's annual agricultural water withdrawal is the highest in the world** followed by China and the United States.
- Inspite of China having **larger area under irrigation than India, China withdraws much less water for agricultural purposes.** This clearly reflects that India's agricultural practices are highly water inefficient that also makes such practices unsustainable.

What has made Indian Agriculture practices water inefficient?

- **Water intensive crops:** The most important crops of India like rice, wheat and sugarcane, are the most water consuming crops. Rice, which is India's main food crop, consumes about 3,500 litres of water for a kilogram of grain produced.
- **Unintended consequences of government policies that changed the cropping pattern for worse:** This resulted in withdrawal of more ground water for sustaining and enhancing the production. For example
  - **Green revolution led to marginalization of water efficient crops** (millets, oilseeds and pulses) and promotion of water intensive wheat and rice.
  - **Rice and sugarcane are more suitable for eastern states** (they receive better rainfall and are also endowed with perennial rivers). However, Punjab produces more rice and Maharashtra produces more Sugarcane than eastern states.
- **Degradation of soil in Green revolution belt reduced the water productivity:** Excessive use of fertilizers and chemicals has degraded the soils in these areas thereby reducing its friability and water holding capacity (WHC). This resulted in increased demand of water for cultivation. For example, Punjab requires 2-3 times more water than Bihar and West Bengal to produce a kilogram of rice.
- **Traditional irrigation practices:** Majority of the farmers practice flood irrigation method which has only 50% water use efficiency.
- **Poor conservation of water:** According to the Central Water Commission, India requires at most 3,000 billion cubic meters of water annually and receives 4,000 billion cubic meters of rain. However, India captures only 8% of its annual rainfall (the lowest in the world). Additionally, about 80% of the water that reaches households, leaves as waste and pollutes our water bodies and environment.

What is being done by the government to overcome water challenges in Agriculture

- **Pradhan Mantri Krishi Sinchayee Yojana (PMKSY):** It is an overreaching scheme of Ministry of agriculture cooperation and farmers welfare with vision to ensure access to some means of protective irrigation to all agricultural farms in the country (Har Khet ko Pani). **Two of its components ensure high water use efficiency of irrigation projects.**
  - **Per Drop More Crop (PMKSY- PDMC)** focusing on micro irrigation systems (sprinkler, drip, pivots, rain-guns etc.) that promote precision farming by making water available in a targeted manner to the root zone of crops.
  - **Watershed Development Component of PMKSY (WDC-PMKSY):** This component pertains to effective management of runoff water and improved soil & moisture conservation activities such as ridge area treatment, drainage line treatment, rain water harvesting, in - situ moisture conservation and other allied activities on watershed basis.
- **Micro irrigation fund:** Micro Irrigation Fund corpus of Rs. 5000 crore has been created with National Bank of Agricultural and Rural Development (NABARD) to supplement the PMKSY-PDMC. It aims to extend loans to state governments to undertake special and innovative projects in micro irrigation.
- **Jal Shakti Abhiyaan a campaign for water conservation and water security** was launched by the Ministry of Jal Shakti. The campaign is driven by citizen participation and has 5 important water conservation interventions:
  - Rainwater harvesting;
  - Renovation of traditional and other water bodies/tanks;

- Reuse bore well recharge structures;
- Watershed development;
- Intensive afforestation.

- **Crop diversification/Promotion of millets:** Millets consists of Jowar, Bajra, Ragi and minor millets together termed as **nutri-cereals** (due to presence of high amount of micronutrients). These are climate smart crops (resistant to climate change) are highly resistant to water scarcity. Therefore, following efforts are made for their promotion (enhancing cultivation and consumption)
  - Ministry of Agriculture & Farmers' Welfare is running **a Rs 600-crore scheme to increase the area, production and yield of nutri-cereals.**
  - **Minimum support price (MSP) on millets was hiked** this year.
  - Agricultural and Processed Food Products Export Development Authority (APEDA) is preparing a perspective Action **Plan for increasing export of Millet and Millet Products for a period five years** (2021-2026).

How governments' efforts for overcoming water challenges could be made more effective?

- **Climate sensitive agricultural policies:** Price reforms and doing away with unsustainable subsidy is need of the hour for resolving the water crisis caused by the agriculture.
- **The spread of drip and sprinkler irrigation systems should be increased rapidly** with state support.
- **Promotion of new agronomic practices:** like sub-surface irrigation, raised bead planting ridge-furrow method of sowing, and precision farming, Zero budger natural farming, conservation farming etc. They have the potential to enhance water-use efficiency in agriculture.

Conclusion

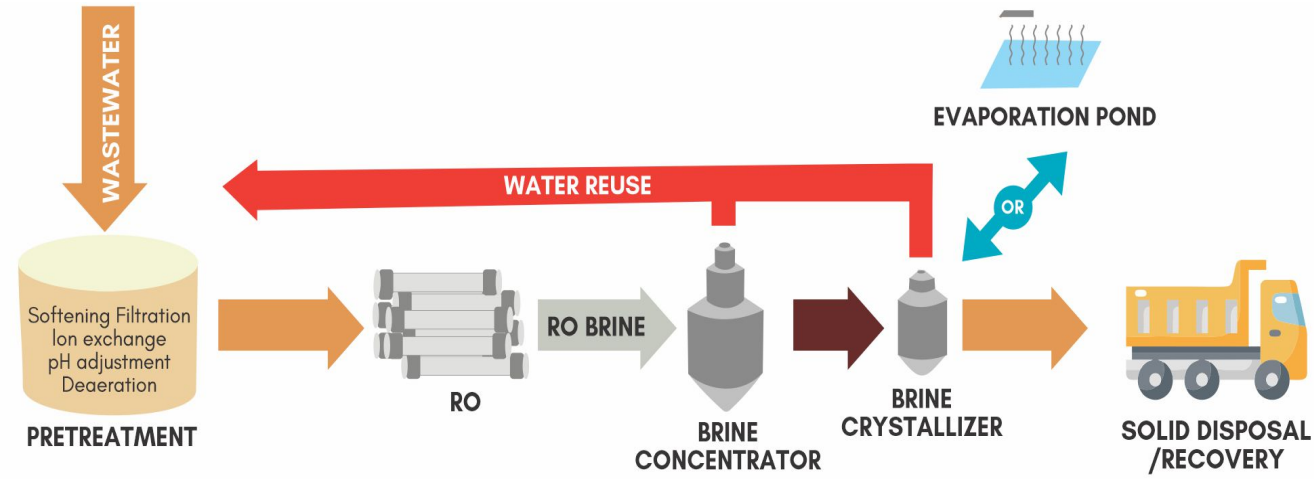
The need to "produce more with less" is underscored by the fact that 90% of freshwater consumption in India is cornered by the agriculture sector. With the growing population demand for fresh water would also rise. Therefore, holistic and integrated approach should be devised for efficient conservation and utilization of water more so by agriculture.

5.7. ZERO LIQUID DISCHARGE (ZLD)

The Centre is examining various options of moving forward on the country's ZLD policy trying to make a balance between the environmental protection and industrial development.

About ZLD

- ZLD is a **water treatment process** to recirculate all the water back to the process with zero liquid waste.
- A ZLD system involves a range of advanced **wastewater treatment technologies for treating water up to the level that can be reused inside the same Company.**
- **A typical ZLD system comprises of the following components:**
  - **Pre-treatment (Physio-chemical & Biological):** Wastewater is filtered using membrane technologies such as ultra-filtration. Separated water is reused and a concentrate (polluted stream) is further treated.
  - **Reverse Osmosis (Membrane Processes):** It removes contaminants from unfiltered water, or feed water, when pressure forces it through a semipermeable membrane.
    - ✓ **Water flows from the more concentrated side** (more contaminants) of the RO membrane to the less concentrated side (fewer contaminants) to provide clean drinking water.
  - **Evaporator & Crystallizer (Thermal Process):**
    - ✓ Concentrate enters a brine concentrator which is a mechanical evaporator using a combination of heat and vapor compression, resulting in a wet sludge.
    - ✓ Crystallization converts the sludge to solid waste using high pressure steam. Any remaining water is clean enough for reuse.



- **ZLD helps industries by**
  - **Protecting the public health:** By eliminating the need of discharging wastewater into ecosystem (nearby water bodies or on land, by enabling efficient recycling of wastewater streams).
  - **Reducing the water stress:** The World Resources Institute (WRI), in 2019, placed India at 13th place among the world's 17 'extremely *WATER*-stressed' countries. ZLD reduces the water demand from the Industry thereby contributing reduction in water stress also.
  - **Ensure production cost efficiency by recovering valuable products** from waste streams, such as, caustic soda, sodium sulphate, potassium Sulphate, gypsum and other heavy metals.

Challenges in adopting ZLD system for effluent management:

- **ZLD generates hazardous solid wastes** creating disposal challenges.
- Evaporators in ZLD system **consume a large amount of energy** thus increasing the carbon footprint. Also implementing ZLD increases the production costs 25%-30%.
- **Certain industries like semiconductors cannot reuse 'treated' wastewater** as they need ultra clean water.

Thus, it could be seen that ZLD system comes with certain environmental and economic cost. **Therefore, following alternatives can also be considered for sustainable management of industrial effluent discharge.**

- **Minimal liquid discharge (MLD):** MLD refers to water treatment processes where 70-95% of water is recovered (almost 100% water recovery in ZLD). The installation and maintenance cost of MLD system is far less than that of ZLD system. Thus MLD could be a better alternative to ZLD.
- **Deep-well injection:** Deep well injection is a liquid waste disposal technology. This alternative uses injection wells to place treated or untreated liquid waste into geologic formations that have no potential to allow migration of contaminants into potential potable water aquifers. Deep-well injection is easier and also less expensive than ZLD.
- **User specific norms:** ZLD is not suitable for industries that need ultra clean water (like semiconductors). These industries should be exempted from the obligation of 'reuse' of treated wastewater. However, even they must be mandated to treat their effluents before disposing them.
- **Discharge the effluents after primary and secondary treatment into the sea:** Releasing High TDS water in sea is a safe disposable method. So, industries that are near coastal areas should be allowed this method.
- **Hybrid of ZLD and Common Effluent Treatment Plants (CETPs):** CETPs are treatment systems specifically designed for collective treatment of effluent generated from small-scale industrial facilities in an industrial cluster. ZLD Systems could also be integrated with the CETP to make the effluent treatment and reuse of the wastewater cost efficient for small scale industries also.

Conclusion

Failing to address wastewater as a social and environmental problem would nullify other efforts towards achieving 2030 Agenda for Sustainable Development. Similarly, too strict effluent discharge norm would hamper the economic growth. Hence, an integrated approach is needed to address the challenges of industrial development, deteriorating water quality, and rising water stress in a holistic manner.

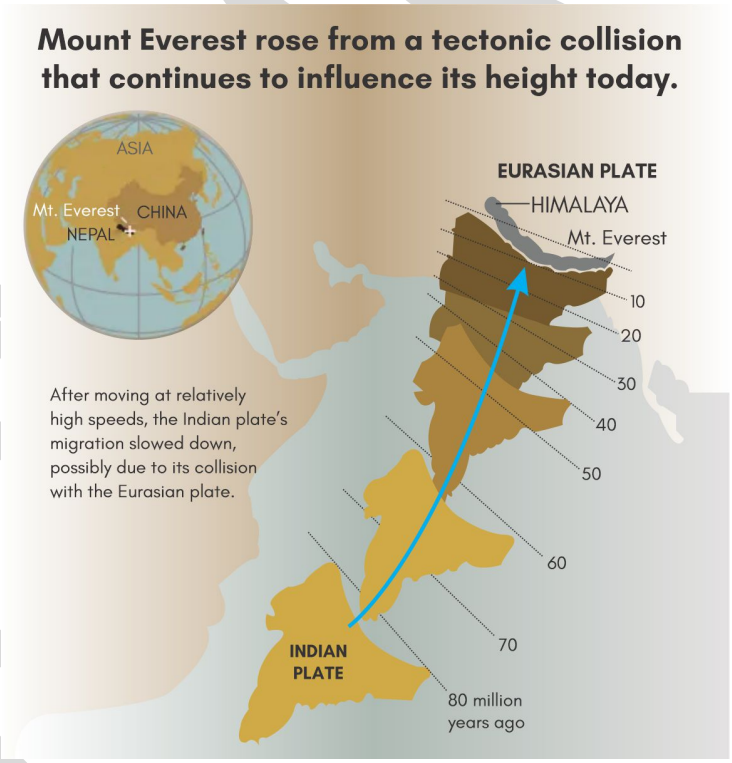
5.8. MOUNT EVEREST GROWS TO NEW HEIGHT

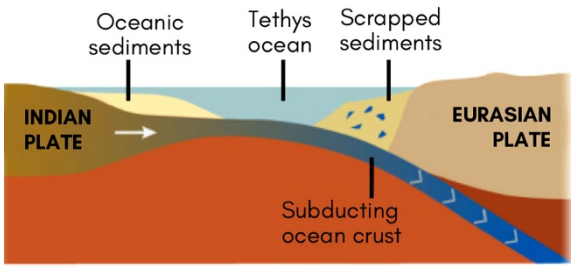
Why in News?

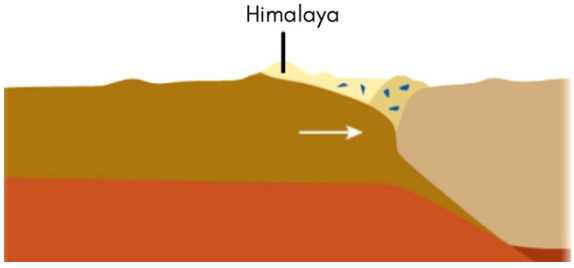
Recently, Foreign Ministers of Nepal and China jointly **certified the elevation of Mount Everest at 8,848.86 metres above sea level — 86 cm higher than what was recognised since 1954.**

About Mount Everest

- Mount Everest is a peak in the Himalayan mountain range and is considered the highest point on Earth (measured with the **mean sea level as the base**).
  - **As measured from the Earth's core, Ecuador's Mount Chimborazo is the world's highest,** standing more than 2,072 meters above Everest.
    - Because the Earth bulges in the middle, mountains along the equator are farther from the core.
  - **Measuring from the foot of the mountain to the peak, Hawaii's Mauna Kea is the tallest**.
    - Mauna Kea's summit is at 4,205 meters above sea level, but it extends about 6000 meters below the water's surface. Therefore, its **total height is 10,210 meters.**
- It is **located between Nepal and Tibet**, an autonomous region of China**.**
  - The Tibetan name is Chomolungma, which means "Mother Goddess of the World." The Nepali name is Sagarmatha, which has various meanings.
- Mount Everest **formed from a tectonic smashup between the Indian and Eurasian tectonic plates** tens of millions of years ago. The collision crumpled the landscape, raising mountains along some 1,5000 miles, a range we know as the Himalaya.
  - The Himalayas started building up around **200 million years ago**, as the supercontinent of Pangea began to split into pieces.
  - The Indian plate had started moving northward toward the landmass we now know as Asia. The Indian plate has moved **nearly 30 feet** or more each century.
  - The vast **Tethys Ocean existed between India and Eurasia** but as Indian plate moved northwards, the ocean had begun to close.
  - The plate under the water made of **dense oceanic crust** moved beneath the southern edge of the more buoyant rocks that make up the **Eurasian continental plate**, creating a subduction zone.
  - Gradually, the slow slip of the oceanic slab into the mantle had scraped a thick layer of seafloor sediments into a pile at the edge of the Eurasian plate and this **sandy layer formed rocks and accumulated on the mountainous peaks.**
  - The Indian continental plate is thick and buoyant. So, as the continents compressed and India plate moved under Eurasian plate, the surface buckled and **the crust thickened to form the Himalayan mountain range** comprising of the Mount Everest.







- The **collision continues to this day, which is, in part, why Everest's altitude is always changing.**
    - India **creeps northward a couple inches each year**, and scientists estimate that the ongoing impact with Eurasia might force the mountains to ever greater heights, with an estimated average uplift of **roughly 10 millimeters a year in the northwestern sections of the range, and around a millimeter a year at Everest.**
    - **However, erosion and earthquakes work against their upward progression.**
        - Earthquake can cause the mountain to either grow or shrink small amounts depending on exactly how and where the ground shifts.
- In the nineteenth century, the mountain was **named after George Everest, a former Surveyor General of India.**
- The first **ever recorded people to climb Everest were Edmund Hillary** (a mountaineer from New Zealand) and his **Tibetan guide Tenzing Norgay.**
    - They climbed the mountain in 1953 and hold the record together.

6. SCIENCE AND TECHNOLOGY

6.1. SPACE BASED REMOTE SENSING

Why in news?

Recently, Department of Space has published a draft 'Space based Remote Sensing Policy' of India (SpaceRS Policy 2020).

About Space Remote Sensing Policy - 2020' (SpaceRS Policy - 2020)

- Policy aims at **encouraging various stakeholders in the country to actively participate in space based remote sensing activities** to enhance commercialization of space technology.
- Policy states that Government of India shall:
  - **promote Indian Industries** to carry out space based remote sensing activities within and outside India.
  - **enable easy access to space based remote sensing data**, except for "sensitive data and information".
  - **concentrate on realisation of space based remote sensing systems** to cater to the country's needs, that cannot be effectively, affordably and reliably satisfied by the commercial entities, either due to national security concerns or economic factors.
  - **provide a timely and responsive regulatory environment** for the commercial Indian industry to establish and operate space based remote sensing systems.
- Earlier **Remote sensing data policy (RSDP) 2011, is said to be more restrictive and provides less opportunities** to service providers.
- Hence this new policy helps to address these issues and provides opportunities through **Self- reliance (Atma-Nirbhar), Knowledge exploration, Competitiveness & Conducive environment.**

About Remote Sensing

- Remote sensing is the **process of detecting and monitoring the physical characteristics of an area/object** by measuring its reflected and emitted radiation at a distance (typically from satellite or aircraft).
- This help researchers to sense things about the earth.
- **Some examples are:**
  - **Cameras on satellites and airplanes** take images of large areas on the Earth's surface, allowing to see much more than what can be seen when standing on the ground.
  - **Sonar systems on ships** can be used to create images of the ocean floor without needing to travel to the bottom of the ocean.
- Remote Sensing data have **ability to detect changes, observations at different resolutions** due to characteristics like synoptic view, repetitive coverage with calibrated sensors etc.
- **Space based remote sensing** is the process of detecting and monitoring the physical characteristics of an area from satellite, aircraft and Unmanned Arial Vehicle (UAV).
- **Spectral, spatial, temporal and polarization signatures are major characteristics** of the remote sensing, which facilitate target recognition and classification.
- An easy access of space based remote sensing data and information shall **enable unfolding of knowledge based solutions**, addressing many planning and monitoring requirements of the nation.

Other methods of remote sensing

- **Light Detection and Ranging (LiDAR):** It is an active remote sensing technology that uses optical measurements of scattered light to find distance.
- **Radio Detection and Ranging (RADAR)**: It is a detection system that uses radio waves to determine the range, angle, or velocity of objects.
- **Sound Navigation Ranging (SONAR)**: The method of remote sensing uses echoes of sound waves to learn the landscape.
- **Hyperspectral Imaging (HSI):** It is a technique that analyzes a wide spectrum of light. The light striking each pixel is broken down into many different spectral bands in order to provide more information.

How the space based remote sensing can enhance India's development?

- **Natural resources:** To identify and map natural resources like renewable energy, minerals, ground water, ocean floors and forests, which helps to know about potential sources and harvest available potential sustainably. Eg. National resource Development Programme.
- **Disaster management:** India faces frequent disasters like flood, drought, earthquake and landslide etc, so data from space remote sensing can be efficiently used for forecasting and management of such disasters.
- **Agriculture and soil:** Space data is used in addressing in many critical aspects, such as, crop area estimation, crop yield & production estimation, crop condition, deriving basic soil information, cropping system studies. Such information helps in production and Govt. policies like pricing, procurement and food security etc.

- **Rural and urban development:** Space data can be used for planning, monitoring and assessment of Integrated Watershed Management Programme (IWMP) and MGNREGA in rural areas, while for sustainable urban development with rising city population and urban sprawl.
- **Weather and climate:** Weather forecasting and climate monitoring is much necessary with climate change and rising uncertainty. Space based remote sensing will make such complex task easier as already ISRO has established in-situ observational network of Automatic Weather Stations (AWS).
- **Governance:** Data from space remote sensing can be used in integrated way by various Central Ministries and State Governments in planning, periodic monitoring, mid-course correction and evaluation of developmental activities.

What challenges are being faced in space based remote sensing?

- **Lack of financial resources:** The lack of domestic and international financial resources is an obstacle for investing in space programs in developing countries, because it is less commercialised and poorly funded by private sector.
- **Technology and skills gaps:** Lack of capability and expertise to produce satellite information with local resources and to provide user support can be a barrier to expanding the use of space-based remote sensing.
- **Data challenges:** Restrictive data access, lack of standardization, lack of analysis of ready data and demand of user needs are obstacles to the wider use of space based remote sensing.
- **Space debris:** One of the most urgent issues is the increasing number of space debris in orbit around the Earth. The accumulation of space debris represents a considerable risk of collision for satellites, or in some cases, they might even fall back on Earth in an uncontrolled manner.
- **Risks and security concerns:** Images and data produced by space remote sensing can be used for military purposes and may create information asymmetries that can adversely affect different market actors.

How to address challenges in space based remote sensing?

- **Creating investment opportunities:** There is need to make space remote sensing sector more open to attract private investment and competitive.
- **Use of emerging technologies:** Use of Block chain and Artificial intelligence for processing high amount of data and enhance computing capacities to derive more benefits.
- **Regulations and guidelines:** Formulating international cooperation, guidelines and mitigation measures to address the sustainability of human space expansion and reduce space debris.

6.2. PRIME MINISTER WI-FI ACCESS NETWORK INTERFACE (PM-WANI)

Why in News?

Union Cabinet recently approved a framework for the proliferation of public Wi-Fi networks through PM Wi-Fi Access Network Interface or PM WANI scheme.

About PM-WANI

- The initiative **aims to elevate wireless internet connectivity** in the country.
- **PM-WANI eco-system will be operated by different players** such as Public Data Office (PDO); Public Data Office Aggregator (PDOA); App Provider; Central Registry.
    - The public network will be **set up by the PDOAs to provide Wi-Fi service through the PDOs** spread throughout the country.
        - A PDOA buys bulk bandwidth from licenced telcos/ISPs, and re-sells it to multiple PDOs to ensure the latter can offer Wi-Fi connectivity to customers.
        - This **nationwide network of public Wi-Fi hotspots**, termed **PDOs after the public call office (PCO) concept** rolled out by the Indian government to set up a nationwide network of landline public pay-phones.
    - The government will **develop an app to register users and discover the WANI-compliant Wi-Fi hotspots** in the nearby area and display them for accessing internet service.
        - The App Provider **will also be able to verify a customer's credit card details** if payment for WiFi service is done electronically instead of cash. The App provider works closely with the PDOA.

- **Central Registry** will maintain the details of App Providers, PDOAs, and PDOs. To begin with, the Central Registry will be maintained by Centre for Development of Telematics (C-DOT).
- PDOA **shall make necessary provisions for storage of user data for one year** to ensure compliance with legal provisions, as required.
- The **user data privacy will be ensured by App Providers and PDOAs**. Complete user data and usage logs will be stored within India.

- There shall be **no license fee for providing Broadband Internet through these public Wi-Fi networks.** A customer wanting to access the network from a PDO's premise can do so only after an eKYC authentication.

What is Wi-Fi?

- Wi-Fi is a **wireless networking technology** that allows devices such as computers (laptops and desktops), mobile devices (smart phones and wearables), and other equipment (printers and video cameras) to interface with the Internet.
  - It is commonly called a **wireless LAN (local area network).**
- It allows **these devices--and many more--to exchange information with one another, creating a network.**
- The wireless network is operating three essential elements that are **radio signals, antenna, and router**. The radio waves are keys that make Wi-Fi networking possible.
- **Mobile data works essentially the same way as Wi-Fi.** The biggest difference is that the signal comes through your mobile service provider rather than ISP (Internet service provider).
- Also, both **Bluetooth and Wi-Fi are used for providing wireless communication** through radio signals.
  - However, **Bluetooth is actually accustomed to connect short-range devices for sharing information whereas Wifi is used for providing high-speed web access or internet.**
  - The **range** of Bluetooth is about 10 metres in comparison to wi-fi's hundred metres.
  - **Bluetooth limits the number of devices that can connect** at any one time, whereas Wi-Fi is open to more devices and more users.
  - In addition, Bluetooth, because it requires only an adapter on each connecting device, tends to be simpler to use and needs less power than Wi-Fi.

Significance of Public Wi-Fi

- **Cost effective:** Wi-Fi is **easier to scale than adding new mobile towers**. It bolsters connectivity inside buildings, airports, etc. where mobile network penetration is limited. Also, **Wi-Fi uses free unlicensed spectrum** and Wi-Fi hardware is cheap and widely adopted.
- **De-congest Telecom networks:** Enhanced usage of public Wi-Fi networks reduces load on Telecom Service Providers as limited spectrum is available for voice calling and internet. Reduced congestion will increase quality of service and users will experience higher internet speeds over Wi-Fi.
- **Capacity utilisation:** it will vastly improve utilisation of the large and high-capacity fibre network created by Bharat Broadband Network (BBN), RailTel, GAIL etc. BBN (created through NOFN investing more than Rs. 110 Bn) user numbers for 2018-19 were a mere 11.92 lakh, with monthly data usage at 69,409 gigabytes, not even 1 percent of capacity utilisation.
- **Boost GDP:** The World Bank observed that a 10% increase in internet penetration leads to a 1.4% increase in GDP. Public hotspots hold an important place in the last-mile delivery of broadband to users.
- **Bridge Rural-Urban divide:** As per 'The Indian Telecom Services Performance Indicators' report of TRAI broadband penetration in rural India is limited to 29.2% against urban India which has a broadband penetration of 93%.
  - **No License Fee for providing broadband internet services** using public Wi-Fi Hotspots will encourage internet proliferation and penetration across the country.
- **Employment opportunity:** It will create job opportunities for entrepreneurs, local businesses, IT engineers, app developers and cybersecurity professionals. Those who can operate data centres, administer cloud servers and storage may also be in demand.
- **Fiscal Saving:** There would be lot of savings for the government by putting digital information in the portal either through video, text or pictures and not go for conventional approach like banner, hoardings and others.

Challenges

- **Public Wi-Fi accessibility are prone to security attacks** due to the non-encryption of such networks. In the past, there are cases where it was **misused for unauthorized access.**
- **Financial status of telecom service provider:** Huge debt of telcos do act as a deterrent for Wi-Fi deployment in the country

- **Lack of supporting infrastructure** such as electric connection in both Rural and Semi - Urban areas, getting the space (Access Point) for the tower etc
- **Customers are facing the issue of manual action for periodic Login to Wi-Fi networks** rather than automatically connecting the network while on the move.
- **Right of Way (RoW) issues:** Complex procedures across states, non-uniformity in levies and obtaining approvals from various government agencies leads to **delay in deployment of optical fibre cables (underground)** and **mobile towers (overground) infrastructure**.

Way forward

- **Wi-Fi hotspots deployment as per India's population** so Indian government should strategise accordingly and focus more on villages.
- Since user data is being handled by multiple agencies – app providers, PDOAs, PDOs, DoT and TSPs/ISPs, at every stage **user data safe-handling protocol with respect to storage, sharing, encryption and grievance redressal must be well-documented and enforced.**
- **Consumer education and hand-holding has to be part of the overall deployment strategy** to build trust and acceptability.
- **Seamless Wi-Fi Roaming** is important where people can easily access Wi-Fi on the move.

6.3. NARROW BAND-INTERNET OF THINGS

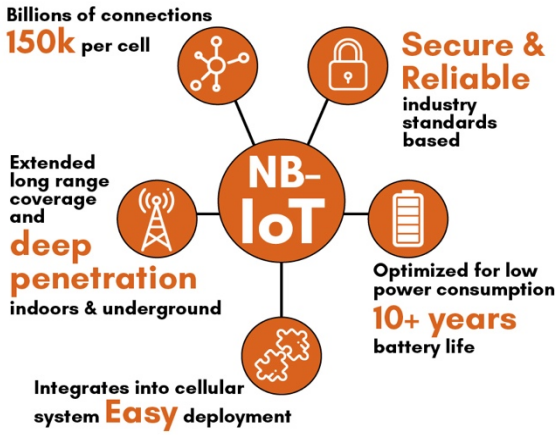
Why in news?

BSNL, in partnership with Skylotech India, announced worlds' first satellite-based narrowband-IoT (NB-IoT) network in India.

More about news

- This is in vision of Digital India and **to provide affordable, innovative telecom services and products across customers segments.**
- With this solution, **India will now have access to a ubiquitous fabric of connectivity for millions** of yet unconnected machines, sensors and industrial IoT devices.
- This new 'Made in India' solution will **connect with BSNLs satellite- ground infrastructure and provide PAN-India coverage,** without leaving any dark patch within the boundary of India and Indian seas.
- NB-IoT supports the Department of Telecom and NITI Aayog's plan of **bringing indigenous IoT connectivity to India's core sectors** and already been tested successfully in Indian Railways, fishing vessels and enabling connected vehicles across India.

About Narrow Band-Internet of Things (NB-IoT)



- Narrowband IoT (NB-IoT) is a **wireless communication standard for the Internet of Things (IoT)** belonging to the category of low-power wide-area networks (LPWAN).
- It **enables to connect devices that need small amounts of data**, low bandwidth, and long battery life.
- NB-IoT can **co-exist with 2G, 3G, and 4G mobile networks.**
- It **doesn't operate in the licensed LTE construct**, Instead, it works in one of three ways:
  - Independently
  - In unused 200-kHz bands that have previously been used for GSM (Global System for Mobile Communications).
  - On LTE base stations allocating a resource block to NB-IoT operations or in their guard bands.
- **NB-IoT has various applications** like
  - smart city infrastructures such as connecting street lamps or dustbins,
  - smart metering (electricity, gas, and water),
  - intruder and fire alarms,
  - measuring health parameters,
  - tracking of persons, animals or objects

- connected various industrial appliances.

- **Internet of Things, or IoT**, refers to the billions of physical devices around the world that are now connected to the internet, all collecting and sharing data. Ex: A lightbulb that can be switched on using a smartphone app is an IoT device, as is a motion sensor or a smart thermostat in your office or a connected streetlight.
  - However, Internet of Things doesn't necessarily have to be connected to the internet, it can also be a network of things.

Benefits of NB-IoT

- **Power Efficiency:** In NB-IoT technologies the power is saved when they aren't operating as they draw energy only when the modem is running and handling signal processing.
- **Cost Savings:** NB-IoT consume less power and offers reduced complexity of analog-to-digital (A/D) and digital-to-analog (D/A) conversion, buffering, and channel estimation, which ultimately saves cost. As well as NB-IoT chips are simpler to create and thus come cheaper.
- **Secure & reliable:** It benefits from all the security and privacy features of mobile networks, such as support for user identity confidentiality, entity authentication, confidentiality, data integrity, and mobile equipment identification.
- **Connectivity:** NB-IoT can efficiently connect large fleets of devices upto 150K connections per cell, which enables to access unconnected machines, sensors and industrial IoT devices starting with fishermen, farmers, construction, mining and logistics enterprises.
- **Reliability:** Rolling out NB-IoT on a licensed spectrum improves reliability for users and guaranteed resource allocation for managed Quality of Service (QoS).
- **Wider Deployment:** NB-IoT has lower bitrates and better link budgets. Additionally, NB-IoT doesn't need gateways to provide connectivity, while can directly connect sensors to the base station.

6.4. HEALTH DATA

Why in news?

Recently, the **Health Data Management Policy (HDMP)** was launched in pursuance of the earlier envisaged **National Digital Health Mission (NDHM)**.

National Digital Health Mission (NDHM)

- NDHM is a project of the Government of India which stems from the National Health Policy, 2017.
- It intends to digitize the entire healthcare ecosystem of India.
- This would be done by **creating digital health records** and **creating and maintaining registries for healthcare professionals and health facilities**.

This **Health Data Management Policy** is the first step in realizing the **NDHM's guiding principle of "Security and Privacy by Design**" for the protection of individuals'/data principal's personal digital health data privacy.

What is health data and why is appropriate handling and regulation is important?

Health data can be broadly considered as every type of data related to **health status**, **personal choice about selecting a treatment**, **health security or policy number**, all kind of **treatment reports**, **causes of death**, socio-economic **parameters regarding health and wellness**, **historical healthcare background** such as diseases in past years or any data which relates to the physical or mental health of an individual.

Given this definition, regulation of health data becomes important due to **following issues**:

- **Issue of privacy and sensitive nature of data:** Health data of an individual contains the kind of information which the person may not want to share with the world, also leak of such data may lead to exploitation or discrimination against the individual. For example, information on the HIV status of a person.
- **Individual losing the control over data:** Health Data when shared among the institutions and agencies for medical purposes, can lead to the loss of control on data by the individual in the absence of regulatory framework. This could lead to a scenario where this data is **misused for surveillance or for corporate interests.**
- **Poor record-keeping and maintenance of health data:** In the absence of regulation, health data tends to be kept poorly with very low shareability. The lack of health information leads to inconvenience, duplication of diagnostic and consultation services, delays in treatment, and increase in expenditure. Loss of records and delays can even lead to misdiagnosis and other harms to patients.

Alongside these issues, **generation of large volumes of personal health data** collected in the recent times on a daily basis in places like public health centers and hospitals can be used to improve healthcare services.

The importance of health data has become even more important due to **data-based approaches forced by the outbreak of COVID-19**, whether it is digital dashboards at the state-level to track and trace COVID-19 hotspots or a myriad of contact tracing apps that allow citizens to determine their exposure levels to the virus in a geographic span.

Current status of Health Data Ecosystem in India

Before passing of the Health Data Management Policy, the Health Ministry had proposed a '**Digital Information Security in Healthcare Act' in 2018** that would enforce privacy and security standards which has now been subsumed under Personal Data Protection (PDP) Bill. Also, some earlier efforts include-

- Creation of a **national Health Management Information System (HMIS)** to enable better use of data.
- **National Health Portal** which aims to become a single point access for authenticated health information for citizens, students, healthcare professionals and researchers.

But these efforts were stalled by the **health data challenges prevalent in India**-

- **Fragmented data:** Healthcare data in India is fairly fragmented and scattered, given the interaction of citizens ranges across multiple diagnostic centers, hospitals, medical practitioners and pharmacies.
- **Multiples entities in healthcare delivery:** There are also several distinct parts in delivery chain, whether its insurance agents, third-party administrators (TPAs) or intermediaries such as ASHA workers. This increases the integration challenge in the system.
- **Data remains in Silos due to lack of interoperability:** The development of IT systems without a modicum of interoperability (i.e., the-ability of a hospital system X to communicate with system Y in a different location) has led to redundancies with static silos of data repositories that have sprung up.
    - Absence of interoperability also creates the issue of non-portability of health records. Non-portability of records unfairly locks in a patient with the first hospital, or most frequently visited hospital.
- **Absence of an overall policy:** There have been concerns about the lack of data policy on storage, rights of access, and privacy of individuals vis-à-vis usage in the overall system.
- **Creation of multiple data handling entities:** Several national data systems, such as the mother-child tracking system, were introduced in parallel to HMIS. This undermined the existing HMIS and increased the workload of field health staff. States themselves maintain local level data sets, resulting in multiple systems.

Salient features of Health Data Management Policy

- **Creating a standard for privacy protection and storage of data:** It sets out the minimum standard for data privacy protection that should be followed across the board in order to **ensure compliance with relevant and applicable laws, rules and regulations.**
- **Federated structure with interoperability:** It is based on the principle of federated architecture, which **allows interoperability between independent and decentralized information systems**. Here federated structure implies that the data will not be stored in a central repository but with respective agencies and the policy will provide a platform for their exchange and interaction.
- **Voluntary Participation:** If an individual chooses to participate, he/she will be **issued a Health ID** (as defined in this Policy). Where an individual wishes to avail of any health services, the **Health ID of the individual may be verified by the use of Aadhaar** or any other method of identification as may be specified.
- **Network connecting each hospital and laboratory:** It will **increase the pan-India portability of the Health Data** and it may also generate **aggregated data which could be used for research and clinical purposes.**
- **Control of data with the individual:** The policy has created a **consent manager**, which is an electronic system for consented sharing of data (including partial consent e.g., one can instruct the system to share one's ECG by withholding the Psychiatric Data).
- **Integration with Ayushmaan Bharat:** The policy aims to integrate the data collection and usage with the Ayushmaan Bharat architecture of Health and Wellness Centres.

It should be noted that the document itself states that the **policy will be dynamic in nature** and will serve as an **enabling document before complete roll out of the National Digital Health Mission.**

Potential challenges in implementation of the policy

- **Absence of a Personal Data Protection (PDP) bill:** Absence of PDP Bill creates ambiguities in areas like what are definitions of key terms like Health Data or what happens if there is data privacy breach.
- **Poor reliability and inconsistencies in data:** There are apprehensions that the data generated from several sources is unreliable, this may render the data sharing ineffective. For e.g.- Several central agencies have shown skeptism about the State level data.
- **Poor digital literacy:** A study highlights that for about 90% of India's population, digital literacy is almost non-existent. In this scenario, it would be ambitious to assume that majority of the population will be able to navigate the digital consent mechanism. This may create a scenario where data fiduciaries (such as hospitals and clinics) manage consent on the data subject's behalf.
- **Absence of clear accountability mechanisms for prevention from commercial usage:** The policy does not clearly state what are the penalties and who is liable in case the data is used for commercial purposes.
- **Right to be forgotten:** The policy doesn't speak of the "right to be forgotten" of a patient or clarity on how a health stack built with a biometric authentication (Aadhaar) layer would solve for concerns around anonymity, especially as health data is categorized as sensitive personal data.

Way forward

To ameliorate the potential challenges, multi-stakeholder consultations should be adopted for the next iteration of the policy (as the policy is dynamic in nature) to provide more balance to the policy. This **balance** between the protection of **personal privacy**, **providing transparency** and **accountability** for the institutions that govern this data (whether consent managers or data exchanges) whilst ensuring the **empowerment of the individual is at the heart** of setting a prudent, appropriate and federated rights-based design for healthcare data protection.

6.5. PUBLIC HEALTH SURVEILLANCE IN INDIA

Why in news?

Recently, NITI Aayog released a white paper on 'Public Health Surveillance in India by 2035', in the context of issues faced in surveillance during the COVID-19 pandemic.

More on news

- The document envisions a Public Health Surveillance System that is **predictive, responsive, integrated, and tiered.**
- It also aims to make India capable enough to provide regional and **global leadership in managing events that constitute a public health emergency** of international concern.

Need for a Public Health Surveillance System

- **Predicting/Forecasting and Preparedness for Epidemic Outbreaks** for communicable and emerging epidemics of non-communicable disease, such as MDR-TB, NIPAH outbreak etc.
- **Guiding Prevention and Health Promotion Strategies**: Identify new/hidden reservoirs and sources of infection, block chains of rapid transmission and limit the resulting morbidity, disability or death.
- **Responding to Outbreaks and Guiding Future Programs of Disease control**: Surveillance can help create standard protocols to interpret actionable medical data in real time and subsequently use tools like genetic mapping to target variations or susceptible hosts.

Also, the importance of these roles in the Health setup has further increased in the recent time due to following reasons:

- **Re-emerging and new Communicable Diseases**: A number of new infections have emerged, and pathogens and diseases have re-emerged with resistant or mutant strains.
- **Increasing rates of non-communicable diseases and acute and chronic conditions**: For example, India's Ministry of Health data suggest that 61% of overall mortality and 55% of the disability adjusted life years were caused by NCD in 2016.
- **Anti-microbial resistance (AMR):** Increasing AMR in the recent times has decreased the efficacy of drugs and has developed into diseases like Multi-Drug Resistant TB etc.

Current Public Health Surveillance Framework in India

- The **Integrated Disease Surveillance Project (IDSP)** within the National Health Mission constitutes the primary Centre for surveillance in India.
- In 2019, the World Health Organization (WHO) in partnership with the Government of India launched the **Integrated Health Information Platform (IHIP) within the IDSP program.**
  - The IHIP is a **digital web-based open platform that captures individualized data** in almost real-time, generates weekly and monthly reports of epidemic outbreaks and early warning signs and captures response by 'rapid response teams', for 33+ disease conditions.
- Apart from IDSP, the **Indian Council of Medical Research (ICMR)** has played a key role in strengthening surveillance and research related to surveillance with its **large network of 130+ laboratories.**
  - For instance, Epidemics of SARS, Nipah and rotavirus have been rapidly detected through the viral research and diagnostic laboratory network of ICMR and have been effectively controlled.
- **Early Health Warning System:** The system is being developed by **Ministry of Earth Sciences** and is expected to forecast the possibility of disease outbreaks in the country.
  - Based on the **relationship between weather changes and disease incidence**, the system is expected to predict **outbreaks of vector-borne diseases**, particularly malaria and diarrhoea, subsequently, it is likely to monitor non-communicable diseases as well.

Issues in the current surveillance system in India

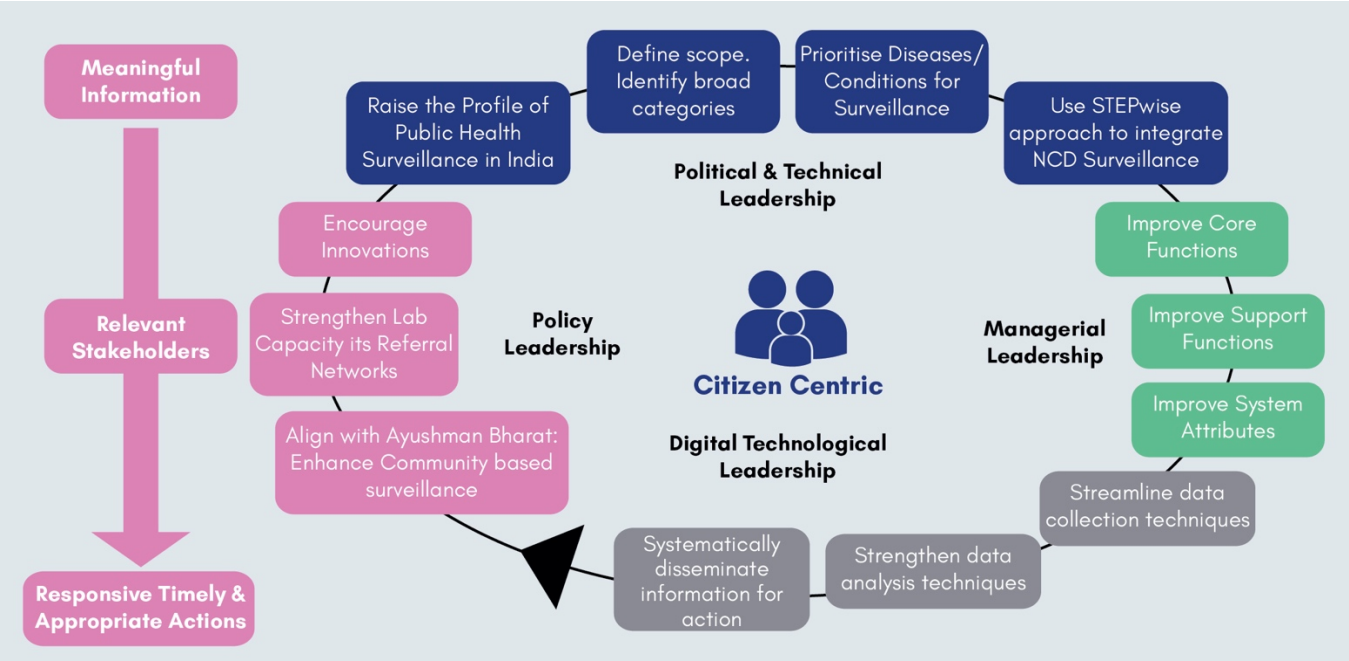
- **Surveillance is not comprehensive:** The IHIP is not yet fully operational across the country, reason being lack of uniformity in outbreak investigation and reporting and limitations in geographic coverage within states.
- **Surveillance functions in vertical siloes of programs and institutions:** There is limited ability of program implementation structures to work in synchrony with research organizations and vice versa. For example, there is no data interaction between IDSP and ICMR data.
- **Private sector involvement in surveillance is limited** which constitutes 75% of the outpatients and 62% of inpatients of the country.
- **Inadequate linkage of morbidity with mortality data:** This linkage provides key insights to enable the identification of contributing factors and potential solutions for better healthcare provision and prevention of future deaths.
- **Limited use of digital, social and print media in surveillance:** These media sources can be used to promote disease prevention and containment actions at community level during new infectious disease outbreaks (e.g., During COVID-19 pandemic).
- **Limited focus on non-communicable disease surveillance:** The IDSP has a division of NCD that includes surveillance which is focused on diabetes, cardiovascular disease and cancers. However, full integration of surveillance for NCD risk factors, disease and death statistics, and surveillance of injury and accidents, air pollution and its effects, etc., are yet to be included into surveillance.
- **Other issues** include **inconsistent recruitment** of human resources at State and district level in many State and **lack of in-house expertise for training in health surveillance.**

Recommendations given by the aforementioned document

In the light of these issues, the document has suggested four key pillars for health surveillance- **developing a governance ecosystem for surveillance**, **introducing data sharing mechanisms**, **using data analytics** and focusing on the idea of '**Information for action'**. To enable these pillars, following recommendations have been given by the report-

- **Streamline data sharing, analysis, dissemination and use for action:** Creating an integrated system which has its basis **Unique Health Identifier (UHID) which is the primary source of data.**
- **Align with Ayushman Bharat:** The Health and Wellness centres present a unique opportunity to strengthen community-based surveillance at the primary health care level, by capacitating front-line health personnel.
- An amalgamation of **plant, animal, and environmental surveillance in a One-Health approach.**
- **Raise the Profile of Public Health Surveillance** from a standalone activity to an integral part of the healthcare system.
- **Create/Strengthen an Independent Health Informatics Institute:** Public health informatics has an essential role in data collection, collation, analysis and transmission for public health surveillance and related actions.

- **Define the scope of surveillance into broad categories of diseases/ conditions**: Apart from Communicable/Infectious diseases the scope can be expanded to Non-Communicable Diseases, Occupational Health (issues like Silicosis) and Environmental Health Surveillance (issues like pollution).
- **Use a WHO STEPwise approach to include NCD Surveillance:** The STEPwise approach refers to an integration procedure that is inclusive of death, disease and risk factors.
- **Strengthen laboratory infrastructure, referral networks and community-based surveillance** to enable more efficient disease surveillance and associated prevention.



6.6. NON-COMMUNICABLE DISEASES

Why in News?

Global Health Estimates (GHE) released by World Health Organization estimates that all noncommunicable diseases together accounted for 74% of deaths globally in 2019.

More in News

- WHO Global Health Estimates provide a comprehensive and comparable assessment of mortality and loss of health due to diseases and injuries for all regions of the world.
- **Key findings of GHE 2019 report**
  - Non-communicable diseases make up **7 of the world's top 10 causes of death**, an increase from 4 of the 10 leading causes in 2000.
    - The new data cover the period from 2000 to 2019.
  - Heart disease now represents 16% of total deaths from all causes.
  - **Lifespans have increased over the years**, with a global average of more than 73 years (in 2019) compared to nearly 67 (in 2000).

Non-Communicable Diseases

- NCDs are **medical conditions or diseases that are not caused by infectious agents**. These are chronic diseases of long duration, and generally slow progression**.**
- **Main types of NCDs are** cardiovascular diseases (like heart attacks and stroke), cancers, chronic respiratory diseases (such as chronic obstructive pulmonary disease and asthma), Chronic neurologic disorders (Alzheimer's, dementias), diabetes etc.

Factors influencing the NCDs

- **Genetic Factor:** Evidence indicates a genetic role in major NCDs including cancer, diabetes, cardiovascular diseases, mental health and asthma.

- **Behavioural Factors**: Physical inactivity, unhealthy diets (diets low in fruit, vegetables, and whole grains, but high in salt and fat), tobacco use (smoking, secondhand smoke, and smokeless tobacco), and the harmful use of alcohol
- **Socio-economic factors:** Poverty is closely linked with NCDs.
  - Nearly 30% of NCD-related deaths in low-income countries occur under the age of 60, whereas in high-income countries the proportion is only 13%.
- **Urbanization and urban development policy:** The urban expansion and increased disposable income has encouraged mechanized transport and discourages physical activity. The nature of work available in urban areas may require less energy expenditure than rural areas.
  - Also, Children living in unfavourable social conditions, poor housing and no access to parks and recreation centres were likely to be overweight or obese.
- **Cultural norms:** Beliefs and norms amongst some social groups include preferences for foods high in animal fat which are socially acceptable but can result in obesity, hypertension etc.

Global Measures to control NCDs

- NCDs are **recognized as a major global challenge in the United Nation's 2030 Agenda for sustainable development.**
  - As part of the Agenda, Heads of State and Government committed to develop ambitious national responses, by 2030, to reduce by one-third premature mortality from NCDs through prevention and treatment (SDG target 3.4).
- WHO has developed a **Global action plan for the prevention and control of NCDs 2013-2020**, which includes nine **global targets that have the greatest impact on global NCD** mortality. These targets **address prevention and management of NCDs**.
  - **India is the first country to develop specific national targets** and indicators aimed at reducing the number of global premature deaths from NCDs by 25% by 2025.

Measures taken by India to control NCDs

- In order to prevent and control major NCDs, the **National Programme for Prevention and Control of Cancer, Diabetes, Cardiovascular Diseases and Stroke (NPCDCS) was launched in 2010** with focus on strengthening infrastructure, human resource development, health promotion, early diagnosis, management and referral.
- **Ayushman Bharat which would help to deal with NCDs** and injuries along with communicable diseases.
- **Food Safety and Standards Authority of India** (FSSAI) proposed a tax and advertisement ban on unhealthy foods.
  - **FSSAI has launched 'Eat Right India' movement** to improve public health in India and combat negative nutritional trends to fight lifestyle diseases and a **mass media campaign 'Heart Attack Rewind'** for the elimination of industrially produced trans-fat in the food supply.
- **Pradhan Mantri Ujjwala Yojana scheme** helps to reduce indoor air pollution which is also responsible for a significant number of acute respiratory illnesses.

Some programs to control NCDs

- National Programe For Control of Blindness & Visual Impairment (NPCBVI)
- National Mental Health Programme (NMHP)
- National Programme for healthcare of Elderly (NPHCE)
- National Programme for the Prevention & Control of Deafness (NPPCD)
- National Tobacco Control Programme (NTCP)
- National Oral Health Programme (NOHP)
- National Iodine Deficiency Disorders Control Programme

Way forward

- **Monitoring progress and trends of NCDs** and their risk is important for guiding policy and priorities.
- **Investing in better management of NCDs is critical**. Management of NCDs includes detecting, screening and treating these diseases and providing access to palliative care for people in need.
- High impact essential NCD interventions can be delivered through a **primary health care approach to strengthen early detection and timely treatment**. If provided early to patients, they can reduce the need for more expensive treatment.
- Countries with adequate health insurance coverage are likely to provide **universal access to essential NCD interventions.**

- A **comprehensive approach is needed** requiring all sectors including health, finance, transport, education, agriculture, planning and others, to collaborate to reduce the risks associated with NCDs and promote interventions to prevent and control them.

6.7. MRNA VACCINE

Why in news?

Recently, India's first indigenous mRNA vaccine got Drugs Controller General of India (DCGI) nod for human trial

About mRNA vaccine

- mRNA vaccines are a **new type of vaccine to protect against infectious diseases.**
- Unlike a normal vaccine, RNA vaccines **work by introducing an mRNA seq uence (the molecule which tells cells what to build) which is coded for a disease specific antigen**. Once produced within the body, the antigen is recognised by the immune system, preparing it to fight the real thing.
    - **messenger RNAs (mRNA) are one of the types of RNA** that is transcribed from DNA and travels into a cell's cytoplasm where it's translated by ribosomes into proteins.
- **mRNA vaccines teach our cells how to make a protein**—or even just a piece of a protein—that triggers an immune response inside our bodies. That immune response, which produces antibodies, is what protects us from getting infected if the real virus enters our bodies.
- **mRNA vaccines can be delivered using a number of methods,** via needle-syringe injections or needle-free into the skin, injection into the blood, muscle, lymph node or directly into organs; or via a nasal spray.
- There are **different types of mRNA vaccine** like Non-replicating mRNA, In vivo self-replicating mRNA, In vitro dendritic cell non-replicating mRNA vaccine etc.
- **Benefits of RNA Vaccines**
    - **Safe and non-infectious:** RNA vaccines are not made with pathogen particles or inactivated pathogen, so are non-infectious. RNA does not integrate itself into the host genome and interact with our DNA. The RNA strand in the vaccine is degraded once the protein is made.
    - **Efficacy:** Clinical trials found that mRNA vaccines can generate a stronger type of immunity as compared to traditional vaccines, and are well-tolerated by healthy individuals with few side effects.
    - **Production:** Vaccines can be produced more rapidly in the laboratory in a process that can be standardised, which improves responsiveness to emerging outbreaks.

Deoxyribonucleic Acid (DNA) & Ribonucleic Acid (RNA)

- They are two main **types of nucleic acids** responsible for the storage and reading of genetic information that underpins all life.
- **Three types of RNA**
    - **Messenger RNA (mRNA**) copies portions of genetic code, a process called transcription, and transports these copies to ribosomes, which are the cellular factories that facilitate the production of proteins from this code.
    - **Transfer RNA** (**tRNA**) is responsible for bringing amino acids, basic protein building blocks, to these protein factories, in response to the coded instructions introduced by the mRNA. This protein-building process is called translation.
    - **Ribosomal RNA (rRNA**) is a component of the ribosome factory itself without which protein production would not occur.

Ribonucleic Acid (RNA)	Deoxyribonucleic Acid (DNA)
RNA **converts the genetic information contained within DNA** to a format used to build proteins, and then moves it to ribosomal protein factories.	DNA **replicates and stores genetic information**. It is a blueprint for all genetic information contained within an organism
RNA only has one strand, but like DNA, is made up of nucleotides.	**DNA consists of two strands**, arranged in a double helix.
RNA contains ribose sugar molecules, without the hydroxyl modifications of deoxyribose.	**The sugar in DNA is deoxyribose**, which contains one less hydroxyl group than RNA's ribose.
RNA shares Adenine ('A'), Guanine ('G') and Cytosine ('C') with DNA, but contains Uracil ('U') rather than Thymine.	The bases in DNA are Adenine ('A'), Thymine ('T'), Guanine ('G') and Cytosine ('C').
RNA forms in the nucleolus, and then moves to specialised regions of the cytoplasm depending on the type of RNA formed.	**DNA is found in the nucleus**, with a small amount of DNA also present in mitochondria.
RNA is more resistant to damage from UV light than DNA.	DNA is vulnerable to damage by ultraviolet light.

Conventional Vaccines	Gene based Vaccines
• Traditional or conventional vaccines include **live attenuated vaccines, inactivated pathogens** (also known as "killed vaccines"), viral-vectored vaccines, and other types known as subunit, toxoid and conjugate vaccines. • It **exposes the body to proteins made by a virus or bacteria**, are often made by using weakened or inactive versions of that virus or bacteria. • Traditional vaccines **require refrigeration.**	• They contain two types of Vaccine: **DNA and RNA vaccines.** • Instead of injecting a weakened form of a virus or bacteria into the body, DNA and RNA vaccines **use part of the virus' own genes to stimulate an immune response**. In other words, they carry the genetic instructions for the host's cells to make antigens • Both DNA and RNA vaccines **deliver the message to the cell to create the desired protein** so the immune system creates a response against this protein. • They **can be stored at room temperature** without losing their activity and more stable than conventional vaccines in warm climates "if kept dry and/or sterile at pH8'.

6.8. FOOD ADULTERATION

Why in news?

Recently, Honey sold by several major brands in India were found adulterated with sugar syrup.

More about news

- It was found that **golden syrup, invert sugar syrup and rice syrup are used for adulteration in honey**, which are being procured from China and also manufactured in India.
- Such adulteration in honey is traced by tests like **Nuclear Magnetic Resonance Spectroscopy (NMR), Trace Marker for Rice (TMR), Specific Marker for Rice syrup test (SMR), C3-C4 and oligosaccharides sugar tests.**
- Still such sugar syrups used for adulteration of honey **pass all the adulteration tests** listed in the 2020 standards by Food Safety Standards Authority of India.

About food adulteration

- Food adulteration is an act of **adding or mixing of poor quality, inferior, harmful, substandard, useless** or unnecessary substances to food.
- Food items, medicines, vegetables, paste, creams, products of famous brands etc. are adulterated.
- **Food is declared adulterated if:**
  - A substance is added which depreciates or injuriously affects it.
  - Cheaper or inferior substances are substituted wholly or in part.
  - Any valuable or necessary constituent has been wholly or in part abstracted.
  - It is an imitation.
  - It is colored or otherwise treated, to improve its appearance or if it contains any added substance injurious to health.
  - For whatever reasons its quality is below the Standard
- Food adulteration can be **intentional to increase profit and to meet excess demands**, incidental due to negligence or lack of proper facilities.

COMMON FOOD ADULTERATION

Food Stuffs	Adulturants
Cereal	Soil, pieces of stone, infested cereal
Pulses	Khesari dal
Bengal gram Flour	Starch powder, maize flour
Ghee	Vegetable ghee, Animal fat, sweet potato
Milk	Water
Tea	Used tea leaves
Pepper	Papaya seeds
Clove	Clove after extraction
Dhaneya	Saw dust, horse dung
Red Chelli Powder	Saw dust, Powdered Red Brick
Honey	Sugar, Water
Turmeric	Yellow Soil

What are the impacts of food adulteration?

- **Production and cost:** Adulteration can directly reduce production of raw food items, which also increases the production cost and less market price for raw food.
- **Livelihood:** With falling food prices and reduced production of raw food due to food adulteration, threatens the livelihood of food producers. Eg. Adulteration in honey affects the beekeepers due to less demand of raw honey.

- **Nutritional value:** Adulterated food is of low quality and has no or very fewer nutritional values, which can create problem of malnutrition. Eg. Milk with water have less calcium and protein content.
- **Human health:** Food adulteration increases the impurity in the food items thus making them imperfect to consume, which can cause various diseases chronic diseases like Liver Disorder, Diarrhea, Stomach Disorder, Cancer, Heart Diseases and Food Poisoning etc.
- **Ecology:** Food adulteration can indirectly endanger future flora and fauna, because reduced production of food crops hampers the interdependence among such flora and fauna. Eg. Honeybees are important pollinators and if raw honey production is reduced then certain plant species gets affected in their pollination.

Challenges of food adulterations

- **Lack of technology:** Inadequate information and technology to detect fake and adulterated products is also concern as India has to send honey samples to laboratory in Germany.
- **Poor implementation of law and inspection:** The recent reports of honey adulteration show poor implementation of existing laws.
- **Lack of awareness:** Lack of public awareness about food adulteration is major concern in local markets due to which tracing of adulteration becomes a complex task.

Regulations and steps taken to check food adulteration in India

- **Food Safety and Standards Authority of India (FSSAI)**
  - **It imposes a penalty** for the import, manufacture, storage, sale or distribution of any injurious and non injurious adulterants **under Food Safety and Standards Act, 2006**.
  - Food Safety and Standards Authority of India (FSSAI) has released a **manual 'Detect Adulteration with Rapid Test (DART)' for quick detection of adulterants** in everyday food items.
  - FSSAI released **directives on import of golden syrup, invert sugar syrup and rice syrup** used for adulteration in honey.
- **Consumer Protection Act, 2019**: It provides for a three tier quasi-judicial machinery at national, state and district level to provide simple and speedy redressal to consumer disputes.
- **Codex Alimentarius commission**: It adopts international food standards, guidelines and codes of practice which contribute to the safety, quality and fairness of this international food trade.
- **Harmonised system (HS) code**: It describes the type of good that is shipped, so certain items that are used for adulteration can be scrutinized well during custom clearance.

Further ways to check food adulteration

- **Surveillance and monitoring:** There should be proper surveillance and monitoring of the activities with periodical records of hazards regarding food adulteration.
- **Training:** Need of periodical training programmes for Senior Officer/Inspector/Analysts for food safety and adulteration.
- **Consumer awareness**: Awareness programmes in respect of food adulteration should be organized by holding exhibitions/seminars/training programmes and publishing pamphlets.
- **Use of technology:** New emerging technologies such as the blockchain further help to check food adulteration, increasing accountability and thus providing to suppliers, regulators and consumers higher trust on food integrity.
  - Eg. **Creating secure online database** and **displaying a smartphone-readable code** that would link to record on the blockchain and **consumers could scan this code** to assure authenticity and purity of food material.

6.9. SRINIVASA RAMANUJAN

Why in News?

2020 **marks 100th death anniversary** of Srinivasa Ramanujan.

About Ramanujan

- Srinivasa Ramanujan was born on **December 22, 1887** in the town of **Erode, Tamil Nadu**.
  - His **birth anniversary on 22 December is celebrated as National Mathematics Day** to honour the achievements of the legendary mathematician.
- He received his degree from Cambridge in 1916 and went on to **publish several brilliant papers on his subject with the help of his professor GH Hardy of Trinity College, Cambridge University**.
- Ramanujan was elected to the **London Mathematical Society in 1917** and was elected a **Fellow of the Royal Society for his excellent work on Elliptic Functions and the theory of numbers**.

- He was also **the first Indian to be elected a Fellow of the Trinity College.**
- Ramanujan **died at the young age of 32** owing to deteriorating health on April 26, 1920.
- In 1976 George E. Andrews found Ramanujan's notes written during his last few years in England. Prof. Andrews, along with Bruce C. Berndt went on to compile the contents of this lost notebook into a **five-volume book entitled Ramanujan's Lost Notebook.**
- Robert Kanigel also wrote a book about him called '**The Man Who Knew Infinity**' and a **movie of the same name** premiered in **2015**.

Ramanujan's Work

- Ramanujan made priceless contributions to several mathematical concepts like **infinite series, continued fractions, number theory and mathematical analysis**. He also made notable contributions like the **hypergeometric series, the Riemann series, the elliptic integrals, the theory of divergent series, and the functional equations of the zeta function.**
- He introduced a summation in **1918**, now known as the **Ramanujan sum** which is currently used in **signal processing, i.e., analysing, modifying and synthesising periodically repetitive signals such as speech, music, DNA sequences etc.**
- In his famous **letter to Hardy in 1919**, he introduced the **"mock theta functions"** which are **used today in 'String Theory' in theoretical physics.**
- He is also credited for his work in **'Modular functions'** which are used to **reveal properties of Black Holes by astrophysicists**.
- He discovered **Hardy Ramanujan number i.e. 1729** which is the smallest number which can be expressed as the sum of two cubes in two different ways- $1729 = 1^3 + 12^3 = 9^3 + 10^3$.

7. SOCIAL ISSUES

7.1. HUMAN DEVELOPMENT REPORT 2020

Why in News?

The 2020 Human Development Report titled "The next frontier: **Human Development and the Anthropocene**" was released.

About the Human Development Report (HDR)

- HDR is released by **United Nations Development Programme (UNDP)** and was released for the first time in the year 1990.
- HDR Office releases five composite indices each year:
  - **Human Development Index (HDI)**,
  - **Inequality-Adjusted Human Development Index (IHDI)**,
  - **Gender Development Index (GDI)**,
  - **Gender Inequality Index (GII)**,
  - **Multidimensional Poverty Index (MPI).**
- HDI is released as part of first HDR. This measures achievement in the basic dimensions of human development across countries. The **HDI ranks countries on the basis of three parameter:**
  - Life Expectancy
  - Education
  - Gross National Income (GNI) per capita
- HDI was created to **emphasize that people and their capabilities should be the ultimate criteria for assessing the development of a country,** not economic growth alone.
  - HDI can also be **used to question national policy choices**, asking how two countries with the same level of GNI per capita can end up with different human development outcomes.

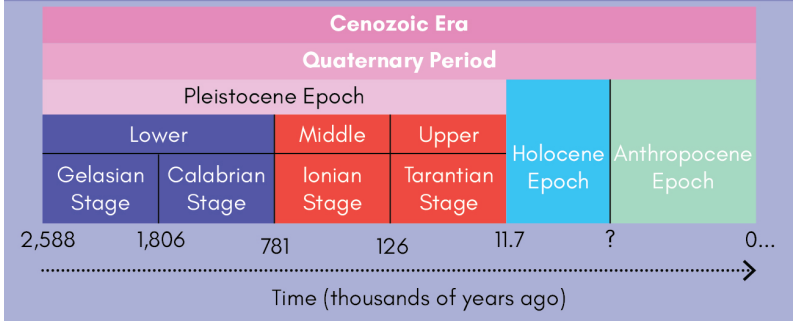
HDR 2020 findings with respect to India

- India dropped two ranks in HDI this year, standing at **131 out of 189 countries**. Norway topped the index, followed by Ireland.
- India's **gross national income per capita fell to $6,681 in 2019** from $6,829 in 2018 on purchasing power parity (PPP) basis.
- **Life expectancy** at birth in 2019 was 69.7 years.
- Indigenous children in Cambodia, India and Thailand **show more malnutrition-related issues such as stunting and wasting.**
- In 2019, India **ranked fifth for installed solar capacity.**
- Evidence from Colombia to India indicates that **financial security and ownership of land improve women's security** and reduce the risk of gender-based violence, clearly indicating that owning land can empower women.
- However, if the **Index were adjusted to assess the planetary pressures** caused by each nation's development, India **would move up eight places in the ranking**.

About Anthropocene

- **Anthropocene is not yet formally established as a new geological epoch,** but several geologists and Earth system scientists propose its beginning to the mid-20th century.
  - Scientists now agree that human activity, rather than any natural progress, is the primary cause of the accelerated global warming.
  - Agriculture, urbanisation, deforestation and pollution have caused extraordinary changes on Earth.
- **Humans are about to leave the 12,000-year-old Holocene Age** and enter a new age named after us — the Anthropocene.
  - **Holocene has seen major change on our planet**, including the rapid population growth of our species and the development of modern civilisations.
  - In the last 11,500 years, humans have built cities and achieved colossal technological advancements.

HOW THE ANTHROPOCENE WOULD FIT IN THE GEOLOGICAL TIME SCALE CORRESPONDING TO THE QUATERNARY PERIOD

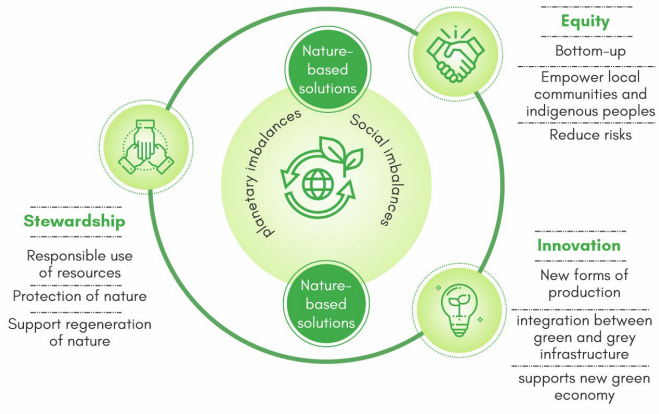


What is the relationship between Anthropocene risks and human development?

- Report argues that people and p**lanet are entering an entirely new geological epoch, the Anthropocene or the Age of Humans**, in which humans are a dominant force shaping the future of the planet.
  - Pressures that humans exert on the planet have become so great that scientists are considering whether the Earth has entered Anthropocene.
- Core concept that the term Anthropocene is trying to capture is that **human activity is having a dominating presence on multiple aspects of the natural world** and the functioning of the Earth system.
- **Recent Manifestation of pressures leading to Anthropocene age**
  - **Covid-19 pandemic has shown how the effects of large-scale shocks** emerge out of ecological systems under pressure from social activities. These shocks are affecting the main components of human development with unprecedented magnitude, synchronicity and global reach.
    - ✓ COVID-19 is rooted ultimately in unbalanced interactions between people and the planet.
  - **Climate change is weakening economic progress** and increasing inequality, with a greater burden for developing countries.
  - **Increasing hunger** as after two decades of progress the number of people affected by hunger (undernourished people) has been increasing since its low of 628 million in 2014.
  - Effects of **natural hazards have been increasing** since the turn of the millennium.

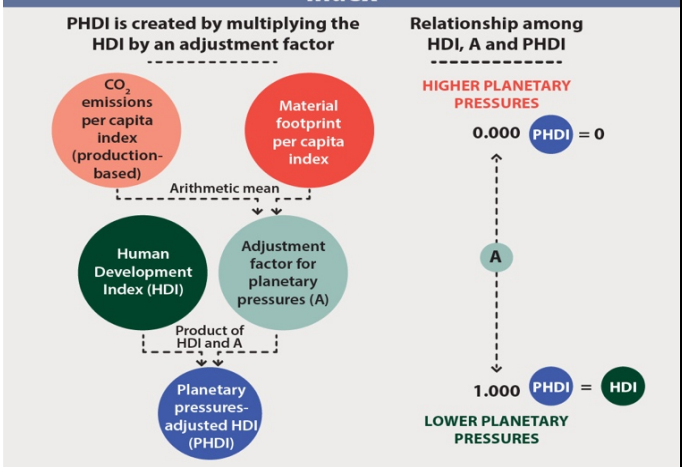
What are the measures required to ease planetary pressures?

Transformational changes	• **Equity** which can rebalance power asymmetries so that everyone can benefit from and contribute to easing planetary pressures. • **Innovation**—which gave humans many of the tools to influence Earth systems—can be harnessed to ease planetary pressures. • **Instilling a sense of stewardship of nature** can empower people to rethink values, reshape social norms and steer collective decisions in ways that ease planetary pressures.
Social Norms	• Social norms can **inform choices on transportation, production and consumption** can evolve towards norms that reduce planetary imbalances. • They are **powerful determinants of people's choices** and can change faster than commonly assumed. And new forms of information sharing can support social processes of ethical reasoning.
Incentives for Change	• Incentives determine in part **what consumers choose to buy, what firms produce and trade, where investors put their money** and how governments cooperate. • Incentives help **explain current patterns of consumption, production, investment** and other choices that lead to the planetary pressures. • Incentives could **evolve ways that would ease planetary pressures**.

Nature-based solutions	• These **can protect, sustainably manage and restore ecosystems,** simultaneously promoting wellbeing and mitigating biosphere integrity loss.
	• Even though they are bottom-up and context-specific, they **can contribute to transformational scale at higher levels for two reasons.**
	  ○ First, many local and community decisions add up to substantial global impact.
	  ○ Second, planetary and social and economic systems are interconnected, and local decisions can have impacts elsewhere and at multiple scales.
	Nature-based solutions and the potential for a virtuous cycle between people and planet
	 

Developing New tool for Measuring human development and Anthropocene	• **By adjusting the HDI to include two more elements:** a country's carbon dioxide emissions and its material footprint. • **The adjustment corresponds to multiplying the HDI by an adjustment factor, creating the PHDI** (refer diagram). ○ If a country puts no pressure on the planet, its PHDI and HDI would be equal, but the PHDI falls below the HDI as pressure rises.
Reimagining the human development journey (where do we want to go?)	• **Decoupling economic growth from emissions and material use** is key to easing pressures on the planet while improving living standards. • It calls on **all countries to improve wellbeing equitably** while easing pressures on the planet. • **Reducing pressure on the biosphere** by protecting biodiversity and restoring landscapes and seascapes

Visual representation of the Planetary pressures- adjusted Human Development Index



7.2. FOOD SECURITY

Why in News?

Recently, Global Hunger Index 2020 report ranked India 94th among 107 countries that put a focus on issue of food security in India.

About Food Security

- Food security exists **when all people, at all times, have physical and economic access to sufficient, safe and nutritious food** that meets their dietary needs and food preferences to ensure an active and healthy life.
- Food insecurity can lead to **lower cognitive ability, diminished work performance and substantial productivity losses.**
- India **produces more than the estimated amount required to feed the entire population** (in 2018-19, India produced 283.37 million tons of food grains).
  - The country **ranks first in millets and second in rice and wheat production** in the world.
  - India has moved away **from dependence on food aid to become a net food exporter**.
- However, as per UN- Food and Agriculture Organization report, 194 million people go hungry every day in India, comprising about 23% of the world's undernourished population.

Manifestation of food security issue in India

In rural and tribal areas	• **Lack of improvement in agricultural productivity** owing to inadequate resources and markets needed to obtain agricultural stability. • For the tribal communities, **habitation in remote difficult terrains and practice of subsistence farming**.
In Urban population	• **Large proportion of informal workforce** resulting in unplanned growth of slums and around 50 % of the urban slums are not notified and thus are deprived of the government schemes. • **Labour class dependence on daily wages** which tends to be variable on different days of the month.
In children and mothers	• Children are food insecure because of factors attributed to **overpopulation, poverty, lack of education and gender inequality.** • **Lack of adequate knowledge amongst mothers** regarding nutrition, breast-feeding and parenting is another area of concern. • **Issue of wage differentials as** females are at a more disadvantaged position compared to men in the rural labour market.
Faulty Food Distribution and poor	• **Inaccurate classification,** under Targeted Public Distribution System (TPDS), as above poverty line (APL) and below poverty line (BPL) categories had resulted in a big decline in the off take of food grains.

storage system	• **Low quality of grains and the poor service at PDS shops** has further added to the problem • **Almost 62,000 tons of food grains were damaged in Food Corporation of India warehouses** between 2011 and 2017.
Unmonitored nutrition programmes	• Although a number of programmes with improving nutrition as their main component are planned but these are not properly implemented. o For instance, a number of states are not providing quality food under the Mid Day Meal Scheme.
Lack of intersectoral coordination	• Lack of coherent food and nutrition policies along with the absence of intersectoral coordination between various ministries of government such as Ministry of Women and Child Health, Ministry of Health and Family Welfare, Ministry of Agriculture, Ministry of Finance etc have added to the problem.
Other issues	• Low GDP per capita, water scarcity, small landholdings, inadequate irrigation, low public expenditure on R&D and protein quality etc.

How can food security issue be resolved in India?

- **Implementing measures to improve agricultural productivity and food storage**
  - **Facilitate increased use of irrigation** and newer farming techniques for cultivation like availability of better quality seeds, fertilizers and credits at lower interest rates.
  - **Focus on rationale distribution of cultivable land**, improving the size of the farms and providing security to the tenant cultivators.
  - **Adopt successful strategies for food storage** from other countries. For example, China has an excellent system of grain storage education and research.
- **Ensuring food availability and accessibility to below poverty line (BPL) candidates**
  - This can be done by more accurate targeting of the BPL population so that they get food at substantially low price.
  - Restrictions on food grains regarding inter-State movement, stocking, exports and trade financing should be removed.
  - Public Distribution System must be made transparent and reliable.
- **Improving purchasing power through employment generating schemes**
  - Government should come up with more holistic schemes like Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA).
  - Poverty alleviation and employment generation schemes need to be re-oriented and up scaled to improve purchasing power of the lower socio-economic segment of the population.
    - Focus needs to be shifted to the workers in the informal sector by providing decent wages and healthy working conditions.
    - In the urban areas, providing assistance to the small-scale enterprises will lead to expansion of employment opportunities.
- **Crop diversification, establishing food grain banks and promoting household gardening**
  - Higher profitability and the stability in production highlight the importance of crop diversification, e.g., legumes alternative with rice and wheat.
  - Creation of decentralized food grain banks in each village or block of the district will improve the delivery of food grains and eliminate corruption.
  - One of the ways to ensure direct access to good quality food that can be easily grown and prepared could be the concept of home gardening.

Initiatives taken in India

- Government launched a number of programmes to remove bottlenecks for greater agricultural productivity**,** especially in rain-fed areas. They include:
  - **National Food Security Mission, Rashtriya Krishi Vikas Yojana (RKVY), the Integrated Schemes on Oilseeds, Pulses, Palm oil and Maize (ISOPOM), Pradhan Mantri Fasal Bima Yojana, the e-marketplace.**
  - **Massive irrigation and soil and water harvesting programme** to increase the country's gross irrigated area from 90 million hectares to 103 million hectares by 2017.
- Government has also taken significant steps **to combat under- and malnutrition over the past two decades,** such as through the introduction of mid-day meals at schools, anganwadi systems to provide rations to pregnant and lactating mothers, and subsidised grain for those living below the poverty line through a public distribution system.
- **National Food Security Act (NFSA), 2013,** aims to ensure food and nutrition security for the most vulnerable through its associated schemes and programmes, making access to food a legal right.

- **Community awareness through information, education and communication (IEC) activities and social marketing:** Need based IEC and training materials should be developed incorporating health and nutrition education into formal school curriculum for girls and adult literacy programmes, Social marketing of iodized salt, iron and folic acid and other low-cost vitamin/mineral preparations will prove to be beneficial.
- **Monitoring and timely evaluation of nutritional programmes**
  - A complete community-based approach needs to be adopted. Annual surveys and rapid assessments surveys could be some of the ways through which program outcomes can be measured.
  - Evaluations must be timely performed and should provide relevant information regarding the effectiveness of interventions.
  - Use of information technology to improve program monitoring can be thought of too.

7.3. STATE OF THE EDUCATION REPORT FOR INDIA 2020

Why in News?

State of Education Report 2020: Technical and Vocational Education and Training (TVET) was released by UNESCO.

About the report

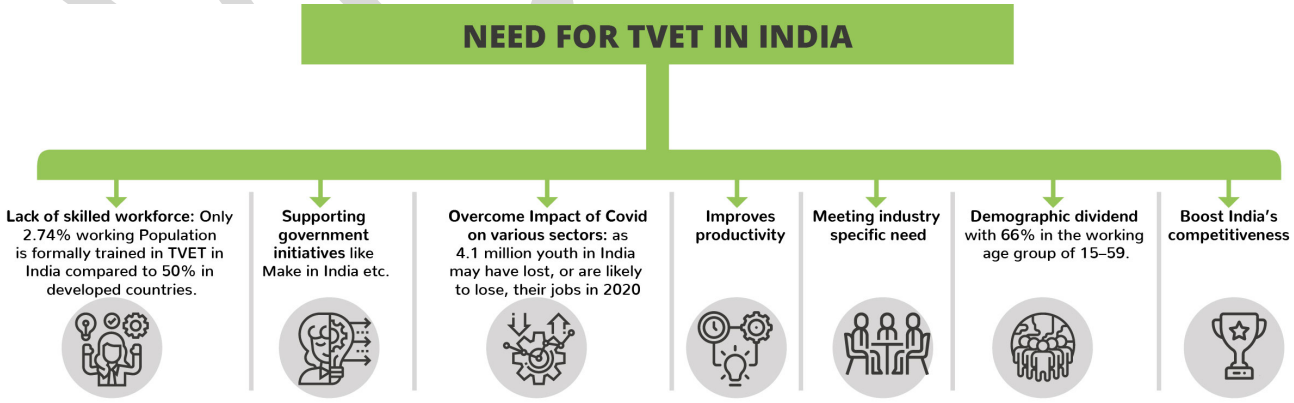
- Report **focuses on TVET and aims to support India** which has already announced skills development as a key national priority under the Skill India Mission.
- It **focuses on highlighting progress and achievements,** describing the intense on-going activity around TVET provision, and **outlining the directions for future growth** through the implementation of the new NEP 2020.
- Report highlights the **Vision for quality TVET** which is also included in India's new National Education Policy 2020 requiring all educational institutions to integrate vocational education into their offerings.
- **Current status of TVET provision**
  - More than 1,000 colleges are presently running the special undergraduate Bachelor of Vocation.
  - Around 10,158 state-government-run schools that offer vocational education to over 1.2 million students.

About TVET

- UNESCO defines TVET 'as **comprising education, training and skills development** relating to a wide range of occupational fields, production, services and livelihoods.
- As per Ministry of Education, **Technical education generally pertains to higher education** while school education up to secondary level is a part of vocational education.

TVET provisions in India

- **National Skill Development Corporation (NSDC),** set up in 2008, is main framework for TVET in India.
- **National Policy of Skill Development and Entrepreneurship (NPSDE) released in 2015** stated goal of creating a skilled workforce of 110 million by 2022.
- **National Skills Qualifications Framework (NSQF)** was adopted in 2013**.**
- **Ministry of Skill Development and Entrepreneurship (MSDE),** was notified in November 2014 to speed up efforts at TVET provision. The NSDC was brought under it in 2015.
- **Industrial Training Institutes (ITIs)** and polytechnics offer Longer-term training courses.
- **National Education Policy 2020** envisions that all schools and colleges will integrate vocational education into their offerings.



Challenges faced in scaling TVET in India

- **Societal attitude:** Among key stakeholders, such as students and parents, there is perception that TVET is inferior to regular school and college education, and that it is suitable only for those youth who are unable to cope with mainstream education.

- **Lack of information:** TVET is not benefiting youth as they are mobilized for these courses but not given adequate information and exposure to the job role and occupation they are about to be trained for.
- **Lack of data on actual skill needs:** In order to improve the employability of youth in rural areas, skills gap analysis needs to be conducted at a much more granular manner, down to the Panchayat level.
- **Poor service conditions for trainers:** A career as a trainer/ assessor is unattractive today because of issues like relatively low wages, irregular salary payments, a lack of social security and other benefits, and poor career prospects.
- **Digital divide:** That has been brought to the fore by the pandemic is a serious challenge to the spread of digital TVET in India.
- **Low women participation:** The participation of women in the labour force is very low, just under 26.5% and women also face significant income inequality.

Steps that can be taken to achieve vision of TVET

- **Focus on beneficiaries:** Place learners and their aspirations at the centre of vocational education and training programmes. Vocational aptitude tests coupled with career counselling and guidance need to be made available to all learners.
- **Conducive environment:** Create an appropriate ecosystem for teachers, trainers and assessors such as induction training, terms of recruitment and deployment, working conditions and career prospects etc.
- **Making TVET inclusive:** Ensure inclusive access to TVET for women, persons with disabilities, and other disadvantaged learners.
- **Align TVET with 2030 Agenda for Sustainable Development:** by creation of new and relevant TVET programmes in many areas of strategic importance to India such as water management and sanitation, clean energy, climate change and sustainability, among many others.

7.4. LEARNING POVERTY

Why in News?

Recently, World Bank released a report titled "Realizing the Future of Learning: From learning poverty to learning for everyone, everywhere".

What is Learning Poverty?

- Learning Poverty is defined as the **percentage of 10-year-olds who cannot read and understand a simple story.**
- As per World Bank estimates, more than half (53%) of 10-year-old children in low- and middle-income countries either had failed to learn to read with comprehension or were out of school entirely.
- To support efforts to improve foundational learning, World Bank has also launched a global target: to **cut the Learning Poverty rate —at least in half by 2030.**

How COVID-19 can act as potential catalyst for learning transformation?

- **COVID 19 highlighted the crucial role of schools in education service delivery,** as well as the critical role it plays in equalizing learning opportunities and skill acquisition, in providing nutrition and other non-education services, and in making labor markets and societies function better.
- **It reveals the crucial role that parents and caregivers play** in children's learning and the importance of the home learning environment in complementing learning at school
- **Pandemic has shown that successful systems focus on equity** and has also shown that resiliency and equity are inextricably linked.
  - More than 135 countries implemented remote learning strategies, but the differences in depth and effectiveness along the income scales are extremely large.
- **Need to close the digital divides** by investing in connectivity software, devices, and teacher professional development.

How the Pandemic is exacerbating learning Poverty?

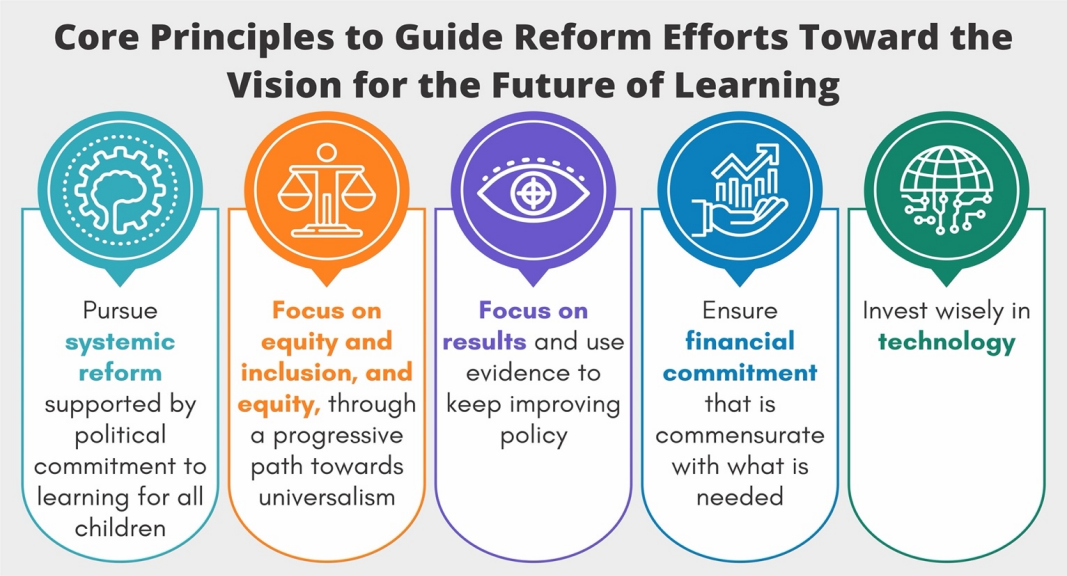
- In the most pessimistic scenario, COVID-related school closures could increase the learning poverty rate in the low- and middle-income countries **by 10 percentage points, from 53% to 63%.**
  - This 10-percentage-point increase in learning poverty implies **that an additional 72 million primary-school-age children could fall into learning poverty**, out of a population of 720 million children of primary-school age.
- Pandemic has brought twin shocks to education—**massive school closures and an ensuing deep economic recession**—that threaten to exacerbate the learning crisis, especially for the poor.

- At the peak of school closures 1.7 billion children and youth had their classes interrupted, and even 7 months after the onset of the pandemic almost 600 million students still had not returned to school.

- **It further exposed the weaknesses of education systems** around the world and underlined the urgency to act.
- **Learning losses and other negative impacts on education outcomes** as a consequence of the pandemic will most likely be large.

What are the key policy actions for various stakeholders in improving learning?

Learners	• **Increase provision of high-quality early childhood development** services by making holistic, cross-sectoral investments in child development from the earliest days of life. • **Remove demand-side barriers** to getting all children into school by eliminating financial and material barriers. • **Create conditions for learning** to occur with joy, purpose, and rigor to keep children in school by emphasizing foundational learning before expecting learners to progress to higher levels of schooling. • **Bolster the role of the family and communities** in learning and improve learning environments outside of school, particularly at home.
Teachers	• **Reshape the teaching profession** as a meritocratic, socially valued career and hold teachers to high professional standards. • **Expand engagement in pre-service training** (at teacher training institutes, normal schools, and universities), with an emphasis on the practicum component. • **Invest in in-service teacher professional development** that is on-going, tailored, focused, and practical. • **Provide teachers with tools and techniques** for effective teaching.
Learning resources	• **Ensure that the curriculum is effective** (adjusted to the level of the students and the capacity of the system) and provide detailed guidance to teachers through highly structured lesson plans. • **Use assessments judiciously**. • **Ensuring high-quality, age-appropriate books** for children. • Ensure that learners, teachers, and school leaders can **access and effectively harness technology to achieve learning objectives.**
Schools	• **Ensure that all children and youth have a space to learn** that meets minimum infrastructure standards for safety and inclusion. • **Create conditions to prevent and address bullying** and any form of discrimination and violence in and around the school. • **Make schools inclusive** so that all learners (including those with disabilities) feel welcome, have access, and can participate in quality learning experiences. • **Teach students first in the language they use** and understand.
System Management	• **Strengthen human resource function** of education systems to professionalize school leadership. • **Provide tools to school leaders** to manage with autonomy**.** • **Invest in system leadership and management capacity** to support schools.



7.5. MALNUTRITION AMONG CHILDREN

Why in news?

The **Ministry of Health and Family Welfare** has released data fact sheets for 22 States and Union Territories (UTs) based on the findings of Phase I of the **National Family Health Survey-5** (NFHS-5).

Key Finding of NFHS-5

- Several concerning trends were observed across the 22 States/Union Territories in NFHS-5 compared to NFHS-4 conducted in 2015-16-
  - Prevalence of **anaemia in childhood increased** in 18 States/Union Territories.
  - Prevalence of **severe acute malnutrition increased** in 16 States/UTs.
  - **Increase in percentage of children under five who are underweight** in 16 States/UTs.
  - **Increase in childhood stunting** (low height for age) in 13 of the 22 States/UTs.
  - Increase in the prevalence of other indicators such as adult malnutrition measured by those having a Body Mass Index of less than 18.5kg/m2 in many States/ UTs.
  - Most States/UTs also saw an increase in overweight/obesity prevalence among children and adults.
- Some improvements were also seen in determinants of malnutrition such as access to sanitation, clean cooking fuels and women's status, for example – a reduction in spousal violence and greater access of women to bank accounts.

Malnutrition

- Malnutrition is a term that refers to any deficiency, excess or imbalance in somebody's intake of energy and/or nutrients. It can either be due to inadequate intake or an excess intake of calories.
- The term malnutrition covers two broad groups of conditions namely-
- **Undernutrition**- This includes stunting (low height for age), wasting (low weight for height), underweight (low weight for age) and micronutrient deficiencies or insufficiencies (a lack of important vitamins and minerals)
- **Overnutrition**- This includes overweight, obesity and diet-related non-communicable diseases (such as heart disease, stroke, diabetes and cancer).

Implications of improper nutrition in Children

- **Inter-generational effects**: The inter-generational cycle of nutritional deficiencies is transmitted from mothers to children and greatly impacts future generations limiting their social mobility.
- **Increased vulnerability to diseases**: Undernutrition increases the risk of infectious diseases like diarrhoea, measles, malaria and pneumonia.
- **Developmental delays**: Chronic malnutrition can impair a young child's physical and mental development. Cognitive impairment resulting from malnutrition may result in diminished productivity in academic performance.
- **Low productivity later in life**: As per estimates of World Bank, childhood stunting may result in a loss of height among adults by 1%, which may further lead to a reduction in individuals economic productivity by 1.4%
- **Poor maternity health**: Undernutrition puts women at a greater risk of pregnancy-related complications and death (obstructed labour and hemorrhage).
- **Barrier to socio-economic development**: Widespread child undernutrition greatly impedes a country's socio-economic development and potential to reduce poverty

Reasons for rise in Malnutrition

- **Reduced household incomes**: In recent years slowdown in economic growth, stagnant rural wages and high levels of unemployment have affected household incomes and limited their ability to invest in nutritional food.
- **Underfunding:** For instance, in a response to a parliamentary question in December 2019, the Minister for Women and Child Development presented data which showed that only about 32.5% of the funds released for Poshan Abhiyaan from 2017-18 onwards had been utilised.
- **Pandemic and lockdown-induced economic distress:** A recent 'Hunger Watch' survey highlighted massive levels of food insecurity and decline in food consumption, especially among the poor and vulnerable households during and after lockdown periods.
- **Poor implementation of schemes**: Anganwadi centres were established under ICDS to provide basic healthcare education and services across the country. Many workers are unable to play an effective role in attending to the problem of malnutrition because of low wages and inadequate training.

- **Other factors-** lack of access to safe water, sanitation and hygiene, ignorance and lack of education, social and cultural factors like child marriage, caste barriers etc.

Way Forward

- **Developing an employment-centred growth strategy**: which includes universal provision of basic services for education, health, food and social security.
- **Strengthening present initiatives**: Direct interventions such as supplementary nutrition (of good quality including eggs, fruits, etc.), growth monitoring, and behaviour change communication through the ICDS and school meals must be strengthened and given more resources.
- **Need of Data initiative:** A modern data initiative leveraging and combining aspects of the NFHS, the National Nutrition Monitoring Bureau and the National Sample Surveys that collected data on detailed household-level consumption and expenditure on various food items should be considered.
- **Food fortification**: A proposed policy would provide for adding essential vitamins and minerals (iron, folic acid, vitamin, iodine) to food items (rice, wheat flour, salt, edible oil, milk) sold in markets. The **Centrally Sponsored Pilot Scheme on Fortification of Rice & its distribution through Public Distribution System** is a step in the right direction.
- **Improve dietary pattern** by promoting production and increasing per capita availability of nutritionally rich food.
- **Targeted approach:** The government agencies in India need to adopt a comprehensive and coordinated multi-sectoral approach which is formulated by taking into account the varied nature of local-level challenges.

Steps taken by Indian Government for nutritional well being

- **POSHAN Abhiyaan or National Nutrition Mission**: It is Government of India's flagship programme to improve nutritional outcomes for children, pregnant women and lactating mothers.
  - Under it the **Anemia Mukt Bharat** (AMB) Strategy was launched in 2018 with efforts to improve Iron and Folic Acid (IFA) supplementation, behaviour change and anaemia-related care and treatment across six target groups including pregnant women, lactating mothers, and children.
- **Integrated Child Development Scheme (ICDS)**: It aims to improve the nutritional and health status of children in the age-group 0-6 years and reduce the incidence of mortality, morbidity, malnutrition and school dropout.
- **Midday meal scheme**: The scheme provides meals for all school children studying in Classes I-VIII of Government, Government-Aided Schools.
- **Public Distribution System**: It provides coverage to upto 75% of rural population and upto 50% of urban population for receiving highly subsidized foodgrains under Targeted Public Distribution System.

8. CULTURE

8.1. INDIA'S TRADITIONAL TOYS

Why in news?

Recently, the Department for Promotion of Industry and Internal Trade (DPIIT), Ministry of Commerce and Industry has EXEMPTED HANDICRAFT and Geographical Indications (GI) TOYS from QUALITY CONTROL ORDER to fulfill the vision of making India a global manufacturing hub for sale & exports of toys.

Status of Indian Toy industry

- India's toy market stands at around $450-500 mn **around 0.5% of the world toy market** which is pegged at around $ 90 bn.
    - Also, India has **one of the largest young population in the world**, owing to which, the toy industry in the country has witnessed a rapid growth.
- Till the 1980s, most of the toy used in India were made in India itself. However, the opening up of the economy in 1991 changed this as **made in China toys began to flood the market.**
- Currently, **80% of Indian toys are Chinese imports** and non-branded Chinese toys account for 90% of India's market.
    - China manufactures almost 75% of the world's toys.

About India's traditional toys

- India is an **old playground of a myriad of toys made from a variety of materials** like wood, polymer, cloth, fibre, wood pulp, rubber and metal.
- **India has a rich culture of storytelling through its toys** which show a perspective of life.
- Historically, Indian toys date back to 5000 years. The excavated toys and **dolls found in Harappa and Mohenjo-Daro included small carts, dancing woman, etc.**
    - Some of the traditional toy manufacturing hubs are Channapatna in Karnataka, Chitrakoot in Uttar Pradesh, Kondapalli in Andhra Pradesh and Budni-Rewa in Madhya Pradesh.
- **Traditional toy sector is eco-friendly** (they are made up of natural products like clay papers, wood, vegetable colours etc.)
- Under the 'Vocal for Local' slogan and the 'Aatmanirbhar Bharat' campaign, **the government is exploring opportunities to tap the potential of the sector.**

Name	State	Description
Channapatna toy	Karnataka	Mysore ruler Tipu Sultan, impressed by a **lacquer-coated wooden artifact** he received as a gift from Persia in the 18th century, invited Persian artisans to India to train the people in his realm.
Kinnal toys	Karnataka	These are wood toys depicting mostly Hindu gods and goddesses.
Kondapalli toys	Andhra Pradesh	Also Known as Bommala Koluvu (Dasara dolls) are made in Kondapalli of Krishna district, Andhra Pradesh. The style of these toys is a mix of Islamic and Rajasthani art, popular for their realistic expressions.
Etikoppaka Toys	Andhra Pradesh	Etikoppaka Toys are made of soft wood and lacquer color. Coloured with natural dyes derived from seeds, lacquer, roots and leaves. The way of toy making is also known as turned wood lacquer craft.
Nirmal toys	Telangana	The style of Nirmal toys of Telangana is a beautiful assimilation Ajanta floral and Mughal miniature.
Thanjavur Golu Dolls	Tamil Nadu	Thanjavur Dancing Dolls, traditionally known as Thanjavur Thalaiyatti Bommai, are a part of an eclectic heritage of beautiful handicrafts from Tanjore.
Laiphadibi	Manipur	Laiphadibi or doll is a feminine image of god made from shabby clothes. From being a play thing to being an integral part of rituals, these dolls, popularly called laidhibi, are treated as living spirits.
Asharikandi Terracotta Toys	Assam	These are similar to terracotta of Harappan civilization. They are made in Asharikandi (Madaikhali) craft village, Assam which is the single largest cluster where both Terracotta and Pottery crafts are found and practiced in traditional way.

Other traditional toys		• **Odisha's** Sambalpur toys and paper mache and stone toys; • **Bihar's** Kanyaputri Dolls and Sikki work; • **Uttar Pradesh's** Wooden toys of Varanasi; • **West Bengal's** Natungram Dolls. • **Tamil Nadu's** Choppu saman • **Gujarat's** Thigda dhingla • **Punjab's** chankana (a toy with a whistle), ghuggu (rattle box for babies), lattoo (spinning top), handwai (kitchen sets) • **Maharashtra's** Bhatukali miniature kitchen sets and Sawantwadi toys

What are the factors that have diminished India's toy Industry?

- **Competition from Chinese toys:** The assembly line production of Chinese toys makes them far less expensive than the traditional toys, which are hand-crafted and hand painted. Even though traditional toys are said to be more durable and safer for children (as they are coloured with vegetable dyes), the Chinese varieties rule the market.
  - Also procurement of raw material like lacquer is very costly.
- **Fractured industry:** Indian toy industry is fractured, with just 3% of the 4,000-odd manufacturers being large-scale players, about 75% are micro units and 22% small and medium enterprises.
- **Lack of innovation:** Traditional artisans, generally, produce the same set of toys without any innovation. As a result the new and attractive designs and colours of the Chinese products score over these toys.
- **Inability to deliver the bulk order:** Traditional artisans lack the capacity for bulk production which usually come with a short notification.
- **High Tax:** Traditional toys attract 12% Goods and Services Tax (GST). This makes it very difficult to scale up the production.
- **Quality issue:** Making traditional toy is not only labour intensive but also time consuming. But, to save time, some artisan compromise with quality. Moreover, a few artisans also use chemical dyes, which are considered harmful for children, instead of vegetable colours. As a result, some consignments fail to make the export quality grade.
- **Impact of COVID-19 pandemic:** The lockdown worsened the woes of the toy makers. Merchants who used to come from different parts of the country are not showing up. Even exhibitions and fairs across the country remain closed. As a result demand has slumped to almost zero.

What needs to be done to revive toy industry of India?

- **Workshops on design innovation**: This need to be carried out to ensure artisan make products which have demand in the market. Also it should be ensured that designs introduced by the handicrafts department authorities and the prototypes approved by them translate into a market for the artisans.
- **Recalibrate the approach of skill development for the artisans:** Artisans say that they are given short-term training by the skill development corporation. Training for 15 days to three months is not sufficient. At least a year of training is required for professional expertise in the craft.
- **Financial support and policy changes:** Subsidies, interest-free loans, scientific development of the industry, market

What other steps are being taken by the government to revive toy industry of India?

- **Nudging people for 'Made in India' toy:** Recently, Prime Minister pitched for using "Made in India toys" to make country AtmaNirbhar by harnessing the economic potential of India's toy Industry and making India a manufacturing hub for toys.
- **Toycathon-2021:** It was recently launched which is a special kind of hackathon organised by the Centre.
  - It aims to promote indigenous toy industry and reduce imports.
  - It provides students and teachers, design experts, toy experts and start-ups a platform to get together to crowd source ideas for developing toys and games that are based on Indian culture, ethos, folklores, heroes and value systems.
- **National Education Policy (NEP) 2020:** As part of the school curriculum, toy- making will be introduced to students from the sixth standard onwards. This will be done through workshops, visits to manufacturing factories as well as through local craftsmen.
- **Centre is working on a comprehensive plan** to boost development, production and sale of indigenous toys.

interventions, low taxation regime and official supply of the costly raw material would ensure the industry's growth and competitiveness.

- **Branding:** Toys made of plastic and other hazardous material are being replaced by wooden toys and toys made of other non-hazardous material. This provides wooden toy-makers a great opportunity. Good marketing and branding will go a long way in reviving traditional toy industry.

Conclusion

India is home to 25% of the world's children aged between 0 and 12 years. Domestic demand is, therefore, huge. There is a huge potential for penetration in the global market as well. India has a rich history and culture when it comes to toy making. Time is right to capitalize on its wide variety of traditional and unique toys.

8.2. JYOTIBA PHULE

Why in news?

Recently 130th death anniversary was observed.

About Jyotiba phule

- Jyotirao 'Jyotiba' Govindrao Phule was a prominent social reformer and thinker of the nineteenth century India. He was born in **Satara** district of **Maharastra** in **1827**. His family belonged to **'mali'** caste of gardeners and vegetable farmers.
- At the age of thirteen years, Jyotirao was married to **Savitribai**.
- After reading **Thomas Paine's famous book 'The Rights of Man'(1791),** Jyotirao was greatly influenced by his ideas. **He believed that enlightenment of the women and lower caste people** were the only solution to combat the social evils.
- He was bestowed with the **title of Mahatma by Vithalrao Krishnaji Vandekar in 1988** and passed away in **1890**.
- **Efforts Towards social reform**
    - **Education:** Phule suggested compulsory, universal and creative education.
        - He and his wife Savitrirao Phule opened **the first-ever school for Dalit girls at Bhide Wada, Pune, in 1848.**
            - ✓ The **curriculum of the school was based on western education** and included mathematics, science and social studies.
            - ✓ Savitribai took a teachers' training course and became a qualified teacher in 1847.
    - **Women empowerment**: Jyotiba believed in the **equality of men and women**. He stressed on women's education and emancipation of women. He brought women in public life. He strongly **opposed social evils like Child marriage and Female infanticide.**
        - In 1863, Jyotirao and Savitribai started the **first-ever infanticide prohibition home in India called Balhatya Pratibandhak Griha.** It helped pregnant Brahmin widows and rape victims deliver children.
    - **Widow Remarriage:** Jyotiba realised the pathetic conditions of widows and established an ashram for young widows and eventually became advocate of the idea of Widow Remarriage.
    - **Against Caste System:** In the 19th century, Jyotiba Phule was the most radical opponent of untouchability and the caste system as he called for the complete demolition of its oppressive structure.
        - He was the first person to coin the term **'Dalits'** to apply to all people considered **lower caste and untouchables**.
        - He **condemned the Vedas** and held Brahmins responsible for framing exploitative and inhuman laws in order to maintain their social superiority.
        - He was a source of inspiration for Maharshi Shinde, Dr. Babasaheb Ambedkar, Gadgebaba and Sahu Maharaj.
- **Association:** In 1873, he formed the **Satya Shodhak Samaj (Society of Seekers of Truth) in Pune**. It was a social reform society that fought for equal rights for the depressed classes. The community included Muslims, non-Brahmins, Brahmins and government officials.
- **Literary work:** He wrote 16 books that contributed to the social awakening of the dowtrodden masses who were subject to the atrocities of the upper castes and the British administrators at that time. His notable published works are **Brahmanacha Kasab (1969), Gulamgiri (1873), Shetkaryancha Asud (1883), Sarvajanik Satyadharma Pustak (1891), Asprushyanchi Kaifiyat (1893)**

9. ETHICS

9.1. CITIZEN ENGAGEMENT IN POLICYMAKING

Introduction

Citizen Engagement is an essential element of every facet of democracy, be it policymaking, its implementation or subsequent grievance redressal. Alongside the will of the citizen, perception of the government in the mind of the citizen also plays a role in this engagement. The trust that the citizen has in the government of the day and the assessment of the capability of the government also play a huge role in dictating the citizen's thought process. Before we delve into how engagement can be increased and what are the challenges, it is pertinent to answer the need for it in the first place.

Why engaging citizens is important in policymaking?

The recent agitations and the process followed for effecting Agricultural Reform Bills can serve as an example to illustrate the importance and need for citizen participation in policymaking-

- It is argued that the policy does not satisfy the needs and interests of the farmers. Large scale citizen participation before drafting of the **final policy could have ensured that the needs and interests of all citizens are taken into account** in decision-making processes thus potentially avoiding the current stalemate.
- Policies like Agri-reform Bills touch upon the lives of a large number of citizens. As a result, it becomes important for the governments to **tap wider sources of information, perspectives, and potential solutions.** This could be done increasing civic participation which will **in turn improve the overall quality of policy.**
- The recent agitations over the Bill have seen considerable misunderstanding and circulation of misinformation. In this light, it becomes important that active citizen engagement is pursued **to meet the challenges of the emerging information society**, to prepare for **greater and faster interactions with citizens** and **ensure better knowledge management.**
- The opacity and urgency that was observed in passing the Agri-reform Bills has created distrust among farmers for the government. To counter this sense of opacity in policies and **for responding better to calls for greater government transparency and accountability**, active and informed public participation remains a key element.

Apart from being good for governance processes in policymaking, citizen engagement also **enhances citizens' recognition of their responsibility to take action** to improve their lives and **enhances citizens ownership of the development process**. Furthermore, public engagement **improves the political position of marginalized or vulnerable groups, such as women, youth, and minorities** that are often not taken into consideration.

In the light of its increased contemporary relevance, how can we increase Citizen Engagement?

- **Sharing information:** For example, **Norwegian Government** has created as **an electronic public record database** for all the civil service activities.
- **Public Consultation:** Discussion among citizens, elected representatives, local civil society groups and other stakeholders helps to get their perspectives included in the designing of the interventions.
- **Joint assessment**: Participatory assessment and monitoring with the stakeholders, particularly the targeted citizens, are used as tools and approaches for enhancing civic engagement. For example, the **Filipino Report Card on Pro-Poor Services initiative of the Philippines Government** assesses the performance of selected government services based on client experience.
- **Shared decision-making and collaboration:** For example, the **city government of Porto Alegre (Brazil) practices "participatory budgeting".** The practice convenes multiple assemblies at all levels in which around 50,000 residents regularly participate.

Some other innovative Citizen Engagement initiatives in India

- **National Capacity Building Framework** of Ministry of Panchayati Raj (MoPR) outlines capacity building at Panchayat level to **increase participative planning** and **increase overall participation of Civil Society.**
- **Citizen Report Card** is a simple yet powerful tool to provide systematic feedback to public agencies from users of public services. Some examples include-
  - Nagrik Sahyog Kendra or Citizen Cells, Gujarat.
  - The Citizens' Report Card in Bangalore.
- **Social Audit, Ministry of Rural Development**: Social audit is conducted jointly by the government and the people, especially by those people who are affected by, or are the intended beneficiaries of, the scheme being audited.

What are the potential challenges in increasing citizen engagement?

- **Apolitical societies**: Most members of society are reluctant to be political and acts of public engagement are often seen as political.
- **Lack of capacity to engage**: There is usually only limited knowledge within society of policy-making processes and limited knowledge and skills to communicate constructively with decision makers. This is further compounded by the **technical and lengthy nature of the policies**.
- **Limited Commitment**: The commitment and continuity to act to effect intended changes is usually limited, since creating an environment for meaningful participation can be a long struggle with few resources. This issue becomes even more glaring for a country like India with **large population resulting in even fewer resources per capita.**
- **Low public trust** in Government also keeps public participation limited, thus creating a vicious cycle where **prevalence of distrust decreases participation and further fuels distrust for the Government**.
- **Exclusion:** Many consultative processes are seen to be ways of reinforcing the view of the dominant groups and exclusion of most marginalized and vulnerable groups, which are often left out of political processes.

Way Forward

- **Looking at citizen engagement as citizen's right and not a favor by Government:** Citizens rights to access information, provide feedback, be consulted and actively participate in policymaking must be firmly grounded in law or policy.
    - Also, the government obligations to respond to citizens when exercising their rights must also be clearly stated. Independent institutions for oversight, or their equivalent, are essential to **enforcing these rights and thus ensuring Government's accountability.**
- **Capacity building for creation of Active Citizenship:** Raising awareness, strengthening citizens civic education and skills as well as providing support for capacity-building among civil society organizations can potentially increase **both citizen's capacity and commitment to the public cause.**
- **Objectivity in information presentation and access:** Information provided by government during policymaking should be objective, complete and accessible. All citizens should have equal treatment when exercising their rights of access to information and participation.
- **Adequate time and resources allotted for engaging citizens:** Public consultation and active participation should be undertaken as early in the policy process to provide enough time for citizens. Also, adequate financial, human and technical resources should be allotted for creating conducive atmosphere for Citizen Engagement.

10. SCHEMES IN NEWS

10.1. ATMANIRBHAR BHARAT ROJGAR YOJANA (ABRY)

Why in News?

The Union Cabinet has given its approval for Atmanirbhar Bharat RojgarYojana (ABRY).

About Atmanirbhar Bharat Rojgar Yojana (ABRY)

Objective	Key feature
• To **boost employment in formal sector and incentivize creation of new employment opportunities** during the Covid recovery phase under Atmanirbhar Bharat Package 3.0. ○ Scheme proposes to **incentivise employers, registered with EPFO, for giving employment to new employees and re-employing persons from low wage bracket who lost their job** during COVID-19 pandemic.	• **Benefits:** ○ **For establishments employing upto 1000 employees,** Government will pay both 12% employees' and 12% employers' contribution of wages towards Employees' Provident Fund (EPF) i.e. 24% of wages towards EPF in respect of new employees for two years (on or after October 1, 2020, and up to June 30, 2021). ○ **For establishments employing more than 1000 employee**, Government will pay only employees' EPF contribution i.e., 12% of wages in respect of new employees for two years. • **Beneficiaries under Scheme** ○ An employee drawing monthly wage of less than Rs. 15000/- who was **not working in any establishment registered with the Employees' Provident Fund Organisation (EPFO)** before 1st October, 2020 and **did not have a Universal Account Number or EPF Member account number** prior to 1st October 2020. ○ Any EPF member possessing Universal Account Number (UAN) drawing monthly wage of less than Rs. 15000/- who made **exit from employment during Covid pandemic from 01.03.2020 to 30.09.2020 and did not join** employment in any EPF covered establishment up to 30.09.2020. • **Eligibility criteria for Establishments** ○ Establishments registered with EPFO if they add new employees compared to reference base of employees as in September, 2020 as under: ▪ minimum of two new employees if reference base is 50 employees or less. ▪ minimum of five new employees if reference base is more than 50 employees. • The subsidy support **to get credited upfront in Aadhaar seeded EPFO Account (UAN) of eligible new employee.** • EPFO shall work out modality to ensure that there is **no overlapping of benefits provided under ABRY with any other scheme** implemented by EPFO. • The scheme is to be operational for the period 2020-2023. ○ Registration for the scheme will be effective from October 1, 2020 to June 30,2021 • The scheme will cost the government Rs 22,810 crore • **Note**: A similar scheme **Pradhan Mantri Rojgar Prohatsan Yojana**, launched in 2016 and valid till 2019, had created 1.21 crore formal jobs. However, **under this the government was reimbursing just 12% of the employers share only.**

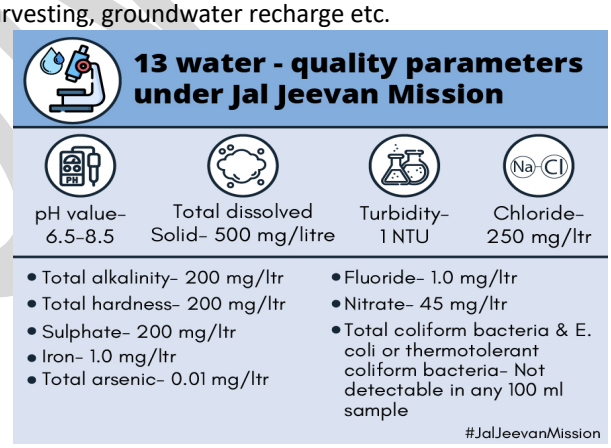
10.2. JAL JEEVAN MISSION (JJM)

Why in news?

Recently, National Jal Jeevan Mission (JJM) in **partnership with Department of Promotion of Industry and Internal Trade** launched Innovation Challenge for developing portable devices for testing water.

About Jal Jeevan Mission (JJM)

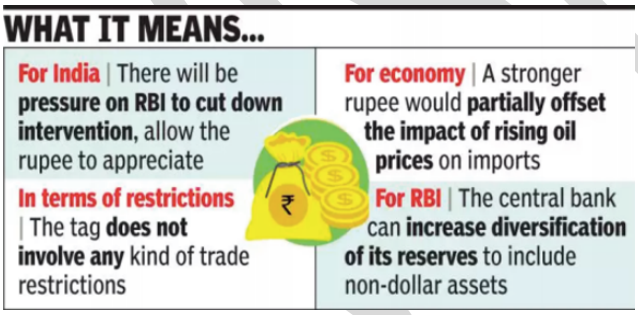
Objective	Key Features
• JJM **aims at providing Functional Household Tap Connection (FHTC) to every rural household by 2024**. ○ FHTC – Functionality of a tap connection is	• JJM is an upgraded version of the National Rural Drinking Water Programme (NRDWP) that was launched in 2009. • **Components under JJM:** ○ development of in-village piped water supply infrastructure ○ development of reliable drinking water sources and/or augmentation of existing sources to provide long-term sustainability of water supply system

defined as having infrastructure, i.e. household tap connection providing at least **55 lpcd (litre per capita per day), of prescribed quality, i.e. BIS:10500 standard, on regular basis.** • To **provide functional tap connection to Schools**, Anganwadi centres, GP buildings, Health centres, wellness centres and community buildings • **To monitor functionality of tap connections**. • To **empower and develop human resource** in the sector such that the demands of construction, plumbing, electrical, water quality management, water treatment, catchment protection, etc. are taken care of in short and long term • To **bring awareness on various aspects and significance of safe drinking water** and involvement of stakeholders in manner that make water everyone's business	○ technological interventions for removal of contaminants where water quality is an issue ○ greywater management (domestic non-faecal wastewater) ○ development of utilities, water quality laboratories, water quality testing & surveillance, R&D, knowledge centre, capacity building of communities, etc • **Community driven approach:** The 73rd Amendment to the Constitution of India has placed the subject of drinking water in the 11th Schedule. So, under JJM, Gram Panchayats and local community play the pivotal role • **Fund sharing pattern:** 90:10 for Himalayan and North-Eastern States; 50:50 for other States and 100% for UTs. • **Institutional Mechanism for implementation:** ○ **National Jal Jeevan Mission:** provide policy guidance, financial assistance and technical support to States ○ **State Water and Sanitation Mission (SWSM):** finalization of State Action Plan (SAP), financial planning etc. ○ **District Water and Sanitation Mission (DWSM):** headed by Deputy Commissioner/ District Collector (DC), it is responsible for overall implementation of JJM. ○ **Gram Panchayat and/ or its sub-committees:** provide FHTC to every existing rural households, ensure preparation of Village Action Plan (VAP) etc • **Implementation strategy:** ○ Time bound completion of schemes has been proposed ○ Priority to cover water quality affected habitations will be given ○ No expenditure like electricity charges, salary of regular staff, and purchase of land, etc, will be allowed from the central share ○ **'Utility-based approach':** this will enable institutions to function as utilities and focus on drinking water supply services and recover water tariffs from all kinds of consumers. ○ **Convergence:** convergence with existing schemes such as MGNREGS to implement measures like rainwater harvesting, groundwater recharge etc. ○ **Incentive for community:** community would be rewarded to the tune of 10% of the capital expenditure on their respective in-village water supply scheme • **Water Quality Monitoring & Surveillance (WQM&S):** includes setting up and maintenance of water quality testing labs and surveillance activities by community 

11. NEWS IN SHORTS

11.1. 'CURRENCY MANIPULATORS' MONITORING LIST

- US has once again included India in its monitoring list of countries with **potentially "questionable foreign exchange policies" and "currency manipulation".**
  - **India was last included in the currency watchlist in October 2018,** but removed from the list in May 2019.
- 'Currency manipulator' is a **label given by the US government to countries it feels are engaging in "unfair currency practices" by deliberately devaluing their currency against the dollar.**
  - Designation of a country as a currency manipulator does not immediately attract any penalties, **but tends to dent the confidence about a country in the global financial markets.**
- **US criteria to label a country as currency manipulator:**
  - Country must have at least have a $20 billion-plus bilateral trade surplus with the U.S.
  - Foreign currency intervention exceeding 2% of GDP
  - A global current account surplus exceeding 2% of GDP.
- India, which has for several years maintained a "significant" bilateral goods trade surplus with the US, recently **crossed the $20 billion mark.**
  - Also India pushed net purchases of **foreign exchange to $64 billion–or 2.4% of GDP–**over the four quarters through June 2020.



11.2. BSE E-AGRICULTURAL MARKETS LTD. (BEAM)

- **Bombay Stock Exchange (BSE) has launched an electronic spot platform** for agricultural commodities - "BSE E-Agricultural Markets Ltd. (BEAM)" - through its subsidiary BSE Investments.
- This platform will **function as a national, institutionalised, electronic, transparent commodity spot trading platform** in line with the Prime Minister's vision to create a single market
  - It **facilitates spot agricultural commodities transactions across the value chain,** consisting of producers, intermediaries, ancillary services and consumers.
  - It will **facilitate risk-free and hassle- free purchase and sale of various agriculture commodities** by leveraging on state-of-the-art technology to offer customized solutions to farmers, traders, and stakeholders.
- With BEAM, **farmers in one state will be able to reach out to markets in other states** and auction their produce.
  - This will not only help farmers and farmer collectives **discover best prices for their produce based on the quality**, but also offers to build capacity to help intermediaries, processors and exporters procure from states.

About spot market

- A spot market is where **financial instruments are exchanged for immediate delivery,** such as commodities, currencies, and securities.
- Spot commodity refers to **a commodity that is being sold (on the spot market) with the intention of being delivered to the buyer fairly immediately** --either presently or within only a few days.

11.3. UNCTAD INVESTMENT PROMOTION AWARDS

- UNCTAD has declared **Invest India**- National Investment Promotion Agency of India **as a winner of the 2020 United Nations Investment Promotion Award.**
  - **Invest India** is the National Investment Promotion and Facilitation Agency of India under the Department of Industrial Policy and Promotion.
- UNCTAD award recognize and celebrate the outstanding achievements of the world's best-practice investment promotion agencies.

11.4. DEFENCE RESEARCH AND DEVELOPMENT ORGANISATION (DRDO) SYSTEMS

- **Three indigenously developed DRDO systems are:**
  - **Indian Maritime Situational Awareness System (IMSAS):** It is high performance intelligent software system that provide Global Maritime Situational Picture, Marine planning tools and Analytical capabilities to Indian Navy.
    - It provides Maritime Operational Picture from Naval HQ to each individual ship in sea to enable Naval Command and Control (C2).

- **ASTRA Mk-I Missile:** It is first **Beyond Visual Range air-to-air Missile** designed to be mounted on a fighter aircraftand is also designed to engage and destroy highly manoeuvring supersonic aircraft.
  - Astra has a **range of over 70 km** and speed of over 5,555 km per hour.
- **Border Surveillance System (BOSS):** It is an all-weather **electronic surveillance system** automatically detecting intrusions in harsh high-altitude sub-zero temperature areas with remote operation capability.
  - It has been **deployed at Ladakh border area**.

- Also recently, Ministry of Defence accorded approvals to DRDO to develop **six airborne warning and control system (AWACS) aircraft** to boost surveillance capabilities along the China and Pakistan borders.
  - IAF currently has just **three Israeli Phalcon AWACS**, with a 400-km range, and **two indigenous "Netra" aircraft** with a range of 250km**.**

11.5. MEDIUM-RANGE SURFACE-TO-AIR (MRSAM) MISSILE

- **MRSAM,** developed by the DRDO (Defence Research and Development Organisation) in collaboration with Israel Aerospace Industries (IAI) for Army **has been tested successfully**
- MRSAM Army version consists of a command-and-control post, multi-function radar and mobile launcher system.
- The propulsion system, coupled with a thrust vector control system, allows the missile to move at a maximum speed of Mach 2.
- The weapon has the ability to engage multiple targets simultaneously at ranges of 70km.
- In May 2019, Indian Navy, DRDO and IAI successfully tested Naval version of MRSAM.

11.6. EXPORT OF AKASH MISSILE SYSTEM

- Cabinet approved export of indigenously developed Akash missile systems to friendly foreign countries.
  - It **would help to achieve target of 5 Billion USD of defence export** and **improve strategic relations with friendly foreign countries.**
  - Besides Akash, there is interest coming in other major platforms like Coastal Surveillance System, Radars and Air platforms.
- Also, a **Committee comprising of Minister of Defense, Minister of External Affairs and National Security Advisor has been created to provide faster approvals for export of major indigenous platforms**.
- **Other measures Taken by the Government to Promote Defence Exports**
  - **Scheme for Promotion of Defence Exports has been notified** to provide an opportunity to the prospective exporters an option to get their product certified by government.
  - **A separate Cell in Department of Defence Production** to co-ordinate and follow up on export related action.
  - **A completely end-to-end online portal** for receiving and processing authorisation permission has been developed.
  - In repeat orders of same product to the same entity, **consultation process has been done away with and permission is issued immediately.**

ABOUT AKASH MISSILE SYSTEM

- Akash is a Surface to Air Missile with a range of 25 Kms.
- The missile was inducted in 2014 in Indian Armed Forces (IAF) and in 2015 in Indian Army.
- Export version of Akash will be different from System currently deployed with IAF.

11.7. INS VIKRANT

- India's Cochin Shipyard Limited (CSL) has completed the basin trials of Indigenous Aircraft Carrier (IAC), INS Vikrant.
- It is India's **first domestically built aircraft carrier**.
- It leads ship of the Indian Navy's Vikrant-class, to be designed and **built in India under Indigenous Aircraft Carrier (IAC) program.**
- The 40,000 Tons aircraft carrier is designated as IAC-1, **operates a ski-jump assisted Short Take-Off But Arrested Recovery (STOBAR) launch systems for launching aircraft** and is capable of accommodating MiG 29K fighter jets and helicopters.
- **INS Vishal,** also known as Indigenous Aircraft Carrier 2 (IAC-2), is to be the second aircraft carrier to be built in India after INS Vikrant (IAC-1).
  - The proposed design of the second carrier class will be a **new design, including an increase in displacement with Electromagnetic Aircraft Launch System (EMALS) and Catapult Assisted Take-Off But Arrested Recovery (CATOBAR) system**.
- **INS Vikramaditya (India's only active aircraft carrier)** is Indian Navy's largest short take-off, but assisted recovery (STOBAR) aircraft carrier, converted from the Russian Navy's

decommissioned vertical take-off and landing (VTOL) missile cruiser carrier.

11.8. PROJECT 17A

- Under Project 17A program, **a total of seven ships (guided missile frigates) are being built with enhanced stealth features, advanced indigenous weapon and sensor fit** along with several other improvements.
- Recently, **Indian Navy's 2nd Project 17A Frigate 'Himgiri'** was launched by India's shipbuilder Garden Reach Shipbuilders and Engineers Limited.

11.9. TIHAN-IIT HYDERABAD

- Recently, Union Minister of Education virtually laid the foundation stone for '**TiHAN-IIT Hyderabad'**.
- It is India's first **Testbed for Autonomous Navigation Systems** (Terrestrial and Aerial) and Data Acquisition systems (UAVs, RoVs, etc.).
- It is funded by Department of Science and Technology under the **National Mission on Interdisciplinary Cyber-Physical Systems (NM-ICPS).**
    - **CPS integrate computation and physical processes in a dynamic environment** and encompasses technology areas of Cybernetics, Mechatronics, Design and Embedded systems, Internet of Things, Big Data, Artificial Intelligence etc.

11.10. LADAKH'S TSO KAR WETLAND COMPLEX NOW A RAMSAR SITE

- Tso Kar Wetland Complex is India's **42nd Ramsar site** and a second one in Ladakh. Tso Moriri wetland is another Ramsar site in Ladakh.
- Tso Kar Basin is a **high-altitude wetland complex consisting of two principal waterbodies,** Startsapuk Tso & Tso Kar itself.
    - **Startsapuk Tso** is a freshwater lake to the south & **Tso Kar** is a hypersaline lake to the north.
- Tso Kar Basin is an **A1 Category Important Bird Area** as per Bird Life International **and a key staging site in Central Asian Flyway** (area of Eurasia between Arctic and Indian Oceans and associated island chains).
    - This is a **breeding area for species like** Black-necked Crane, **Great Crested Grebe,** Bar-headed Geese , **Ruddy Shelduck** etc.
    - **A1 category has Globally threatened species**. Other categories are: A2 for Restricted-range species, A3 for Biome-restricted species & A4 for Congregations (of ≥1% of global population of one or more species).

ABOUT RAMSAR CONVENTION ON WETLANDS

- It is an intergovernmental treaty adopted in 1971 in Iranian city of Ramsar.
- Aim is to develop and maintain an international network of wetlands which are important for conservation of global biological diversity and for sustaining human life through maintenance of their ecosystem components, processes and benefits.
- **Recently added wetlands from India:** Lonar lake (Maharashtra), Sur Sarovar (Keetham lake) in Agra, Kabartal Wetland (Bihar) and Asan Conservation Reserve (Uttarakhand).

11.11. STATUS OF LEOPARDS IN INDIA, 2018 REPORT RELEASED BY MINISTRY FOR ENVIRONMENT, FOREST AND CLIMATE CHANGE

Key Findings

- **Species:** Leopards are among the most adaptable carnivores, and are known to exist very close to human habitations.
    - Indian subspecies (Panthera pardus fusca) is **found in all forested habitats in the country, absent only in the arid deserts and above the timber line in the Himalayas.**
        - In the Himalayas they are sympatric with snow leopards (Panthera uncia).
- **Population:** India now has 12,852 leopards, **60% increase compared to the previous estimate (2014).** Highest population
    - **State Wise:** Madhya Pradesh (3421), Karnataka (1783) and Maharashtra (1690)
    - **Region wise:** central India and eastern ghats
- **Threat:** Poaching, habitat loss, depletion of natural prey and human-conflict**.**
- **IUCN status**: Vulnerable.
    - It is also listed in **Appendix I of the Convention on International Trade of Endangered Species of Wild Fauna and Flora (CITES)** and in Schedule I of the Wildlife (Protection) Act 1972.
- **Rajasthan was first state to launch a project Leopard** to mitigate human-leopard conflicts and conserving the leopard population.
- **Leopard is one of the 4 big cats found in India.** Other three are Lion (Endangered), Tiger (Endangered), Snow Leopard (Vulnerable).

11.12. FIRST TIGER TRANSLOCATION IN UTTARAKHAND FROM JIM CORBETT TIGER RESERVE (JCTR) TO RAJAJI TIGER RESERVE (RTR)

- Tigres will be shifted **as part of the project to increase the density of the big cat in RTR.**
  - Project for translocation of tigers to the western part of Rajaji **was approved by National Tiger Conservation Authority (NTCA) in 2016.**
  - NTCA is a statutory body under the Ministry of Environment, Forests and Climate Change **for strengthening tiger conservation**
- Translocation is the **managed movement of live indigenous plants or animals** from one location to another. It is carried out:
  - To **increase a species' chance of survival or recovery**.
  - As part of a **restoration programme.**
  - To establish a species for a **specific purpose such as advocacy, education or scientific study**.
- **RTR** is located in the **Shivalik range of Himalayas in Uttarakhand** and is the second tiger reserve of Uttarakhand after JCTR.
- **JCTR** is situated in the Nainital district of Uttarakhand and is the oldest national park in India established in 1936 to protect the endangered Bengal tiger.
  - Park was the **first to come under the Project Tiger initiative.**

11.13. INTERNATIONAL BLUE FLAG HOISTED AT 8 BEACHES ACROSS THE COUNTRY

- **8 beaches are:** Kappad (Kerala), Shivrajpur (Gujarat), Ghoghla (Diu), Kasarkod and Padubidri (Karnataka), Rushikonda (Andhra Pradesh), Golden (Odisha) and Radhanagar (Andaman & Nicobar Islands).
  - Also, India sets up **target of getting Blue flag certification for 100 more beaches** in next 3-4 years.
- **Blue Flag beach is an Eco-tourism model** to provide tourists/beach goers clean and hygienic bathing water, facilities/amenities, safe and healthy environment and sustainable development of the area.
- Certification is **accorded by Denmark based Foundation for Environment Education.**
  - **It is based on 33 criteria in four major heads:** Environmental Education and Information, Bathing Water Quality, Environment Management and Conservation and Safety and Services in the beaches.
- India had also **launched its own eco-label BEAMS (Beach Environment & Aesthetics Management Services)** under its ICZM (Integrated Coastal Zone Management) project to **abate pollution in coastal waters, promote sustainable development of beach facilities, protect & conserve coastal ecosystems & natural resources etc.**
  - It has resulted in reducing marine litter by over 78% and marine plastic by over 83% in 10 coastal states.
  - ICZM is to promote sustainable development & management of coastal zones.

11.14. EXISTENCE OF LARGE MAMMALS IN INDIA

- A study by Yale University suggests that diverse populations of **large, land-dwelling mammals, such as elephants, rhinos and big cats still exist in India due to co-evolution**.
  - It is the **first study to explore the extinction of megafauna in Indian subcontinent in detail and** documents a mere handful of large animals that are found extinct in the fossil record.
- Due to co-evolution **native animals learnt to adapt to a new predator, i.e., humans** which ultimately aided their survival.
  - Over the last **100,000 years**, **several land-dwelling mammals** have **gone extinct** across the **globe**.
- **Key findings**
  - Due to **climate change** and **human pressures** - **large, slow-reproducing mammals went extinct** compared to smaller sized fauna.
  - Asian elephants, tigers, and other large mammals in India had **extensive ranges extending from Turkey to Southeast Asia, which improved their chances of survival.**
  - Ostriches - which were depicted in cave art and their eggshells used for ornamentation - went

extinct from Indian Subcontinent which suggests **humans may have been the reason for their local extinction**.

- Study also finds **contemporary mammals are facing similar pressures that these extinct mammals faced.**
  - Confining animals to increasingly smaller habitats because of human encroachment **leads to loss of genetic diversity that can protect against extinction.**
  - **Other include:** Hunting & poaching and accelerated climate change.

11.15. RED LIST ASSESSMENT OF INDIAN GRASSHOPPERS

- Recently, the **Grasshopper Specialist Group of the International Union for the Conservation of Nature (IUCN) initiated the Red List Assessment of grasshoppers in India.**
  - Red List of Threatened Species, founded in 1964, is the world's most comprehensive inventory of the global conservation status of biological species.
- The project will start from the Nilgiri biosphere reserve spread in three states of Kerala, Tamil Nadu and Karnataka followed by other parts of the country
- The assessment will also include a **new species of grasshopper (named 'Tettilobus Trishula' or 'Shiva's pygmy trishula')** discovered in the **Eravikulam National Park** in **Kerala's Idukki district.**
- **Significance**
  - It will help in **understanding the condition of the grasshopper's ecosystem.**
    - Grasshoppers are primarily considered as agricultural pest.
    - They live in all sorts of environments except those covered in snow.
    - Their survival status would explain about the environment they are living in.
  - It would now **update their conservation status** and also initiate India's grasshopper conservation activities.
    - The Indian grasshopper species has remained a neglected group since none had been included earlier in the Red List of Threatened species.

11.16. DIGITAL OCEAN

- Digital Ocean is a state of the art data platform **to provide ocean data related services at one place.**
  - It includes a set of applications developed to **organize and present heterogeneous oceanographic data** by adopting rapid advancements in geospatial technology.
- It has been **developed by the Indian National Centre for Ocean Information Services (INCOIS)** of the MoES.
  - **INCOIS provides ocean information and advisory services to various stakeholders**, including Potential Fishing Zone (PFZ) advisories, Ocean State Forecast (OSF), high wave alerts, tsunami early warnings, etc.
- **Significance of the 'Digital Ocean'**
  - It will serve as a **one stop-solution for all the data related needs** of a wide range of users.
    - Data from **various projects like Deep Ocean Mission, 'Samudrayaan' project**, research on alternative sources of energy, etc would be included.
  - It will help to**assess the evolution of oceanographic features** through 3D and 4D data visualization.
- **Importance of Ocean Data**
  - It helps to**improve our understanding of working of oceans** thus play a central role expanding 'Blue Economy' initiatives.
  - It will help in **capacity building on Ocean Data Management for all Indian Ocean Rim countries.**

INDIA'S PROJECTS ON OCEANS

- **'Deep Ocean Mission' envisages exploration of minerals, energy and marine diversity** of the underwater world, a vast part of which still remains unexplored. It is yet to be launched.
- **'Samudrayaan' project** proposes to send a submersible vehicle with three persons to a depth of about 6000 metres to carry out deep underwater studies.

11.17. SAGUNA RICE TECHNIQUE (SRT)

- It is a **unique new method of cultivation of rice and related rotation crops** without ploughing, puddling and transplanting (rice) on permanent raised beds.
- It is a**zerotill, Conservation Agriculture (CA) type of cultivation method** evolved at SagunaBaug, District Raigad, Maharashtra.
- **Principles in SRT**
  - SRT insists that all roots and small portion of stem should be **left in the beds for slow rotting.**
  - **No ploughing, puddling and hoeing** is to be done to control weeds. Weeds are to be controlled with weedicides and manual labor.
  - This system will get the **crop ready for harvesting 8 to 10 days earlier.**

11.18. INDIA'S FIRST LITHIUM REFINERY

- India's first Lithium refinery which will **process Lithium ore to produce battery-grade material will be set up in Gujarat**.
- Manikaran Power Limited, will set up this refinery**.**
- Lithium is a rare element not usually found in India. The company will be importing Lithium ore from Australia and will be processing it here.
- With India poised to become one of the largest electric car markets of the world, the **refinery would help India reduce import bill on imported Lithium-Ion Battery.**
    - Import of Lithium-ion batteries quadrupled to 712 million batteries in 2018 from 175 million in 2016.
    - **China, Hong Kong and Vietnam were the leading sources of imports.**
- Lithium an alkali metal is the **lightest of the solid elements**. It is soft, white, and lustrous.
- It is **found in brine deposits and as salts in mineral springs**; its concentration in seawater is 0.1 part per million.
- It constitutes **about 0.002 percent of Earth's crust**.
- It is also found in minerals and ores like: petalite, lepidolite amblygonite etc.
- A significant proportion of lithium reserves are located in South America's **"lithium triangle"** – an area encompassing parts of Chile, Argentina and Bolivia (largest reserves of lithium in the world).
- Australia is largest producer of lithium in the world.

About Lithium-ion battery

Lithium-ion battery is one of the most promising electrochemical energy storage technologies owing to its **high voltage capacity, high energy density, long life cycle and high storage characteristics**.

- It finds wide applications in **electronic gadgets, tele-communications and Industrial applications as well as in aerospace.**
- Recent progress in Lithium-ion battery technology has made it a **favourite power source for electric and hybrid electric vehicles.**

11.19. SEA OF GALILEE

- Sea of Galilee, also known as Lake Tiberias or Kinneret is one of the **lowest-lying bodies of water in the world.**
- It **lies in northern Israel**, between the Israel occupied Golan Heights and the Galilee region.
- It is a **freshwater body fed by underground springs,** but its major source is the Jordan river, which flows through the Sea of Galilee before ending in the Dead Sea.
- Water is not extracted from the Sea of Galilee, but it is considered to be an important barometer of the water situation in Israel.

11.20. LAB-GROWN MEAT

- Recently, the Singapore Food Agency (SFA) approved the sale of a lab-grown meat product**.** This is **the first-time a cultured meat has been cleared** for sale anywhere in the world.
- In lab-grown or cultured meat **scientists use the animal's stem cells to create meat rather than slaughtering animals**.
    - **Stem cells are the building blocks of cells and tissues**, and by feeding them amino acids and carbohydrates, the muscle cells will be multiplied and grown in the lab. Once muscle fibers start growing, the result is an artificially created meat that resembles actual meat in terms of appearance, texture, and nutrient profile.
- **Lab-grown meat is different from plant-based meat as** latter is made from **plant sources such as soy or pea protein,** while cultured meat is **grown directly from cells in a laboratory**.
- **Advantage**
    - Cultivated beef could **reduce land use** by more than 95%, **climate change emissions** by 74-87% and **nutrient pollution** by 94%.
    - It is created in clean facilities thus, **eliminating the risk of contamination by pathogens** such as salmonella and E coli, which may be present in traditional slaughterhouses and meat-packing factories.
        - Due to Covid-19 and **widespread fears about zoonotic diseases**, especially African swine fever and highly pathogenic avian influenza, cultured meat provides an opportunity to the alternative meat industry.

- It **does not require antibiotics**, **unlike animals raised for meat** thereby reducing the threat posed to public health by growing antibiotic resistance.

11.21. CHINA'S CHANG'E 5 SUCCESSFULLY ENTERS EARTH'S SURFACE

- Chang'e 5 mission recently returned to Earth, loaded with moon rocks – the first since the Soviet Union's Luna 24 mission in 1976.
  - China is the **third country** to have retrieved lunar samples **after U.S and Russia**.
- The Chang'e-5 mission collected two kilograms of material in an area **north of the Mons Rumker** known as **Oceanus Procellarum or "Ocean of Storms"** which is a vast, unexplored lava plain.
- **Chang'e 5 is not the only ongoing sample-return mission.**
  - **Japan's Hayabusa2 mission** returned a lander from space to the continent of Australia on December 6, 2020; it brought pieces of **the asteroid Ryugu collected** over two years ago.
  - More recently, **NASA's OSIRIS-REx probe took a sample of the asteroid Bennu**; that material is expected to be returned to Earth in September 2023.

11.22. CMS- 01

- Recently, ISRO launched the country's **42nd communication satellite CMS-01.**
- CMS-01 is envisaged to provide services in the Extended-C Band of the frequency spectrum whose **coverage will include the Indian mainland, Andaman-Nicobar and Lakshadweep Islands.**
- Satellite will be the first in a **new series of communication satellites by India after the GSAT and INSAT series.**

11.23. FIRST POTENTIAL RADIO SIGNAL FROM EXOPLANET

- A team of scientists has collected a **potential radio signal for the first time from an exoplanet system about 51 light-years away from our solar system.**
  - An exoplanet or extrasolar planet is a planet outside the Solar System.
- The emission bursts were uncovered from the **Tau Bootes star-system** which contains a binary star system and an exoplanet.
- The researchers used the **Low Frequency Array (LOFAR), a radio telescope in the Netherlands, to achieve this feat**.
- If confirmed through follow-up observations, **this radio detection opens up a new window on exoplanets and provides a novel way to examine alien worlds that are tens of light-years away.**
- **Observing an exoplanet's magnetic field helps astronomers decipher a planet's interior and atmospheric properties**, as well as the physics of star-planet interactions.
  - The **magnetic field of Earth-like exoplanets may contribute to their possible habitability** by shielding their own atmospheres from solar wind and cosmic rays, and protecting the planet from atmospheric loss.
  - Earth's magnetic field protects it from solar wind dangers, keeping the planet habitable.

11.24. GEMINID METEOR SHOWER

- **Geminid Meteor showers occur every year** around the second week of December.
  - A meteor is a meteoroid that enters Earth's atmosphere.
  - Meteoroids are objects in space that range in size from dust grains to small asteroids.
- Geminid meteors **are created by tiny bits of rocky debris** shed from a small asteroid named 3200 Phaethon, which was discovered in 1983.
  - **Phaethon loops around the Sun every 1.4 years** in an orbit that approaches the Sun closer than any other known asteroid.

11.25. ORGANOCHLORINES

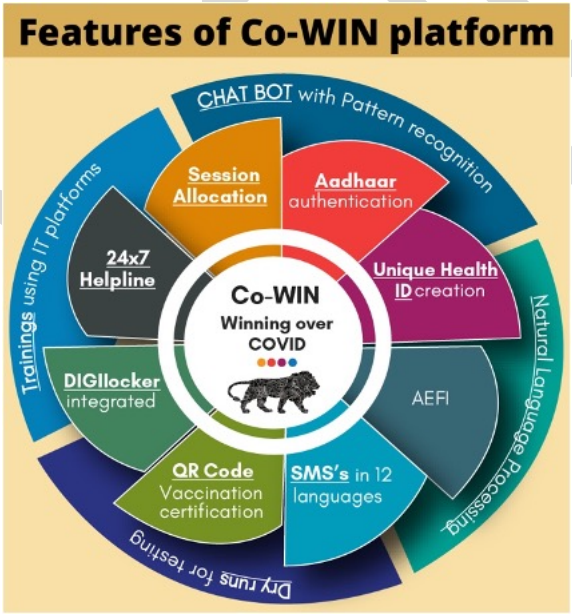
- According to reports, Organochlorines seem to be the reason **behind a mystery disease that has impacted 450 patients in with seizures, nausea, dizziness and headaches.**
  - Organochlorines are capable of causing adverse effects in the central and peripheral nervous system.
- Organochlorines are a **group of chlorinated compounds that belong to the class of persistent organic pollutants (POPs).**
  - They are relatively cheaper and as a result widely used as pesticides (40% of all pesticides) in Asia.
- **POPs are chemicals of global concern due to** their potential for long-range transport, persistence in environment, ability to bio-magnify and bio-accumulate in ecosystems, negative effects on human health and environment.
  - **Most commonly encountered POPs are organochlorine pesticides**, such as DDT, industrial chemicals etc.
- **Steps taken to prevent POP contamination**
  - **Stockholm Convention on POPs,** which suggests ending commercial use of several POPs and reduce or eliminate their emission into the environment.

- **Some of organochlorines recognized under convention** are DDT, dieldrin, Heptaclor etc.

- **India notified 'Regulation of Persistent Organic Pollutants Rules** under provisions of Environment (Protection) Act, 1986 to ban 7 chemicals listed as POPs under Stockholm Convention.

11.26. COWIN

- Recently, IT minister announced a launch of grand challenge for strengthening the **COVID Vaccine Intelligence Network (CoWIN) system.**
- CoWIN is a digitalised real time platform to be used to effectively roll out and scale up the mechanism for **COVID Vaccine Distribution System.**
- CoWIN will allow the **system to monitor the utilisation, wastage, coverage of Covid-19 vaccination**.
- Till now, **Universal Immunisation Programme has been using a vaccine intelligence system called eVIN (electronic vaccine intelligence network)** and CoWIN is essentially an extension of eVIN.
- CoWIN app will have four modules User: administrator module; beneficiary registration; vaccination and beneficiary acknowledgment; and status updation.
- There are three options for registration including self-registration, individual registration, and bulk by uploading photo identity card, while authentication will be biometric or OTP-based.



11.27. PNEUMOSIL

- It is **India's first pneumococcal conjugate vaccine (PCV)** developed recently by Serum Institute of India in collaboration with partners like the Bill and Melinda Gates Foundation.
- Pneumosil targets the **pneumococcal bacterium, which causes pneumonia and other serious life-threatening diseases such as meningitis and sepsis.**
  - Vaccine will ensure that children are **protected better against pneumococcal disease.**
  - Pneumococcal disease is a **significant contributor under-five mortality rate worldwide and** cause nearly four lakh deaths in children each year worldwide.

11.28. PLANT BASED VACCINE (PBV)

- It is **emerging as an affordable and efficient alternative for vaccination** against diseases.
- **PBV are a kind of recombinant vaccines** that introduce antigens against particular pathogens into the selected plant.
  - Rather than replicating a virus, it **aims to engineer a virus-like protein (VLP)** in living plants.
  - When administered, a **VLP mimics a virus and is recognised by the immune system**, thus eliciting a protective response.
- A vaccine generally contains **a dead or weakened version** of same microbe of disease.

11.29. NANOMICELLES

- Recently, Researchers have found that **Nanomicelles can be used for Cancer treatment**
- Nanomicelles are **globe-like structures with a hydrophilic outer shell and a hydrophobic interior**. This dual property makes them a **perfect carrier for delivering drug molecules**.
  - N**anomicelles are extremely small structures** with size less than 100nm and have been noted as an emerging platform in targeted therapy. They are **stable at room temperature.**
- Once injected **intravenously these nanomicelles can easily escape the circulation and enter the solid tumours where the blood vessels are found to be leaky**. These leaky blood vessels are absent in the healthy organs.
- Advantage of nanomicelles is their **quality as an efficient pharmaceutical content because of their low toxicity, ability to minimize drug degradation, ability to permeate tissues easily for drug delivery, and lower adverse drug side effects.**

11.30. RECOGNITION SCHEME FOR HYGIENE RATING AUDIT AGENCIES (HRAA)

- Scheme has been launched **by QCI at the behest of Food Safety and Standards Authority of India (FSSAI).**

- It has been launched **to scale up Hygiene Rating** by increasing the number of recognized HRAA in the country.
- Recognised HRAA will be **responsible for verifying the compliance with food hygiene and safety** procedures (under **Food Hygiene Rating Scheme)** laid by FSSAI and get Hygiene Rating.

- **Food Hygiene Rating Scheme**(launched in 2019)is a certification system for food businesses supplying food directly to consumers.
  - Food businesses are rated on the basis of **food hygiene and safety** conditions found at the time of inspection, and **given a score between 1 and 5 as per their hygiene and food safety compliance.**
  - It is applicable for food service establishments such as **hotels, restaurants, cafeterias, dhabhas, sweet shops, bakeries and meat retail stores.**
- **Significance of the scheme**
  - Enable consumers to make informed choices/decisions pertaining to the food outlets where they eat.
  - Encourage **food businesses to adopt high hygiene standards** and to sustain them to showcase the same to consumers.

QUALITY COUNCIL OF INDIA (QCI)

- QCI was set up in 1997 by Central Government jointly with Indian Industry as an **autonomous body under the administrative control of the Department for Promotion of Industry and Internal Trade (DPIIT), Ministry of Commerce and Industry.**
- **Its functions include:**
  - To operate the National Accreditation Structure for conformity assessment bodies;
  - Providing accreditation in the field of education,
  - Health and quality promotion.
- Chairman of QCI is appointed by the Prime Minister on recommendation of the industry to the government.

11.31. INDIA WORKPLACE EQUALITY INDEX (IWEI) LAUNCHED

- It is India's First comprehensive benchmarking tool for employers to measure their progress on lesbian, gay, bi and trans (LGBT+) inclusion in the workplace.
- IWEI empowers organisations to navigate the challenges of embedding LGBT+ inclusion and provides them with a clear roadmap to follow.
- **Index is created by Keshav Suri Foundation in partnership** with Pride Circle, Stonewall UK and FICCI.
  - Index is built on the expertise of the Stonewall Workplace Equality Index, which launched in 2005.
- **The index measures nine areas:** policies and benefits, employee lifecycle, employee network group, allies and role models, senior leadership, monitoring, procurement, community engagement and additional work.
- Transgender Persons (Protection of Rights) Act, 2019 (Transgender Act) p**rohibits the government as well as private persons from unfairly discriminating against transgender people** in employment relationships, including by denying or terminating employment on the basis of gender identity.
  - Section 9 of the Transgender Act specifically bestows protection against discrimination in employment.

11.32. NEW 'POLICY ON SCHOOL BAG 2020' OF UNION MINISTRY OF EDUCATION

- **Key recommendations**
  - **School bags should not be more than 10% of the body weight of students** across classes I to X. There should be no bags in pre-primary.
  - Weight of the bag **needs to be monitored on a regular basis** in schools.
  - It also **suggests maximum homework time for students of different classes**.
  - Adequate **good quality mid-day meal and potable water to all students** so that they need not carry lunch boxes or water bottles.
  - **Weight of each textbook may come printed** on them by the publishers.

11.33. POST MATRIC SCHOLARSHIP TO STUDENTS BELONGING TO SCHEDULED CASTES (PMS-SC)

- PMS-SC is **to provide financial assistance to SC students studying at post matriculation or post-secondary stage** to enable them to complete their education.
- It is a **Centrally Sponsored Scheme** (Ministry of Social Justice and Empowerment) and implemented through State Governments.
- Recently, **Changes were approved to PMS-SC**.
  - It will be run on an online platform.
  - Central share (60%) would be released on DBT mode.
  - Central Assistance would be increased more than 5 times annually during 2020-21 to 2025-26.

11.34. STREET HAWK CULTURE

- Recently, Singapore's popular and vibrant Street Hawker culture was designated an **Intangible Cultural Heritage (ICH) by UNESCO**
    - **'Intangible Cultural Heritage' indicates 'the practices, representations, expressions, knowledge, skills – as well as the instruments, objects, artefacts and cultural spaces associated** therewith – that communities, groups and, in some cases, individuals recognize as part of their Cultural Heritage'. Examples of intangible heritage are oral traditions, performing arts, local knowledge, and traditional skills.
    - **'Tangible Cultural Heritage' refers to physical artefacts produced, maintained and transmitted intergenerationally in a society.** It includes artistic creations, built heritage such as buildings and monuments, and other physical or tangible products of human creativity that are invested with cultural significance in a society.
- The hawker centres are **representative of Singapore's multiculturalism with stalls selling cheap and delicious food of** Chinese, Malay, Indian origins among others.
- The Singapore government under its **National Environment Agency** has implemented various steps to keep the hawker culture alive.
- It has set up the **Incubation Stall Programme** and **Hawkers' Development Programme among others** to equip aspiring and existing street hawkers with relevant skills.

ICH from India inscribed on the UNESCO Representative List are Tradition of **Vedic chanting; Ramlila,** the traditional performance of the Ramayana**; Kutiyattam,** Sanskrit theatre; **Ramman,** religious festival and ritual theatre of the Garhwal Himalayas, India; **Mudiyettu**, ritual theatre and dance drama of Kerala; **Kalbelia** folk songs and dances of Rajasthan; **Chhau dance**; **Buddhist chanting** of Ladakh; **Sankirtana**, ritual singing, drumming and dancing of Manipur; **Traditional brass and copper craft** of utensil making among the Thatheras of Jandiala Guru, Punjab, India; **Yoga; Nawrouz; Kumbh Mela**.

11.35. MONPA HANDMADE PAPER INDUSTRY

- Recently, the **Monpa Handmade Paper of Arunachal Pradesh** has been revived with the committed efforts of **Khadi and Village Industries Commission (KVIC).**
- **Monpa is a fine-textured handmade paper**, which is called **Mon Shugu in the local dialect**, is integral to the vibrant culture of **the local Monpa tribe in Tawang**.
- The paper originated over 1000 years ago and has great historic and religious significance as it is the **paper used for writing Buddhist scriptures and hymns in monasteries.**
    - **Monpas used to sell these papers to countries like Tibet, Bhutan, Thailand and Japan** as no paper making industry existed in these countries at that time.
    - However, the local industry **gradually began declining and the indigenous handmade paper was taken over by inferior Chinese paper.**
- The Monpa **handmade paper, will be made from the bark of a local tree called Shugu Sheng**, which has medicinal values too.

11.36. THARU TRIBE

- **Recently,** Uttar Pradesh government has embarked upon a scheme to take the unique culture of its ethnic Tharu tribe across the world
- **About Tharu tribes**
    - Tharu people are an ethnic group indigenous to the Terai in southern Nepal and northern India. In India, they live **mostly in Uttarakhand, Uttar Pradesh, and Bihar**.
    - Most of them are **forest dwellers, and some practice agriculture**.
    - They speak **various dialects of Tharu**, a language of the Indo-Aryan subgroup, and variants of Hindi, Urdu, and Awadhi.
        - In central Nepal, they speak a variant of Bhojpuri, while in eastern Nepal, they speak a variant of Maithili
    - Tharus **worship Lord Shiva as Mahadev** and call their supreme being "Narayan", who they believe is the **provider of sunshine, rain, and harvests**.
    - Tharu tribe's celebrate '**Barna' festival** during the month of Shrawan every year. During the festival, they remain indoors so that the plants are not trampled. The festival shows their **love for nature and commitment towards conservation of forests.**
    - Tharu women have strong property rights.

11.37. CATTLE, BUFFALO MEAT RESIDUE FOUND IN INDUS VALLEY VESSELS

- The study **published in Journal of Archaeological Science** has shown that apart from cultivating and growing crops, the civilization also used to eat meat.
- An analysis of **lipid residues** in ancient ceramic vessels from settlements of the Indus Civilisation in present-day Haryana and Uttar Pradesh **suggests**

that the prehistoric people of the time consumed meat of animals like cattle, buffalo, sheep, goat, and pigs as well as dairy products.
    - Lipids are relatively less prone to degradation and have been discovered in pottery from archaeological contexts around the world.
    - The analysis of lipid residues **involved extraction and identification of the fats and oils** absorbed in the vessels.
- The study also talks of a **diversity of plant products and regional variation in cropping practices**.
    - Both summer and winter-based cropping was practiced.
    - Evidence of barley, wheat, rice, different varieties of millets, a range of winter and summer pulses, oilseed and fruit and vegetables, including brinjal, cucumber, grapes, date palm were grown and consumed.

11.38. CONSORTIA FOR MEDICINAL PLANTS

- National Medicinal Plants Board (NMPB) launched consortia for medicinal plants **to deliberate on quality planting material, research and development, cultivation and trade of medicinal plants**.
- **'Seed to Shelf' approach is being introduced** to establish the linkage between the farmers and manufacturers, wherein, aspects related to Quality Planting Materials, Good Agriculture Practices, Good Post Harvest Practices would be addressed.
- In the first phase, consortia is proposed for medicinal plant species - **Ashwagandha (Withaniasomnifera), Pippali (Piper longum), Aonla (Phyllanthus emblica), Guggulu (Commiphorawightii), Satavari (Asparagus racemosus).**

11.39. CABINET APPROVES MERGER OF FOUR FILM MEDIA UNITS WITH THE NATIONAL FILM DEVELOPMENT CORPORATION (NFDC).

- **NFDC is a** Central Public Sector Undertaking, incorporated in the year 1975 with the primary object of planning and promoting an organized, efficient and integrated development of the Indian Film Industry.
- **Other** Merged film and media units are
    - **Films Division**, established in 1948, was created primarily to produce documentaries and news magazines as publicity for government programmes and to keep a cinematic record of Indian history.
    - **Children's Film Society** was founded in 1955 with the specific objective of providing children and young people value-based entertainment through the medium of films.
    - **National Film Archives of India** was established in 1964 with the primary objective of acquiring and preserving Indian cinematic heritage.
    - **Directorate of Film Festivals** was set up in 1973 to promote Indian films and cultural exchange.
- **Benefits of merger**
    - **Ensure balanced and focused development of Indian cinema** in all its genres-feature films, including films/ content for the OTT platforms, children's content, animation, short films and documentaries.
    - Better and **efficient utilization of misting infrastructure and manpower**
    - **Reduction in duplication of activities** and direct savings to the exchequer.

11.40. INDIA VOTES TO RECLASSIFY CANNABIS

- India has voted with the majority at the United Nations **to remove cannabis and cannabis resin from the list of most dangerous substances** from Schedule IV of 1961 Single Convention on Narcotic Drugs.
    - Convention allows for **control over trafficking in narcotics, marijuana, cocaine** and coca leaf.
- Now, the decision by UN Commission on Narcotic Drugs (CND) will **lead to changes in the way cannabis is regulated internationally.**
- Under **India's Narcotic Drugs and Psychotropic Substances (NDPS) Act, 1985,** the production, manufacture, possession, sale, purchase, transport, and use of cannabis is a punishable offence.